TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IAŞI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
MATHEMATICAL ANALYSIS 1

1. Course leader: **Senior Lecturer CARAMAN SÂNZIANA, Ph.D.**
2. Topic characteristics: DI, DF **code: CE 101**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2	2			E	28	28			56

4. Objectives of the topic:

1. This discipline has a fundamental character, giving to students basic mathematical tools that are necessary in assimilating other subjects, both fundamental (like Physics, Theoretical Mechanics, Numerical methods) and of a technical profile as well, included in the Curriculum of the Civil Engineering domain.

2. Also, the development of thinking, the increasing of analysis and synthesis ability, the development of intuition are goals of this course.

5. Concordance between the objectives of the topic and the objectives of the training plan
The main goal of this course is to create a part of the foundation of knowledge which is necessary in covering the civil engineering disciplines. Alongside the other disciplines, this one contributes to the improvement of the level of knowledge and, consequently, prepares the student for the incoming professional challenges.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
The students will know the mathematical results required in the study of the fundamental disciplines and technical disciplines.
b. Technical skills and abilities
The students will prove the capacity of solving typical applicative problems and to describe mathematical reasoning.

7. Teaching procedures:

The essential definitions and results (theorems, propositions) are presented at the course, together with examples to illustrate them using expositive method, the heuristic method or using PowerPoint slides (where is necessary). Various exercises are solved together with the students at the seminars, taking care to cover all the notions given at the courses and to enable them to assimilate specific techniques of solving problems of Mathematical Analysis.

8. Evaluation system:

Stages:

Continuous assesment

Seminar activity **Percentage of the evaluation in the final mark 20%**

The evaluation is based on the frequency and the pertinence of the oral answers.

Semestrial tests [2] **Percentage of the evaluation in the final mark 25%**

The average of the two semestrial tests determine the mark of this evaluation.

***Final evaluation*: Examination Percentage of the final mark**: **45%**

In this written examination the students are asked both to present theoretical definitions and results and to prove the capacity of solving typical applicative problems of the same type as those solved at the seminars.

9. Content of the subject:

9.1. Course

Chapters	Nr. of hrs.
Chapter I. The Real Number System Axioms for real numbers. Upper and lower Bounds. The Topological Structure of Real Set.	2
Chapter II. Sequences and Series Sequences of Real Numbers. Series of Nonnegative Terms. Tests of Convergence.	6
Chapter III. Limit and Continuity for Real Functions. Criteria of Existence for the Limit of Functions. Standard limits. Theorems of Continuity.	2
Chapter IV. Derivatives and Differentials. Elementary formulas. Local extrema. Mean value theorems (Rolle, Lagrange, Cauchy). L'Hospital's Rule. Higher Order Derivatives and Taylor's Formula.	6
Chapter V. Sequences and Series of Functions. Power series. The expansion of functions into Power Series.	2
Chapter VI. Functions of Several Variables. Limit and Continuity of Function of several Variables. Partial Derivatives and Differentials of several variables functions. Extrema for Functions of several Variables. Taylor's Formula. Implicit Functions.	10
Cumulated	28

9.2. Applications

1	Algebraic Equations in the Real Number Set	2
2.	Sequences and Series	6
3.	Real Functions	10
4.	Functions of Several Variables	10
	Cumulated	**28**

10. References

1. BERMAN, G.N., *A problem book in Mathematical Analysis*. MIR Publishers, Moscow: 1980.
2.. CARAMAN, S. *Lecture Notes on Mathematical Analysis.* Editura Societăţii Academice „Matei Teiu Botez", Iaşi, 2008.
3. CHIORESCU, Gh. Analiză matematică. Editura Pim, Iaşi, 2006.
4. CRAVEN, B.O, *Functions of Several Variables.* Chapman and Hall, London & New York: 1981.
5. FLEMING, W. *Functions of Several Variables.* Springer-Verlag, New York – Heidelberg – Berlin: 1977.
6. GELBAUM, B. *Problems in Analysis.* Springer-Verlag, New York – Heidelberg – Berlin: 1982.
7. NICULESCU, C. *An Introduction to Mathematical Analysis*. Editura Universitaria Press, Craiova: 2005.
8. NISTOR, I. *Probleme de analiză matematică*. vol.I – II. Editura Cermi, Iaşi, 2004.
9. SCOTT, D.B, TIMS, S.R *Mathematical Analysis.* Cambridge at The University Press: 1966
10. STROMBERG, K.R., Introduction to Classical Analysis. Wadsworth International Group. Belmont, California: 1981.

Date: 24.03.2098

Name and surname **Signatures:**

Course leader: Senior Lecturer Sânziana Caraman, Ph.D.
Instructor: Senior Lecturer Sânziana Caraman, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**MATHEMATICAL ANALYSIS 1**

Codul disciplinei	**CE101**	Semestrul	**1**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28	28		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Elemente de algebră superioară (clasele a XI-a şi a XII-a din liceu) Analiză matematică (clasele a XI-a şi a XII-a din liceu)
	Recomandate	

Obiective	1. Dobândirea de către studenţi a unui sistem de cunoştinţe ştiinţifice de analiză matematică, strict necesare în studierea disciplinelor de specialitate. 2. Dezvoltarea gândirii, a capacităţii de analiză şi sinteză, a intuiţiei şi conducerii raţionamentelor şi calculelor
Conţinut (descriptori)	1. Real numbers 2. Sequences of real numbers 3. Series of real numbers 4. Limit and continuity of real functions 5. Differentiability of real functions 6. Function of several variables

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.probă scrisă pondere 50%;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen T**			**45%**
	Evaluarea pe parcurs*)	**Activitatea la seminar T**		**20%**
		Teste pe parcurs [2] **T**		**25%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector doctor Sânziana Caraman	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector doctor Sânziana Caraman	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IAŞI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering Specialization: CIVIL ENGINEERING
Education form: daily courses Year of study: I Academic Year: 2008-2009

L E A R N I N G P R O G R A M

of the topic:

ALGEBRA AND GEOMETRY 1

1. Course leader: Senior Lecturer ROMAN Marcel Romică, Ph.D.
2. Topic characteristics: DI, DF code: CE 102
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2	2			E	28	28			56

4. Objectives of the topic:

1. This discipline has a fundamental character, giving to students basic mathematical tools that are necessary in assimilating other subjects, both fundamental (like Physics, Theoretical Mechanics, Numerical methods) and of a technical profile as well, included in the Curriculum of the Civil Engineering domain.

2. Also, the development of thinking, the increasing of analysis and synthesis ability, the development of intuition are goals of this course.

5. Concordance between the objectives of the topic and the objectives of the training plan

The main goal of this course is to create a part of the foundation of knowledge which are necessary in covering of the civil engineering disciplines. Alongside the other disciplines, this one contribute to improvement of the level of knowledge and consequently prepares the student for the incoming professional challenges.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The students will know the mathematical results required in the study of the fundamental disciplines and technical disciplines, too.

b. Technical skills and abilities

The students will prove the capacity of solving typical applicative problems and to describe mathematical reasoning.

7. Teaching procedures:

The essential definitions and results (theorems, propositions) are presented at the course, together with examples to illustrate them using expositive method, the heuristic method or using PowerPoint slides (where is necessary). Various exercises are solved together with the students at the seminars, taking care to cover all the notions given at the courses and to enable them to assimilate specific techniques of solving problems of Linear Algebra, Analytic and Differential geometry.

8. Evaluation system:

Stages:

Continuous assesment

Seminar activity Percentage of the evaluation in the final mark 20%

The evaluation is based on the frequency and the pertinence of the oral answers.

Semestrial Tests [2] Percentage of the evaluation in the final mark 25%

The average of the two semestrial tests determine the mark of this evaluation.

***Final evaluation*: Examination Percentage of the final mark: 45%**

In this written examination the students are asked both to present theoretical definitions and results and to prove the capacity of solving typical applicative problems of the same type as those solved at the seminars.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
Chapter I. Matrices Matrices and determinants. Symmetric and skew-symmetric matrix. GL(n:K) and GO(n:K).	2
Chapter II. Linear systems Cramer type systems. Rouche-Frobenius and Kronecker-Capelli theorems. Homogeneous systems. The method of Gaussian elimination.	2
Chapter III. Vector spaces (linear spaces) The notion of vector space. Properties. Linear subspace. Generators, Bases and dimension. Coordinates.	4
Chapter IV. Linear endomorphisms Linear endomorphisms. The kernel and the image of an endomorphism. The rank theorem. Changes of coordinates of a vector in two bases. The linear space L(X,Y). The matrix of the endomorphism. The change of the matrix of an endomorphism with respect to a change of basis. Invariant subspaces of an endomorphism. Eigen values and eigenvectors. Diagonalization of (the matrix of) endomorphisms.Cayley-Hamilton Theorem.	8
Chapter V. Linear and bilinear forms. Quadratic forms (Q-forms) Linear forms. The dual space. Changes of coefficients of a linear form with respect to a change of bases. Bilinear forms (BLF-s). The space $L_2(X,K)$. The analytic expression and the matrix of the BLF. The change of the matrix of a BLF with respect to a change of basis. Symmetric bilinear forms and Q-forms. Canonical Diagonal) form of a Q-form. The Sylvester theorem. The Gauss method and the Jacobi method.	6
Chapter VI. Inner product space(IPS), normed vector space and metric spaces The notion of inner product. Inner product space(IPS) or Euclidean spaces. The normed vector space. Orthogonal system of vectors, orthonormal bases. Gram-Schmidt theorem. Orthogonal transformations. Orthogonal matrices. Symmetric linear transformations (self-adjoint endomorphisms). Eigenvalues and eigenvectors. Q-forms on IPS. The diagonalization of an endomorphism using eigenvalues (the eigenvalues method).	4
Chapter VII. Vector Algebra The vector spaces V^2 and V^3. Operations with vectors. Colinear and coplanar vectors. Orthogonal projections. The dot product, the cross product, the double cross product and the mixed product.	2

Cumulated 28 hrs

9.2. Applications

1	**Matrices and determinants**	2
2.	**Linear systems**	2
3.	**Vector spaces (linear spaces)**	4
4.	**Linear endomorphisms**	6
5.	**Linear and bilinear forms. Quadratic forms (Q-forms)**	6
6.	**Inner product space(IPS), normed vector space and metric spaces**	4
7.	**Vector Algebra**	4

Cumulated 14 hrs

10. References

Course:

1. Gh. ANDRICIOAEI – Algebră liniară, geometrie analitică şi diferenţială, geometrie proiectivă, Universitatea Tehnică, Iaşi, 1996.
2. Al. CĂRĂUȘU – Linear algebra, MatrixRom, Bucureşti, 1999.
3. A. NEAGU – Geometrie, Universitatea Tehnică, Iaşi, 1996.

4. C. NIŢESCU – Algèbre linéaire, Geometry Balkan Press, Bucharest, 2000.
5. N. PAPAGHIUC, C. CĂLIN – Algebră liniară şi geometrie, Editura Perfomantica, Iaşi, 2003.
6. A.L. PLETEA, A. CORDUNEANU, M. LUPAN – Lecţii de algebră liniară, Editura Politehnium, Iaşi, 2005.
7. I. POP, Gh. NEAGU – Algebră liniară şi geometrie analitică în plan şi spaţiu, Editura Plumb, Bacău,1996.
8. C. POPOVICI – Algebră liniară, geometrie analitică şi diferenţială. Utillizare MATLAB, Politehnium, Iaşi, 2008
9. GH. PROCOPIUC – Matematica, 1999, Universitatea Tehnica "Gh. Asachi" Iaşi.
10. G. TEODORU - Algebră liniară şi geometrie analitică, Vol. II, 1980, Rotaprint, I.P. Iaşi.
11. C. UDRIŞTE – Algebră liniară. Geometrie analitică, Geometry Balkan Press, Bucureşti, 1996.

Applications:

1. Gh. ATANASIU, Gh. MUNTEANU, M. POSTOLACHE – Algebră liniară, geometrie analitică, diferenţială, ecuaţii diferenţiale. Culegere de probleme, Ed. All, 1994, 1998.
2. Al. CĂRĂUŞU – Vector algebra, analytic and differential geometry, PIM, Iaşi, 2003.
3. V.T. BORCEA – Probleme de algebră şi ecuaţii diferenţiale, Universitatea Tehnică, Iaşi, 1993.
4. V.T. BORCEA, C.I. DAVIDEANU – Geometrie analitică, Editura PIM, Iaşi, 2002.
5. S. CHIRIŢĂ – Probleme de matematici superioare, E.D.P., 1989.
6. P. GEORGESCU, G. POPA – Structuri fundamentale în algebra liniară, geometria vectorială şi geometria analitică. Probleme rezolvate. Editura Matrix Rom, Bucureşti, 2003.
7. I. POP, Gh. NEAGU – Algebră liniară şi geometrie analitică în plan şi spaţiu, Editura Plumb, Bacău,1996
8. G. TEODORU, D. FETCU – Algebră liniară, geometrie analitică şi diferenţială. Culegere de probleme, Universitatea Tehnică, Iaşi, 2004.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Marcel Romică ROMAN, Ph.D.

Instructor: Senior Lecturer Marcel Romică ROMAN, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ALGEBRA AND GEOMETRY 1**

Codul disciplinei	**CE102**	Semestrul	**1**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28	28		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Elemente de algebră superioară (clasele a XI-a şi a XII-a din liceu) Geometrie analitică (clasa a XI-a din liceu) Geometrie şi trigonometrie (clasa a X-a din liceu).

Obiective	*1. This discipline has a fundamental character, giving to students basic mathematical tools that are necessary in assimilating other subjects, both fundamental (like Physics, Theoretical Mechanics, Numerical methods) and of a technical profile as well, included in the Curriculum of the Civil Engineering domain.* 2. Also, the development of thinking, the increasing of analysis and synthesis ability, the development of intuition are goals of this course.
Conţinut (descriptori)	1. Matrices. 2. Linear systems. 3. Vector spaces (linear spaces). 4. Linear endomorphisms. 5. Linear and bilinear forms. Q-forms. 6. Inner product space, normed vector space and metric spaces. 7. Vector algebra.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.probă scrisă ; sarcini: rezolvarea de probleme şi de subiecte teoretice; condiţii de lucru T pondere 50 %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**45%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**20%**
		Teste pe parcurs [2]		**25%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector Dr. Roman Marcel Romică	

Titularul aplicaţiilor	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector Dr. Roman Marcel Romică	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

MECHANICS 1

1. Course leader: Senior Lecturer Corneliu Eugen ŞFARTZ, PhD.
2. Topic characteristics: DI, DID **code: CE103**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2	1	-	-	E	28	14	-	-	42

4. Objectives of the topic:

Mechanics is one of the technical culture topics which insure the basic training of an engineer. The chapters of Mechanics are presented in the order they appeared and developed, Statics, Kinematics and Dynamics, followed by elements of Analytical Mechanics. This order was chosen since it corresponds to the growing level of complexity and is in conformity with the needs of some courses that use elements of Mechanics (Strength of Materials, Statics of Constructions, Dynamics of Constructions, Earthquake Engineering).

The objectives of the course refer to:

- provide the students with a set of theoretical and practical knowledge concerning the field of Mechanics, knowledge which are needed in order to understand the specialty topics.

- contribute to the development of the capacity of analysis and synthesis, of intuition and of performing calculations and reasoning.

- develop the necessary skills needed to analyze the results of a given problem.

5. Concordance between the objectives of the topic and the objectives of the training plan

The modern technique faces the civil engineers with very diverse problems concerning the calculus of various types of constructions. The diversity of these problems and their solving are based on general principles having a common scientific root, which is the study of the equilibrium and motion of bodies. This study is performed at the classes of Mechanics.

The Mechanics provides the students with a set of knowledge that are needed for the study of the specific topics for a civil engineer. The methods given by the Statics will be used to solve problems concerning the equilibrium of structures. Based on the knowledge of Dynamics and Analytical Mechanics, the civil engineer will be able to deal with practical problems involving the dynamic behavior of high structures, acted by the wind, traffic, earthquakes, etc.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The study of Mechanics has a great contribution in initiating the student in the individual study, in the organized intellectual work. It gives him the opportunity of personal exploration and helps him to become more self confident, in order to be able to learn, to investigate and to design.

After learning the basics of Mechanics, the students will be able to use the vector analysis, the principles and the general theorems of statics and dynamics in order to solve various theoretical and practical problems encountered in civil engineering. They will also be able to find appropriate mathematical models for the practical problems that they will deal with.

b. Technical skills and abilities

- Establish the mathematical model of various types of constructions.

- Use the methods of statics and dynamics for the study of various structures.

- Use the methods of the analytical mechanics for the analysis of practical problems, discuss and use the results for research and design.

7. Teaching procedures:

- Systematic and selective presentation of new knowledge.
- Give lectures, solve problems and analyze the results.
- Use the computer for the study of some practical cases or for solving some complex problems.

8. Evaluation system:

Stages:

Continuous assessment

1. The seminar activity (percentage in the final mark: 20%)

The assessment refers to the frequency and the quality of the answers given by the students during the evaluation of knowledge, before beginning solving problems. The evaluation will also emphasize the originality of the solutions given by the students, the generalizations and the discussion of the results when solving problems of Mechanics.

2. Tests during the semester (percentage in the final mark: 15%)

The students will receive both multiple choice tests and regular tests, in order to assess the theoretical knowledge and the capacity of solving problems.

3. Homeworks (percentage in the final mark: 10%)

At the end of each chapter, each student will have to solve individually a problem concerning the content of that chapter. Some problems will represent the starting point for themes that will be developed within the student research groups.

***Final evaluation*: Examination Percentage of the final mark: 45%**

The final evaluation exam is represented by a written test where the students have to solve problems from each chapter that was studied during the semester. They also have to present two theoretical problems, along with their proofs. The students are allowed to use their electronic calculators for performing any necessary calculations concerning the problems.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
I. Introduction *The object of Mechanics. The main chapters of Mechanics. Models used in Mechanics. The principles of Classical Mechanics*	2
II. The Statics of the Rigid Body *The moment of a force about a point and about an axis. Systems of forces. The reduction of systems of forces. Particular systems of forces. The center of mass of a rigid body. Statical moments of inertia. First moments of area. Simple constraints of a rigid body (the simple support, the pin support, the fixing, the cable and the rigid rod).* *The equilibrium of the constrained rigid body; ideal constraints and friction. The vectorial and scalar equilibrium equations.*	10
III. The Statics of Mechanical Systems *The vectorial and scalar equations of equilibrium for a mechanical system. Statically determined systems. The theorems of the statics of systems of particles and systems of rigid bodies (the theorem of solidification, the theorem of equilibrium of parts of a system). Statics of trusses. The method of joints. The method of sections.*	8
IV. Moments of Inertia *Second moments of area (definitions, measure units, examples). The variation of the second moments of area about parallel axes and about concurrent axes. Principal axes of inertia, principal moments of inertia. The ellipse of inertia. Mechanical moments of inertia. Calculation of seconds moments of area and mechanical moments for various bodies that are used in civil engineering.*	6

V. The Statics of Cables *The equations of the statics of cables. The equilibrium of the cable subjected to concentrated loads. The equilibrium of the homogeneous heavy cable. Cables wound around rough surfaces.*	2

Cumulated: 28 hrs

9.2. Applications

I. The Reduction of Systems of Forces *Finding the resultant force, the resultant moment and the parameter of a system of forces. The cases of reduction for systems of forces. The central axis and the minimum resultant moment. Particular cases of systems of forces (parallel forces, coplanar forces)*	2
II. Centers of Mass. The Equilibrium of the Rigid Body *Finding the center of mass and the first moments of area for homogeneous bodies (plates, beams, blocks). The case of non-homogeneous bodies. The equilibrium of the rigid body. Friction. Planar problems, space problems.*	4
III. The Equilibrium of Statically Determined Mechanical Systems *Finding the reactions at the internal and external constraints for a statically determined mechanical system. The method of the equilibrium for parts of a system. The method of solidification. Trusses. Finding the force in a member of a truss using the method of joints and the method of sections.*	4
IV. Second Moments of Area *Finding the second moments of area and principal central second moments of area for planar plates. Principal axes of inertia. The central ellipse of inertia. The moments of inertia for homogeneous rigid bodies.*	3
V. The Statics of Cables *The Statics of cables. Cables wound around rough disks.*	1

Cumulated: 14 hrs

10. References

1. Hibbeler R. C., ENGINEERING MECHANICS. STATICS, Eleventh Edition, Prentice Hall, 2007.
2. Hibbeler R. C., ENGINEERING MECHANICS. DYNAMICS, Eleventh Edition, Prentice Hall, 2007.
3. Meriam J. L., Kraige L. G., ENGINEERING MECHANICS. DYNAMICS, Sixth Edition, John Wiley & Sons, 2007.
4. Meriam J. L., Kraige L. G., ENGINEERING MECHANICS. STATICS, Sixth Edition, John Wiley & Sons, 2007.
5. Ferdinand Beer, Russell Johnston, William Clausen, VECTOR MECHANICS FOR ENGINEERS. STATICS, Eighth Edition, McGraw-Hill, New York, 2007.
6. Ferdinand Beer, Russell Johnston, William Clausen, VECTOR MECHANICS FOR ENGINEERS. DYNAMICS, Eighth Edition, McGraw-Hill, New York, 2007.
7. Ciumasu, S.G., Vieru, D., COMPLEMENTE DE MECANICĂ, Ed. Junimea, Iaşi, 1997.
8. Voinea, R., Voiculescu, V., Simion, F.P., INTRODUCERE IN MECANICA SOLIDULUI CU APLICAŢII ÎN INGINERIE, Ed. Academiei, Bucureşti, 1989.
9. Hangan, S., Slătineanu, I., MECANICA, E.D.P., Bucureşti, 1983.
10. Popescu, D., Poterasu, V.F., CULEGERE DE PROBLEME DE MECANICĂ, vol.I, Rotaprint, Iaşi, 1983.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Corneliu Eugen ŞFARTZ, PhD.

Instructor: Senior Lecturer Corneliu Eugen ŞFARTZ, PhD.

FIŞA DISCIPLINEI

Denumirea disciplinei	**MECHANICS 1**

Codul disciplinei	**CE103**	Semestrul	**1**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28	14	-	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Algebra liniară, geometrie sintetică şi analitică , Analiza matematică, Fizica

Obiective	*- provide the students with a set of theoretical and practical knowledge concerning the field of Mechanics, knowledge which are needed in order to understand the specialty topics.* *- contribute to the development of the capacity of analysis and synthesis, of intuition and of performing calculations and reasoning.* *- develop the necessary skills needed to analyze the results of a given problem*
Conţinut (descriptori)	The Reduction of Systems of Forces Centers of Mass. The Equilibrium of the Rigid Body The Equilibrium of Statically Determined Mechanical Systems Second Moments of Area The Statics of Cables

Sistemul de evaluare:					
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)				**E**
	Probele evaluării Lucrare scrisă cu rezolvare de probleme şi prezentare de subiecte teoretice pondere %;				
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**T**	**45%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**T**	**20%**
		Teste pe parcurs [*număr)*	**M**	**2**	**15%**
		Lucrări de specialitate, teme de casă [*număr***]**	**M**	**3**	**10%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*					

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr. ing. mat. Corneliu-Eugen ŞFARTZ	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr. ing. mat. Corneliu-Eugen ŞFARTZ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

BUILDING MATERIALS 1

1. Course leader: Senior Lecturer GROLL Livia Ingrid, Ph.D.
2. Topic characteristics: DI, DID code: CE104
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2	2			E	28	28			56

4. Objectives of the topic:

Presentation of the main construction materials characteristics

5. Concordance between the objectives of the topic and the objectives of the training plan

Its objectives are to harmonize and complete the basic education of the young civil engineer students. The objectives of the course fall in the objectives of the curricula as concerns the use of advanced means of study and the principles of conceiving building materials and solving some problems of building elements design and construction.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *Technical characteristics of the main construction materials and their interpretation to establish their utilization domain according to the European requirements.*
- *Technological condition for construction materials using to ensure the buildings quality*

b. Technical skills and abilities

- *Identification of the optimal using domain of the different advanced materials for construction elements and structures realization.*
- *The design of the constructions elements manufacturing technological processes according to the used advanced materials.*

7. Teaching procedures:

Course

- *Power point presentations. The lecturing material will be presented typed or on magnetic suport.*

Applications

- *Materials analisys and testing for technical characteristics determination*

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: grid test. The students have to answer at 12 questions from 20 for the minim qualificative. This form represents 35% from the final mark.

b) means and working conditions for reaching the goal: The students will be noted function of the frequency to the course presentations – 10% from the final mark.

c) percentage of the evaluation in the final mark – 45%

Speciality projects (applications)

The students have to know the lab procedure and to present their own notebook. This form represents 20% from the final mark.

***Final evaluation*: Examination** **Percentage of the final mark**: 45%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Composite structures *Classification. Particularities*	2
2.General physical characteristics of the construction materials *Terminology. Determination general principles of the materials technical characteristics. Physical characteristics: (densities, compactness, porosity). Specific characteristics of the granular materials (granularity, bulk density, voids volume). Materials water behaviour (water absorption, water permeability, water softening, gelivity strength). Heating behaviour (thermal expansion, softening, thermal conductivity).*	6
3.Mechanical characteristics of the construction materials *Stress – strain behaviour. Characteristic stress – strain curve. Principles of materials mechanical testing. Static testing (compression, tensile). Dynamic testing (compression, tensile). Cyclic testing (fatigue). Non-destructive materials testing methods*	8
4.Natural stone *Minerals. Roks. Clasifications. Stone products for buildings. Aggregates*	4
5.Ceramics and glass *Obtaining procedures. Clasification of ceramics (bricks). Glass products for buldings*	4
6. Metals. *Obtainig procedures. Clasifications. Metalic elements. Mecanical testing.*	4

Cumulated 28 hrs

9.2. Applications

1.	**Physical characteristics of the construction materials.** Density, apparent density, compactness, porosity, humidity, water absorption.	6
2.	**Granular materials.** Granularity, finesse modulus, Sand's moisture expansion. Granular materials mixtures.	6
3.	**Mechanical characteristics.** Static compression and tensile testing.	4
4.	**Ceramics.** Analysis. Mechanical testing	2
5.	**Metals.** Tensile strength	2

Cumulated 20hrs

10. References

1. Groll L., Hîrhui I., s.a., Materiale pentru construcţii – Bazele fizico – chimice ale studiului materialelor de construcţii, I.P.I. „Gh. Asachi" Iaşi, 1988.
2. Hîrhui I., Groll L., Babor D., Materiale pentru construcţii, Editura VESPER 1997
3. Hîrhui I., Conglomerate artificiale cu lianţi minerali, Ed. „Gh. Asachi" Iaşi, 1999.
4. Rujanu M., Groll Livia, -Materiale pentru construcţii, Ed. „Gh. Asachi" Iaşi, 1999.
5. Teoreanu I., Nicolescu I., Ciocea N., Moldovan V., Introducere în ştiinţa materialelor anorganice, Ed. Tehnică Bucureşti, 1987.
6. Bob C., Velica P., Materiale pentru construcţii, EDP,Bucureşti, 1978.
7. Groll L. ş.a., Materiale pentru construcţii, Îndrumător de laborator, Rotaprint U.T.I. 1992.
8. Groll Livia, Babor D., Covatariu Daniel, Raluca Iordăchescu, Materiale pentru construcţii – lucrări practice de laborator, Ed. Societăţii academice „Teiu Botez", 2001.
9. Groll L. ş.a., Materiale pentru construcţii, Caiet de lucrări practice, Rotaprint U.T.I. 2002.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader	Senior Lecturer Livia Ingrid GROLL, Ph.D.	
Instructor:	Senior Lecturer Dănuţ BABOR , Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**BUILDING MATERIALS 1**

Codul disciplinei	**CE104**	Semestrul	**1**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Chimie

Obiective	Information on the general construction materials and standard procedures for determining their technical characteristics. The interpretation of the technical characteristics in terms of achieving the requirements of quality and durability of materials in construction. Discipline is targeted, mainly to prepare graduated engineers as users of the materials and not as producers of material.
Conţinut (descriptori)	The structure of materials. General properties of construction materials. Physical characteristics. Mechanical characteristics. Natural stone. Ceramic products. Glass. Metals.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.**test gridă** ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin EXAMEN (test gridă, urmat de examinare orală)**			**45%**
	Evaluarea pe parcurs*)	Activitatea la seminar / lucrări		**35%**
		Teste pe parcurs [*număr)*		
		Lucrări de specialitate, teme de casă [*număr*]		**10%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Livia Ingrid GROLL	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Livia Ingrid GROLL	
	Şef lucr.dr.ing. Dănuţ BABOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENGINEERING GRAPHICS

1. Course leader: **Asist.drd. ANTONESCU ION**
2. Topic characteristics: DF **code: CE105**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	-	-	2	-	Vp	-	-	28	-	28

4. Objectives of the topic:

The course gives the theoretic and practical basis of technical drawing as foundation of design process.

5. Concordance between the objectives of the topic and the objectives of the training plan

This module follows the objective A3 of the training plan: to draw and model various construction types.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- Knowing of the basis of graphical reresentations used in civil engineering;
- Knowing of technical drawing standards and norms used in civil engineering.

b. Technical skills and abilities

- The ability of corect reading of technical drawing;
- The skill of creating civil engineering technical drawings;

7. Teaching procedures:

- exposing at blackboard using drafing instruments;
- conspects from bibliography,
- using of presentation drawings.

8. Evaluation system:

Stages:

Continuous assesment

The involving of students in the workshop activities, the knowledge of imposed bibliography and the corectiveness of using the instruments are type of imposed assignements: Percentage of the evaluation in the final mark 20%.

Speciality projects (applications)

The students will design 5 drawings in the workshop hours. The corectiveness of using the drawing standards and norms, and representation rules is followed. Percentage of the evaluation in the final mark 25%.

***Final evaluation*:** **Colloquium** **Percentage of the final mark**: 45%

9. Content of the subject:

9.1. Applications

1.	**General elements** Drawing materials and instruments. Linetypes used in civil engineering drawing. Standard sheet formats. Graphical elements of a format. The indicator. Representation scales. Projection Cube. Views disposal. Sections and cutouts. Dimensioning.	4
2.	**Technical curves** Geometrical constructions for taceing of technical curves. Filleting of two lines with an circular arc, of a line with a circle, of two circles. Control drawing no. 1 – Represetation of an ovoid channel / metalic flange / balancer.	4
3	**Representation of wooden structures.** Rules for wooden elements representation. Wooden elemnts' joints. Roofs. Control drawing no. 2 – Representation of a wooden roof truss.	4
4	**Representation of metal structures**. Rolled steel profiles. Joints with screews and nuts. Welded joints. Control drawing no. 3 – Representation of a metal truss	4
5	**Reinforced concrete structures**. Rules of representing reinforced concrete elemnts. Notation of concrete elemnts. Dimensioning and notation of reinforcements. The bar schedule. Control drawing no. 4 – Representation of a reinforced concrete beam.	4
6	**Dwelling building representation**. Making and dimensioning of architectural plans. Windows and doors representation. Depicting of facades. Control drawing no. 5 – Dwelling building: current floor plan and main façade.	4
7	**Representation of sections through buildings**. Stairs representations.	4

Cumulated 28 hrs

10. References

1. Up to date standards and norms .
2. Hîncu G., HANDBOOK OF TECHNICAL DRAWING IN CONSTRUCTION, Lito „Gh.Asachi" T.U. Iaşi, 1995.
3. Eftimescu C., Danaila W., TECHNICAL DRAWING FOR CONSTRUCTION, Lito „Gh.Asachi" T.U. Iaşi, 1995.
4. Stănilă, A., DESEN TEHNIC, Iasi, Ed.Cermi, 1998.
5. Hîncu, G., Stănilă, A., DESEN TEHNIC IN CONSTRUCTII, Iasi, Casa de editura Venus, 1998.
6. Ionescu, V., DESEN TEHNIC DE CONSTRUCTII,Buc.Ed.D.P,1970.
7. Popa, C., s.a, DESEN TEHNIC,Iasi,Lito.I.P.Iasi,1987.
8. Eftimescu, C., DESEN TEHNIC DE CONSTRUCTII,Iasi,Lito.I.P.Iasi,1982.
9. Luis, V., s.a, REPREZENTARI AXONOMETRICE IN DESENUL INDUSTRIAL,Ed.Tehnica.-U.Tehnica a Moldovei,Chisinau,1995.
10. Popa, C., s.a, DESEN TEHNIC ,Iasi,Ed."Gh.Asachi",1996.
11. Datcu, C., DESEN TEHNIC DE CONSTRUCTII, Iasi, Lito.U.T.Iasi,2001.

Date:

Name and surname **Signatures:**

Course leader: Asist.drd. ATONESCU Ion

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENGINEERING GRAPHICS**

Codul disciplinei	**CE105**	Semestrul	**1**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28			28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	Deprinderea bazelor teoretice şi practice ale desenului tehnic ca fundamente ale activităţilor de proiectare; - Crearea unor deprinderi specifice de citire şi realizare practică a desenelor la scară; - Familiarizarea cu standardele şi normativele specifice desenului tehnic de construcţii; - Familiarizarea cu terminologia specifică din limba engleză.
Conţinut (descriptori)	Linii, Formate standardizate, Indicator, Scări de reprezentare, Dispunerea proiecţiilor, Secţiuni, Rupturi, Cotare, Curbe tehnice, Elemente din lemn, Elemente din metal, Elemente din beton, Reprezentarea clădirilor. Secţiuni prin clădiri, Scări

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**VP**
	Probele evaluării 1. prezentare orală ; condiţii de lucru T		
Stabilirea notei finale (procentaje)	Evaluare finală prin colocviu		**45%**
	Evaluarea pe parcurs*)	**Activitatea la lucrari T**	**20%**
		Teste pe parcurs [0]	**25%**
		Lucrări de specialitate, teme de casă [5**] T**	
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Asistent ing. Ion ANTONESCU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

CHEMISTRY

1. Course leader: **Senior Lecturer Livia Ingrid GROLL, Ph.D.**
2. Topic characteristics: DI **code: CE106**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	1				C	14				14

4. Objectives of the topic:

The course gives the physic and chemical basis necessary for mechanisms and specific phenomen4 of natural and artificial construction materials. Presentation of the correlation between materials technical characteristics and chemical composition is given in the course.

5. Concordance between the objectives of the topic and the objectives of the training plan

Its objectives are to harmonize and complete the basic education of the young civil engineer students. The objectives of the course fall in the objectives of the curricula as concerns the use of advanced means of study and the principles of conceiving building materials and solving some problems of building elements design and construction.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *Technical characteristics of the main construction materials and their interpretation to establish their domain of using according to the European requirements.*
- *Technological condition for construction materials using to ensure the buildings quality*

b. Technical skills and abilities

- *Identification of the optimal using domain of the different materials for construction elements and structures realization.*
- *The design of the constructions elements manufacturing technological processes according to the used construction materials.*

7. Teaching procedures:

- *Power point presentations or lecturings. The lecturing material will be presented typed or on magnetic suport.*

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: the students activity will be folowed
b) means and working conditions for reaching the goal: grid test
c) percentage of the evaluation in the final mark 90%

Speciality projects(applications)

Solutions concentrtion calculus. Solution preparation. Water analisys.

***Final evaluation*:** **Coloquium** **Percentage of the final mark**: 90%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
Introduction *Lecture's objective. Correlation with the profile fields Development of construction materials industry.*	1
Substances structure, in determination of the materials physic, chemical and mechanical properties *Athoms: structure, properties. Ions: structure, properties. Chemical bonds. Molecular structures. Organic structures. Silicates.*	3
States of matter *Solid state. Liquid state. Gaseous state. States transformations.*	3
Substances systems and their properties *Homogeneous systems (water, liquid solutions). Heterogeneous systems (Surface phenomenons: colloidal systems, micro heterogeneous systems). State equilibrium.*	4
Chemical kinetics *Chemical reactions in homogeneous systems (types of reactions, reaction speed, reaction order, chemical equilibrium). Chemical reactions in heterogeneous systems (particularities, producing conditions). Materials corrosion*	3

Cumulated 14 hrs

10. References

1. Groll L., Hîrhui I., Apostolescu R. -MATERIALE DE CONSTRUCŢII - Bazele fizico chimice ale studiului materialelor de construcţii, Institutul Politehnic "Gh. Asachi" Iaşi - 1988
2. Hîrhui I., Groll L., Babor D. – MATERIALE DE CONSTRUCŢII, Ed. VESPER –1997
3. Groll. L, Hîrhui I., Gorincioiu Alina, Groll L – BAZELE FIZICO CHIMICE ALE STUDIULUI MATERIALELOR DE CONSTRUCŢII, Ed. Societăţii Academice „TEIU BOTEZ" Iaşi – 2003

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: **Senior Lecturer Livia Ingrid GROLL, Ph.D.**

FIŞA DISCIPLINEI

Denumirea disciplinei	**CHEMISTRY**

Codul disciplinei	**CE 106**	Semestrul	**1**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	14	14			

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	The discipline develops basic knowledge in the field of physical chemistry, necessary for chimico-physical mechanisms of the main construction materials (natural or artificial). Are presented interdependencies properties of materials with chemical composition and structure of matter.
Conţinut (descriptori)	Introduction. The structure of matter, that determining the physical and chemical properties and mechanical States of matter. Systems substances and their properties. Notions of chemical kinetics.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.**test gridă** ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**70%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**20%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Livia GROLL	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ELEMENTS OF ARCHITECTURE AND URBAN PLANNING

1. Course leader: **Senior Lecturer Irina BARAN, Ph.D.**
2. Topic characteristics: DI **code: CE107**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2		2		C	28		28		56

4. Objectives of the topic:

The objective of course is to introduce the fundamental concepts of architectural elements during history and some basic notions concerning the organization of the main functions of a dwelling and the territory arrangement and town-planning approaches.

5. Concordance between the objectives of the topic and the objectives of the training plan

The class provides a comprehensive education in fundamentals and completes the basic training of the civil engineer to understand the architectural styles, main functions of a dwelling building and the ways of a town conceiving.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

1. To identify the specific architectural elements of a building
2. To assimilate the theoretical concepts and functions of a single family dwelling
2. To understand the main principles of a town organization
3. To select the best solutions of town conceiving to avoid the urban life inconvenient.

b. Technical skills and abilities

After completing of this course the students must identify the different types of architectural elements, they achieve a good ability in design, from a functional point of view, a dwelling building and they could be able to identify the best ways to organize an urban area.

7. Teaching procedures:

The courses are presented in form of lecture using drawings, power point presentations.
The course presentation uses logistics drawings, power point presentations overhead-projector (OHP) and the classic delivery of the course.
The students apply the course information, receiving the individual tasks which are solved during classes. All the exercises are helpful in developing skills such as: reading, understanding a dwelling plan.
During the semester, the students are provided with two consultation hours to clarify all the problems related to this discipline.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: The periodical examination will be individualized and checked by the course leader and materialized by a degree.

b) means and working conditions for reaching the goal: During the test students are allowed to use the recomended references.

c) percentage of the evaluation in the final mark: 30%

Speciality projects (applications)

The students will get tasks regarding a dwelling building plan: (building elements, functions) and the organization of a quarter and a district, as parts of an urban area.

***Final evaluation*: Colloquy Percentage of the final mark**: 60 %

On the final examination students must solve subjects of a written test concerning the course topics.

The course grade will be determined by the students' performance using the following procedures:

- final examination test paper: 60%
- applications evaluation: 30%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Introduction *General notions of architectural elements*	1
2. Elements of architecture hystory *Architecture during Stone and Metal Age, Bronze and Iron Age, Minoan civilization, Egyptian Architecture, buildings of ancient Greece and Rome, Byzantine Architecture, Romanesque and Gothic Architecture, Renaissance in Architecture, the Baroque and Rococo styles, the 19th and 20th Architecture*	6
3. Introduction in urban planning *Definition, Domains, Stages and Methods of Town-Planning*	1
4. Fundamental concepts in urban-planning *Town, urban agglomeration, conurbation, urban tissue, urban composition, urban silhouette, urban management, town structure, urban morphology, urban infrastructure*	2
5. Urban composition *The main instruments of urban composition and the architectural typology*	1
6. Town-planning approaches and the main urban-planning trends *Functionalism and urban ecology, the physical-spatial, urbanistic, technocratic and systemic trends*	2
7. Town-planning history *Social and urban forms of religious, political, commercial, industrial towns*	2
8. Romanian legislation *Laws concerning town-planning*	1
9. Urban analysis and urban forms *Urban evolution, interurban and urban migration, natural and conventional form*	1
10. The choice of a town placement *Terrain conditions, accesibility, climatic conditions*	1
11. Urban functions and urban frame *The functions and the suitable frame for an urban area*	2
12. Climate, sanitation and urban hygiene *The waste problem, noise control measures*	2
13. Town zoning *The industrial, residential, green areas, internal transportation areas*	4
14. The town surrounding area *External transport area*	1
15. The long-term development of towns *The future of cities and town-planning*	1

Cumulated 28 hrs

9.2. Applications

	Name of task and content Design of a dwelling plan, a quarter and a district plan	**Nr. of hrs.**
1.	Project requirement	2
2.	Ground floor plan – 2 alternatives	10
3.	First floor plan - 2 alternatives	8
4.	Quarter plan - 2 alternatives	4
5.	District plan - 2 alternatives	4

Cumulated 28 hrs

10. References

1. C. Velicu, I Gavrilaş, Al. Veres, D. Stefănescu, - Elemente de sistematizare si urbanism - Ed. Experţilor Tehnici, Iasi 1997

2. Baran I. – ARCHITECTURAL AND URBAN PLANNING ELEMENTS, 260 pagini, Ed. Societăţii Academice "Matei-Teiu Botez", Iaşi, ISBN 978-973-8955-69-1, 2009

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	**Senior Lecturer** Irina BARAN, Ph.D.	
Instructors:	**Senior Lecturer** Irina BARAN, Ph.D.	
	Senior Lecturer Radu PESCARU, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ELEMENTS OF ARCHITECTURE AND URBAN PLANNING**

Codul disciplinei	**CE107**	Semestrul	**1**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Desen tehnic

Obiective	*The objective of course is to introduce the fundamental concepts of architectural elements during history and some basic notions concerning the organization of the main functions of a dwelling and the territory arrangement and town-planning approaches.*
Conţinut (descriptori)	Elements of architecture history, Definition, Domains, Stages and Methods of Town-Planning, Fundamental concepts in urban-planning, Urban composition, Town-planning approaches and the main urban-planning trends, Town-planning history, Romanian legislation, Urban analysis and urban forms, The choice of a town placement, Urban functions and urban frame, Climate, sanitation and urban hygiene, Town zoning, The town surrounding area, The long-term development of towns.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**60%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**30%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.* *T*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Sef lucrări dr. ing. Irina BARAN	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucrări dr. ing. Irina BARAN Şef lucrări dr. ing. Radu PESCARU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

TECHNIQUES OF COMMUNICATION

1. Course leader: **Senior Lecturer CHIRIAC Horia-Costin, Ph.D.**
2. Topic characteristics: DI **code: CE108**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2				C	28				28

4. Objectives of the topic:
The knowledge of the main communication models, communication schools and negociation techniques.

5. Concordance between the objectives of the topic and the objectives of the training plan
The main purpose of the object is to increase the adaptability of future engineers in various communicational contexts and to increase their capacity to optimize individual and group communication in difficult situations.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The knowing of the main communication models and of a large variety of communication techniques.

b. Technical skills and abilities

The development of the capacity of using the romanian language and of optimizing individual and group communication in various situations.

7. Teaching procedures:
Exposure with projections and problematisation.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: 1. written test (T) ; 2. essay (M);
b) means and working conditions for reaching the goal: bibliographical study
c) percentage of the evaluation in the final mark: 45%

Speciality projects(applications)

programme.

- The knowledge of the main communication models and schools.
- The knowledge of the main negotiation techniques.

***Final evaluation*:** **Coloquium** **Percentage of the final mark**:45 %

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
I. The Theory of Communication Processes. Definitions of Communication. Features of Communication. Communication and Information. The Communication Process.	3

II. The Vocabulary of Communication Sciences. Sign, Message, Noise, Feed-Back, Word, Code, Symbol and Meaning. Semiotics and its Principles.	4
III. Theories and Models of Communication. Classical Theories and Models of Communication. The New Theories and Models of Communication	7
IV. Communication and Language: Oral communication The Concept of Language. The Philosophy of Language. Styles of Oral communication. Theoretical Models.	7
V. Non-verbal Communication. The Kinetics. The Facial Expression. The Body Language. The Language of Colours.	2
VI. Communication and Negotiation. The Concept of Negotiation. Negotiation Principles. Types and Techniques of Negotiation.	5

Cumulated 28 hrs

10. References

1) Christian Baylon, Xavier Mignot, **Comunicarea**, Editura Universităţii "Alexandru Ioan
2) Cuza", Iaşi, 2000;
3) Philippe Cabin (ed) **La communication, Etat des savoirs**, Sciences Humaines Éditions,
4) 1998;
5) J.J Cuilenburg, O. Scholten, G.W. Noomen, **Ştiinţa comunicării**, Humanitas, Bucureşti,1998;
6) Emilian M. Dobrescu, **Sociologia comunicării**, Editura Victor, Bucureşti, 1998;
7) Mihai Dinu, **Comunicarea**, Editura Ştiinţifică, Bucureşti, 1997;
8) Jean Lohisse, **Les système de communication**, Armand Colin, Paris, 1998;
9) Andre de Peretti, Jean-Andre Legrand, Jean Boniface, **Tehnici de comunicare**, Polirom, Iaşi, 2000;
10) Nicki Stanton, **Comunicarea**, Societatea de Ştiinţă şi Tehnică, Bucureşti, 1995;
11) Robert Escarpit, **De la sociologia literaturii la teoria comunicării**, Ed. Ştiinţifică şi Enciclopedică, Bucureşti, 1980;
12) Umberto Eco, **Tratat de semiotică generală**, Ed. Ştiinţifică şi Enciclopedică, Bucureşti, 1982;
13) J. Fiske, **Introduction to communication studies**; Methuen, New York, 1982;
14) Denis McQuail, **Comunicarea**, Institutul European Iaşi, 1999;
15) Umberto Eco, **Lector in fabula**, Univers, Bucureşti, 1991;
16) Umberto Eco, **Tratat de semiotică generală**, Ed. Ştiinţifică şi Enciclopedică, Bucureşti, 1982;
17) Jurgen Habermas, **Sfera publică şi transformarea ei structurală**, Univers, Bucureşti, 1998;
18) Armand şi Michelle Mattelart, **Istoria teoriilor comunicării**, Polirom, Iaşi, 2000;
19) B. Miege, **La pensée communicationnelle**, Presses Universitaires de Grenoble, 1995;
20) Ilie Pârvu, **Filosofia comunicării**, Ed. Facultăţii de Comunicare şi Relaţii Publice David Ogilvy, Bucureşti, 2000;
21) Charles Peirce, **Comunicare şi acţiune**, Humanitas, Bucureşti, 1990;
22) Liliana Ionescu Ruxăndroiu, **Conversaţia – structuri şi strategii**, Ed. Didactică şi Pedagogică, Bucureşti, 1975;
23) Paul Watzlawick, Janet Helmick Beavin, Don D. Jackson, **Une logique de la communication**, Seuil, Paris, 1972;

Date:

Name and surname **Signatures:**

Course leader: Senior Lecturer Horia-Costin CHIRIAC, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**COMMUNICATION TECHNIQUES**

Codul disciplinei	**CE108**	Semestrul	**1**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	28			

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	The knowledge of the main communication models, schools and negotiation techniques.
Conţinut (descriptori)	• The Theory of Communication Processes • Definitions of Communication. Features of Communication. Communication and Information. The Communication Process. • The Vocabulary of Communication Sciences • Sign, Message, Noise, Feed-Back, Word, Code, Symbol and Meaning. Semiotics and its Principles. • Theories and Models of Communication • Classical Theories and Models of Communication. The New Theories and Models of Communication • Communication and Language: Oral language. • The Concept of Language. The Philosophy of Language. Styles of Oral language: Theoretical Models. • Non-verbal Communication • The Kinetics. The Facial Expression. The Body Language. The Language of Colours. • Communication and Negotiation • The Concept of Negotiation. Negotiation Principles. Types and Techniques of Negotiation.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1. written test (T) ; 2. essay (M);			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**45%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs (1)		**45%**
		Lucrări de specialitate, teme de casă (1)		
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. Horia-Costin CHIRIAC	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENGLISH LANGUAGE 1

1. Course leader: **Senior Lecturer TUDOR Florin Mircea, Ph. D.**
2. Topic characteristics: DI (DO) **code: CE109**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1		2			VP		28			28

4. Objectives of the topic:

The course estimates the knowledge level of English acquired during high school, the revision of the essential grammar structures, the developing of the translation, speaking and writing abilities, fundamentals of English civilization, general technical elements

5. Concordance between the objectives of the topic and the objectives of the training plan

The objectives of the topic are in agreement with the training plan

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The student must speak and write at least at an intermediate level, must understand when spoken to, must read and understand a common, non-scientific English text at first sight; the student must translate a Romanian text into English with a dictionary.

b. Technical skills and abilities

The student must have a rather good grasp of the essentials of English grammar.

7. Teaching procedures:

Theoretical discussions and practical applications concerning the essentials of English grammar. The applications are done individually and in groups of 2 – 4 students.

8. Evaluation system:

Seminar: individual evaluation depending on the quality of the oral exercises and of the practical applications: 20%
Tests: 2 tests per semester : evaluation: 20%
Homeworks: 2 homeworks: evaluation: 20%
Final semester examination: practical application with or without a dictionary: evaluation: 60%

Stages:

Continuous assessment

a) type of imposed assignments: 2 homeworks, 2 test papers per semester : 40% (20% + 20%)
b) means and working conditions for reaching the goal: books, dictionaries
c) percentage of the evaluation in the final mark

Speciality projects(applications)

5

***Final evaluation*:** **Examination** **Percentage of the final mark**: 30%

9. Content of the subject:

9.2. Applications

1	On Mathematics and Civil Engineering. Types of Verbs. Past Indefinite and Continuous	2
2	Computers. Laser Holography. Qualifying Adverbs. Comparison of Adjectives.	2
3-4	Sources of Energy. Present Perfect Tense Indefinite and Continuous	4
5-6	Kinematics and Dynamics. Plastics. Future Tense Indefinite and Continuous	4
7-8	Solar Energy. Past Perfect Tense Indefinite and Continuous	4
9-11	Pages from the History of Science (I, II, III). Modal Verbs	6
12	Nobel Prize Winners. Grammar Applications	2
13	Test Paper	2
14	Civil Engineering. Grammar Revision	2

10. References

1. xxx A Practical Guide to English Grammar, IPI, 1982
2. Allen, J. P. B., Widdowson, H.G, English in Physical Science, London, 1974
3. Bantaş, Andrei, Popescu, Rodica, Vîlceanu-Ionescu, Irina, Tudor, Florin Mircea, Ciobanu, Georgeta, Bejan
4. Nicolae, Limba engleză pentru ştiinţă şi tehnică, ed. rev., Bucureşti, 1995
5. Bădescu Alice, Gramatica limbii engleze, Bucureşti, 2000
6. Close R. A., The English We Use for Science, London, 1975
7. Ewer, J. R., Latorre G., A Course in Basic Scientific English, London, 1976
8. Hall, Eugene J., The Language of Civil Engineering in English, Englewood Cliffs, 1977
9. Koch, Paul, Engineering: Civil and Mechanical Engineering, New York, London, 1984
10. Quirk, Randolph, et al., A Grammar of Contemporary English, London, 1976
11. Tudor, Florin Mircea, Textbook for the Students in Mechanics, IPI, 1983

Date: 25.03.2009

Name and surname **Signatures:**

Instructor: Senior Lecturer TUDOR Florin Mircea, Ph. D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENGLISH LANGUAGE 1**

Codul disciplinei	**CE109**	Semestrul	**1**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul II**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	14		14		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Limba engleză în şcoala generală şi liceu minim 4 ani
	Recomandate	

Obiective	*The course estimates the knowledge level of English acquired during high school, the revision of the essential grammar structures, the developing of the translation, speaking and writing abilities, fundamentals of English civilization, general technical elements*
Conţinut (descriptori)	On Mathematics and Civil Engineering. Types of Verbs. Past Indefinite and Continuous Computers. Laser Holography. Qualifying Adverbs. Comparison of Adjectives. Sources of Energy. Present Perfect Tense Indefinite and Continuous Kinematics and Dynamics. Plastics. Future Tense Indefinite and Continuous Solar Energy. Past Perfect Tense Indefinite and Continuous Pages from the History of Science (I, II, III). Modal Verbs Nobel Prize Winners. Grammar Applications Test Paper Civil Engineering. Grammar Revision

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		20%
		Teste pe parcurs [*număr)* 2		20 %
		Lucrări de specialitate, teme de casă [*număr***]** 2		20 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. Florin Mircea TUDOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

PHYSICAL TRAINING 1

1. Course leader: **Senior Lecturer BORDEA CONSTANTIN, Ph.D.**
Assoc. Lecturer PARASCHIV PETRONELA

2. Topic characteristics: DI code: CE110

3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	TOTAL
1			1		VP			14		14

4. Objectives of the topic:

a) Strengthening of health and the harmonious development of the body
b) Improvement of basic movement qualities
c) Learning and consolidation of some basic procedures and elements in athletics, gymnastics, games, fitness, their appliance in bilateral games or individual activities
d) Learning of some basic notions of rules in carrying on a sports competition
e) Creations of habituation in respecting sports hygiene norms and learning of schematic physical exercise with daily and weekly schedule

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum):

Physical education and sports come to fulfill the learning plan of this engineering profile, contributing at the more useful scheduling of leisure, in the creation of premises for approaching professional qualities in good health conditions and with increased working strength. It is a mobilizing factor especially for team work.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

Theoretical and practical knowledge required to develop activities at the respective course.

b. Technical skills and abilities

- To identify the structural and functional purpose of physical exercise, basic mean in physical education;
- To identify the proper means of developing physical activity;
- To know the meaning of specialty documents in organizing the learning process
- To individualize the physical effort based on particularities, options and preferences;
- To identify actions and to dose the physical means used depending on the team
- To adapt the possessed materials to the student groups and working methodology.

7. Teaching procedures:

- Repeated actions in different conditions based on pace, strength and complexity of the movements;
- Individual practicing of different exercises, their application in team play;
- Individualizing of physical effort and work based on options and preferences with owned materials

8. Evaluation system:

Stages:

Continuous assessment:

a) type of imposed assignments: participating in non-representative teams activity in sport types or in performance sport;

b) means of working conditions for reaching the goal: sports hall, the used didactic materials are from the basic equipment(barbells, fitness devices, materials for games)
c) percentage of evaluation in the final mark.

Specialty projects (applications)

Final evaluation(T): preliminary examination

-grading of knowledge accumulated during the scholar year by comparative tasks, tests; **percentage 45%**

-grading the regular and active participation in practical assignments, representative teams in sport branches or in performance sports. **percentage 45%**

9. Content of the subject:

9.2. Applications:

Name of task and content
1)Athletics • running elements • jumping and standing start technique • middle-distance running • jogging **2) Basic, aerobics and artistic gymnastics** • front and formation exercises, walking and running variety, simple ground exercises • game exercises and dynamic simple elements from acrobatic gymnastics(rollovers, rolling etc.) • combined course paths with equilibrium elements, climbing, transport • classic, modern and traditional dancing steps on the appropriate music 3) Sport games: basketball, handball, football, volleyball, badminton. • Basic positions, pacing and field crossing • Easy hits, serves, first-touch exercises, still and motion grabbing and passing of the ball • Elementary technique action finishing exercises, marking exercising • Global participation in games on small and normal fields with different purposes 4) improvement of basic motion qualities and specific to some sport branches, by using some fitness, athletics and body-building • Strength and muscular mass improvement by proper use of weights and barbells • Shape adjusting exercises and turning fat into active tissue • Improvement of speed characteristics(reaction, repeating, movement, execution) by specific exercises • Increasing mobility and fitness at different levels • Increasing stamina

Total 14 hours

10. Selective bibliography:

a) Ionescu, A., V., -Exercitiul fizic in slujba sanatatii, Stadion publisher, Buc, 1971.
b) Ulmeanu, Constantin, -Notiuni de fiziologie cu aplicatii la exercitiile fizice, UCFS publisher, Buc, 1966.
c) Dragnea, A., Bota, Aura, -Teoria activitatii motrice, Editura Didactica si Pedagogica publisher, R.A., Buc., 1999.
d) Teodorescu, Leon.- Terminologia educatiei fizice si sportului, Stadion publisher, Buc., 1973.

Date: 25.03.2009

Name and surname **Signatures**:

Instructors: **Senior Lecturer BORDEA CONSTANTIN, Ph.D.**

Prep. drd. PARASCHIV PETRONELA

FIŞA DISCIPLINEI

Denumirea disciplinei	**PHYSICAL TRAINING 1**

Codul disciplinei	**CE110**	Semestrul	**I**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28			14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	Mărirea capacităţii de efort fizic şi intelectual Îmbunătăţirea capacităţii motrice de bază Stimularea practicării independente a exerciţiului fizic Învăţarea unor noţiuni de bază legate de regulamentele de desfăşurare a competiţiilor sportive
Conţinut (descriptori)	To identify the structural and functional purpose of physical exercise, basic mean in physical education; To identify the proper means of developing physical activity; To know the meaning of specialty documents in organizing the learning process To individualize the physical effort based on particularities, options and preferences; To identify actions and to dose the physical means used depending on the team To adapt the possessed materials to the student groups and working methodology.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin verificare pe parcurs**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări T**		**45%**
		Teste pe parcurs (numar) **T**		**45%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularii disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. Constantin Bordea Prep. drd. Petronela Paraschiv	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

MATHEMATICAL ANALYSIS 2

1. Course leader: **Senior Lecturer CARAMAN SÂNZIANA, Ph.D.**
2. Topic characteristics: DF **code: CE 111**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	2	2			E	28	28			56

4. Objectives of the topic:

1. This discipline has a fundamental character, giving to students basic mathematical tools that are necessary in assimilating other subjects, both fundamental (like Physics, Theoretical Mechanics, Numerical methods) and of a technical profile as well, included in the Curriculum of the Civil Engineering domain.

2. Also, the development of thinking, the increasing of analysis and synthesis ability, the development of intuition are goals of this course.

5. Concordance between the objectives of the topic and the objectives of the training plan

The main goal of this course is to create a part of the foundation of knowledge which is necessary in covering the civil engineering disciplines. Alongside the other disciplines, this one contributes to the improvement of the level of knowledge and, consequently, prepares the student for the incoming professional challenges.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The students will know the mathematical results required in the study of the fundamental disciplines and technical disciplines.

b. Technical skills and abilities

The students will prove the capacity of solving typical applicative problems and to describe mathematical reasoning.

7. Teaching procedures:

The essential definitions and results (theorems, propositions) are presented at the course, together with examples to illustrate them using expositive method, the heuristic method or using PowerPoint slides (where is necessary). Various exercises are solved together with the students at the seminars, taking care to cover all the notions given at the courses and to enable them to assimilate specific techniques of solving problems of Mathematical Analysis.

8. Evaluation system:

Stages:

Continuous assesment

Seminar activity **Percentage of the evaluation in the final mark 20%**

The evaluation is based on the frequency and the pertinence of the oral answers.

Semestrial Tests [2] **Percentage of the evaluation in the final mark 30%**

The average of the two semestrial tests determine the mark of this evaluation.

***Final evaluation*: Examination Percentage of the final mark**: **40%**

In this written examination the students are asked both to present theoretical definitions and results and to prove the capacity of solving typical applicative problems of the same type as those solved at the seminars.

9. Content of the subject:

9.1. Course

Chapters	Nr. of hrs
Chapter VII. Indefinite Integrals. Simple integration rules. Basic methods of integration. Basic classes of integrable functions.	4
Chapter VIII. Definite Integral. Basic properties of the definite integral. Methods for evaluating definite integrals. Improper integrals. Applications of integral calculus.	4
Chapter IX. Multiple Integrals. Double and triple integrals. Line integrals and surface integrals.	12
Chapter X. Theory of Vector Fields. The Derivative after a direction. The Gradient. The Divergence. The Curl.	2
Chapter XI. Differential Equations. First order differential equations. Linear Equations of Higher Order. Equations with constant Coefficients.	6
Cumulated	**28**

9.2. Applications

1.	Indefinite Integrals	4
2.	The Definite Integral	4
3.	Multiple Integrals	16
4.	Differential Equations	4
	Cumulated	**28**

10. References

1. BERMAN, G.N., *A problem book in Mathematical Analysis*. MIR Publishers, Moscow: 1980.
2. CARAMAN, S. *Lecture Notes on Mathematical Analysis.* Editura Societăţii Academice „Matei Teiu Botez", Iaşi, 2008.
3. CHIORESCU, Gh. Analiză matematică. Editura Pim, Iaşi, 2006.
4. CRAVEN, B.O, Functions of Several Variables. Chapman and Hall, London & New York: 1981.
5. FLEMING, W. Functions of Several Variables. Springer-Verlag, New York – Heidelberg – Berlin: 1977.
6. GELBAUM, B. Problems in Analysis. Springer-Verlag, New York – Heidelberg – Berlin: 1982.
7. NICULESCU, C. An Introduction to Mathematical Analysis. Editura Universitaria Press, Craiova: 2005.
8. NISTOR, I. Probleme de analiză matematică. vol.I – II. Editura Cermi, Iaşi, 2004.
9. SCOTT, D.B, TIMS, S.R Mathematical Analysis. Cambridge at The University Press: 1966
10. STROMBERG, K.R., Introduction to Classical Analysis. Wadsworth International Group. Belmont, California: 1981.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Sânziana Caraman, Ph.D.	
Instructor:	Senior Lecturer Sânziana Caraman, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**MATHEMATICAL ANALYSIS 2**

Codul disciplinei	**CE111**	Semestrul	**2**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28	28		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Elemente de algebră superioară (clasele a XI-a şi a XII-a din liceu) Analiză matematică (clasele a XI-a şi a XII-a din liceu)
	Recomandate	

Obiective	1. Dobândirea de către studenţi a unui sistem de cunoştinţe ştiinţifice de analiză matematică, strict necesare în studierea disciplinelor de specialitate. 2. Dezvoltarea gândirii, a capacităţii de analiză şi sinteză, a intuiţiei şi conducerii raţionamentelor şi calculelor
Conţinut (descriptori)	1. Partial derivatives 2. Differentials 3. Implicit functions 4. Indefinite and definite integrals 5. Differential equations 6. Multiple integrals 7. Vector fields

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.probă scrisă pondere 50%;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen T**			**40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar T**		**20%**
		Teste pe parcurs [2] **T**		**30%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector doctor Sânziana Caraman	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector doctor Sânziana Caraman	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ALGEBRA AND GEOMETRY 2

1. Course leader: **Senior Lecturer ROMAN MARCEL ROMICĂ, Ph.D.**
2. Topic characteristics: DI **code: CE 112**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	2	1			E	28	14			42

4. Objectives of the topic:

1. This discipline has a fundamental character, giving to students basic mathematical tools that are necessary in assimilating other subjects, both fundamental (like Physics, Theoretical Mechanics, Numerical methods) and of a technical profile as well, included in the Curriculum of the Civil Engineering domain.

2. Also, the development of thinking, the increasing of analysis and synthesis ability, the development of intuition are goals of this course.

5. Concordance between the objectives of the topic and the objectives of the training plan

The main goal of this course is to create a part of the foundation of knowledge which are necessary in covering of the civil engineering disciplines. Alongside the other disciplines, this one contribute to improvement of the level of knowledge and consequently prepares the student for the incoming professional challenges.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The students will know the mathematical results required in the study of the fundamental disciplines and technical disciplines, too.

b. Technical skills and abilities

The students will prove the capacity of solving typical applicative problems and to describe mathematical reasoning.

7. Teaching procedures:

The essential definitions and results (theorems, propositions) are presented at the course, together with examples to illustrate them using expositive method, the heuristic method or using PowerPoint slides (where is necessary). Various exercises are solved together with the students at the seminars, taking care to cover all the notions given at the courses and to enable them to assimilate specific techniques of solving problems of Linear Algebra, Analytic and Differential geometry.

8. Evaluation system:

Stages:

Continuous assesment

Seminar activity **Percentage of the evaluation in the final mark 20%**

The evaluation is based on the frequency and the pertinence of the oral answers.

Semestrial Tests [2] **Percentage of the evaluation in the final mark 20%**

The average of the two semestrial tests determine the mark of this evaluation.

***Final evaluation*:** **Examination** **Percentage of the final mark**: **50%**

In this written examination the students are asked both to present theoretical definitions and results and to prove the capacity of solving typical applicative problems of the same type as those solved at the seminars.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
Chapter I. Reference systems and coordinates Reference systems. Analytic representations of surfaces and curves. Changes of the orthonormal system of coordinates in space and in plane (translations and rotations).Other types of coordinates in space and in the plane: spherical coordinates, elliptical coordinates, cylindric coordinates, polar coordinates.	2
Chapter II. Lines in plane Analytic representations of the line in plane. Properties (the angle between two lines, orthogonality, parallelism, the distance from a point to a line, relative positions of two (or more) lines). Fascicle of lines.	2
Chapter III. Planes and lines in space Analytic representations of the plane. Properties (the angle between two planes, orthogonality, parallelism, the distance from a point to a plane). Analytic representations of the line in space. Properties (the angle between two lines, orthogonality, parallelism). Fascicle of planes. Relative positions of two (or three) planes. Relative positions for a line and a plane. The projection of a line to a plane. The angle between a line and a plane. Other analytic representations of the plane. Relative positions of two lines in spaces. The distance from a point to a line in space.The distance between two lines in spaces.	6
Chapter IV. Conic sections (Second order algebraic curves in plane) The common definition of conics as locus. The circle, the ellipse, the hyperbola, the parabola (analytic representations and properties). The study of conics in their general positions. Reduction of the general equation of a conic with center (of symmetry) and without center. Properties: intersections, tangents to a conic from a point, polar line of a conic, diameters, intersection of two conics, fascicle of conics.	6
Chapter V. Analytic geometry of surfaces. Quadric surfaces. Generating surfaces. The sphere: analytic representations, properties, intersections, tangent lines and tangent oplanes to a sphere). Quadric surfaces in their standard positions: the ellipsoid, the one-sheet hyperboloid, the two-sheets hyperboloid, the elliptic paraboloid, the hyperbolic paraboloid, the elliptic cone, the quadric cylinders. The study of quadric surfaces on their general equation. Generating surfaces: conic surfaces, cylindrical surfaces, conoids with directrix plane, rotation surfaces.	6
Chapter VI. Notions of differential geometry Elements of vector calculus. Differential geometry of plane curves: tangent line, normal line, the curvature of a plane curve, plane curves in polar coordinates, multiple points, asymptotes, the envelope of a family of plane curves, the evolute and the involute of a plane curve. Differential geometry of space curves: the tangent and the normal plane, the osculating plane and the principal normal line, the binornal line and the rectifying plane, Frenet's mobile trihedron, the elementary arc length, the curvature and the torsion, Frenet's formulas. Differential geometry of surfaces. The tangent plane and the normal line to a surface. The elementary area of a surface. The angle between two curves on a surface. The first fundamental quadratic form of a surface. The second quadratic form of a surface. The curvature of a curve on a surface.	6

Cumulated 28 hrs

9.2. Applications

1.	**Reference systems and coordinates**	1
2.	**Lines in plane**	1
3.	**Planes and lines in space**	2
4.	**Conic sections**	4

5.	**Analytic geometry of surfaces. Quadric surfaces. Generating surfaces.**	3
6.	**Notions of differential geometry**	3

Cumulated 14 hrs

10. References

Course:

1. Gh. ANDRICIOAEI – Algebră liniară, geometrie analitică şi diferenţială, geometrie proiectivă, Universitatea Tehnică, Iaşi, 1996.
2. Al. CĂRĂUȘU – Linear algebra, MatrixRom, Bucureşti, 1999.
3. A. NEAGU – Geometrie, Universitatea Tehnică, Iaşi, 1996.
4. C. NIŢESCU – Algèbre linéaire, Geometry Balkan Press, Bucharest, 2000.
5. N. PAPAGHIUC, C. CĂLIN – Algebră liniară şi geometrie, Editura Perfomantica, Iaşi, 2003.
6. A.L. PLETEA, A. CORDUNEANU, M. LUPAN – Lecţii de algebră liniară, Editura Politehnium, Iaşi, 2005.
7. I. POP, Gh. NEAGU – Algebră liniară şi geometrie analitică în plan şi spaţiu, Editura Plumb, Bacău,1996.
8. C. POPOVICI – Algebră liniară, geometrie analitică şi diferenţială. Utillizare MATLAB, Politehnium, Iaşi, 2008
9. GH. PROCOPIUC – Matematica, 1999, Universitatea Tehnica "Gh. Asachi" Iaşi.
10. G. TEODORU - Algebră liniară şi geometrie analitică, Vol. II, 1980, Rotaprint, I.P. Iaşi.
11. C. UDRIŞTE – Algebră liniară. Geometrie analitică, Geometry Balkan Press, Bucureşti, 1996.

Applications:

1. Gh. ATANASIU, Gh. MUNTEANU, M. POSTOLACHE – Algebră liniară, geometrie analitică, diferenţială, ecuaţii diferenţiale. Culegere de probleme, Ed. All, 1994, 1998.
2. Al. CĂRĂUŞU – Vector algebra, analytic and differential geometry, PIM, Iaşi, 2003.
3. V.T. BORCEA – Probleme de algebră şi ecuaţii diferenţiale, Universitatea Tehnică, Iaşi, 1993.
4. V.T. BORCEA, C.I. DAVIDEANU – Geometrie analitică, Editura PIM, Iaşi, 2002.
5. S. CHIRIŢĂ – Probleme de matematici superioare, E.D.P., 1989.
6. P. GEORGESCU, G. POPA – Structuri fundamentale în algebra liniară, geometria vectorială şi geometria analitică. Probleme rezolvate. Editura Matrix Rom, Bucureşti, 2003.
7. I. POP, Gh. NEAGU – Algebră liniară şi geometrie analitică în plan şi spaţiu, Editura Plumb, Bacău,1996
8. G. TEODORU, D. FETCU – Algebră liniară, geometrie analitică şi diferenţială. Culegere de probleme, Universitatea Tehnică, Iaşi, 2004.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer. Marcel Romică ROMAN, Ph.D.

Instructor: Senior Lecturer Marcel Romică ROMAN, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ALGEBRA AND GEOMETRY 2**

Codul disciplinei	**CE112**	Semestrul	**2**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28	14		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Linear algebra, analytic and differential geometry 1 (CE102)
	Recomandate	Elemente de algebră superioară (clasele a XI-a şi a XII-a din liceu) Geometrie analitică (clasa a XI-a din liceu) Geometrie şi trigonometrie (clasa a X-a din liceu).

Obiective	1. Dobândirea de către studenţi a unui sistem de cunoştinţe ştiinţifice de algebră şi geometrie, strict necesare în studierea disciplinelor de specialitate. 2. Dezvoltarea gândirii, a capacităţii de analiză şi sinteză, a intuiţiei şi conducerii raţionamentelor şi calculelor.
Conţinut (descriptori)	1. References systems and coordinates. 2. Lines in plane. 3. Planes and lines in space. 4. Conic sections. 5. Analytic geometry of surfaces. Quadric surfaces. Generating surfaces. 6. Notions of differential geometry.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.probă scrisă ; sarcini: rezolvarea de probleme şi de subiecte teoretice; condiţii de lucru T pondere 50 %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**		**T**	**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**	**T**	**20%**
		Teste pe parcurs [2]	**T**	**20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector Dr. Roman Marcel Romică	

Titularul aplicaţiilor	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector Dr. Roman Marcel Romică	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
MECHANICS 2

1. Course leader: **Assistant Professor Corneliu Eugen ŞFARTZ, PhD**.
2. Topic characteristics: DI **code: CE113**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	2	1	-	-	E	28	14	-	-	42

4. Objectives of the topic:

Mechanics is one of the technical culture topics, which insure the basic training of an engineer. The chapters of Mechanics are presented in the order they appeared and developed: Statics, Kinematics and Dynamics, followed by elements of Analytical Mechanics. This order was chosen since it corresponds to the growing level of complexity and is in conformity with the needs of some courses that use elements of Mechanics (Strength of Materials, Statics of Constructions, Dynamics of Constructions, Earthquake Engineering).

The objectives of the course refer to:

- provide the students with a set of theoretical and practical knowledge concerning the field of Mechanics, knowledge which are needed in order to understand the specialty topics.
- contribute to the development of the capacity of analysis and synthesis, of intuition and of performing calculations and reasoning.
- develop the necessary skills needed to analyze the results of a given problem.

5. Concordance between the objectives of the topic and the objectives of the training plan

The modern technique faces the civil engineers with very diverse problems concerning the calculus of various types of constructions. The diversity of these problems and their solving are based on general principles having a common scientific root, which is the study of the equilibrium and motion of bodies. This study is performed at the classes of Mechanics.

The Mechanics provides the students with a set of knowledge that are needed for the study of the specific topics for a civil engineer. The methods given by the Statics will be used to solve problems concerning the equilibrium of structures. Based on the knowledge of Dynamics and Analytical Mechanics, the civil engineer will be able to deal with practical problems involving the dynamic behavior of high structures, acted by the wind, traffic, earthquakes, etc.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The study of Mechanics has a great contribution in initiating the student in the individual study, in the organized intellectual work. It gives him the opportunity of personal exploration and helps him to become more self confident, in order to be able to learn, to investigate and to design.

After learning the basics of Mechanics, the students will be able to use the vector analysis, the principles and the general theorems of statics and dynamics in order to solve various theoretical and practical problems encountered in civil engineering. They will also be able to find appropriate mathematical models for the practical problems that they will deal with.

b. Technical skills and abilities

- Establish the mathematical model of various types of constructions.
- Use the methods of statics and dynamics for the study of various structures.

- Use the methods of the analytical mechanics for the analysis of practical problems, discuss and use the results for research and design.

7. Teaching procedures:

- Systematic and selective presentation of new knowledge.
- Give lectures, solve problems and analyze the results.
- Use the computer for the study of some practical cases or for solving some complex problems.

8. Evaluation system:

Stages:

Continuous assessment

1. The seminar activity (percentage in the final mark: 20%)

The assessment refers to the frequency and the quality of the answers given by the students during the evaluation of knowledge, before beginning solving problems. The evaluation will also emphasize the originality of the solutions given by the students, the generalizations and the discussion of the results when solving problems of Mechanics.

2. Tests during the semester (percentage in the final mark: 10%)

The students will receive both multiple choice tests and regular tests, in order to assess the theoretical knowledge and the capacity of solving problems.

3. Homeworks (percentage in the final mark: 10%)

At the end of each chapter, each student will have to solve individually a problem concerning the content of that chapter. Some problems will represent the starting point for themes that will be developed within the student research groups.

Final evaluation: Examination Percentage of the final mark: 50%

The final evaluation exam is represented by a written test where the students have to solve problems from each chapter that was studied during the semester. They also have to present two theoretical problems, along with their proofs. The students are allowed to use their electronic calculators for performing any necessary calculations concerning the problems.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
I. Kinematics of the Particle The fundamentals of Kinematics (trajectory, velocity, acceleration, areal velocity). The motion of a particle with respect to different types of frames of coordinates (Cartesian, intrinsic and cylindrical frames). Particular motions of a particle (rectilinear, circular and elliptic motions).	2
II. Kinematics of the Rigid Body and of Systems of Rigid Bodies. The position parameters; the first and second order kinematic parameters for the general motion of a rigid body. Particular motions of a rigid body (translation, rotation about a fixed axis, general plane motion). The collinearity theorems. Real and virtual displacements. The virtual displacements diagram.	8
III. Dynamics of the Particle The principles of the dynamics of the particle. The differential equations of motion of a particle, with respect to various systems of coordinates. The dynamics of the relative motion of a particle. Relative equilibrium.	4
IV. Dynamics of the Rigid Body Kinetic parameters (linear momentum, angular momentum, kinetic energy). Dynamic characteristics (work, mechanical power). General laws of the dynamics of the rigid body. General theorems. Dynamics of particular motions of the rigid body (translational motion, rotation about a fixed axis, general plane motion).	7
V. Dynamics of Systems of Rigid Bodies. Elements of Analytical Mechanics. The D'Alembert equations (the dynamic equilibrium equations). Generalized coordinates. Generalized velocities. The principle of the virtual work. Finding the reactions at the external constraints of a statically determined system, using the principle of the virtual work.	7

Cumulated: 28 hrs

9.2. Applications

I. Kinematics of Particular Motions of the Rigid Body Finding the velocities and accelerations for point of rigid bodies undergoing translation, rotation about a fixed axis or general plane motion. Kinematics of the relative motion of the particle. Summation of velocities and accelerations.	3
II. Kinematics of Systems of Rigid Bodies Establishing the independent position parameters; degrees of freedom. The kinematical analysis of a one-degree-of-freedom system. Finding the absolute and relative centers of rotation. Virtual displacements diagrams.	4
III. Dynamics of the Free and Constrained Particle Problems of dynamics of the free and constrained particle, with respect to Cartesian and intrinsic coordinate frames (absolute and relative motion).	1
IV. Dynamics of the Absolute Motion of the Rigid Body Calculus of kinetic parameters and dynamic characteristics of a rigid body. Work and mechanical power. Solving problems of dynamics of the rigid body using the general theorems of dynamics. The physical pendulum. The planar rolling of circular discs.	2
V. Dynamics of Systems of Rigid Bodies Problems of dynamics of systems that use the D'Alembert dynamic equilibrium equations. Applications of the principle of the virtual work: finding the reactions at the external constraints of a statically determined system.	4

Cumulated: 14 hrs

10. References

1. Hibbeler R. C., ENGINEERING MECHANICS. STATICS, Eleventh Edition, Prentice Hall, 2007.
2. Hibbeler R. C., ENGINEERING MECHANICS. DYNAMICS, Eleventh Edition, Prentice Hall, 2007.
3. Meriam J. L., Kraige L. G., ENGINEERING MECHANICS. DYNAMICS, Sixth Edition, John Wiley & Sons, 2007.
4. Meriam J. L., Kraige L. G., ENGINEERING MECHANICS. STATICS, Sixth Edition, John Wiley & Sons, 2007.
5. Ferdinand Beer, Russell Johnston, William Clausen, VECTOR MECHANICS FOR ENGINEERS. STATICS, Eighth Edition, McGraw-Hill, New York, 2007.
6. Ferdinand Beer, Russell Johnston, William Clausen, VECTOR MECHANICS FOR ENGINEERS. DYNAMICS, Eighth Edition, McGraw-Hill, New York, 2007.
7. Ciumasu, S.G., Vieru, D., COMPLEMENTE DE MECANICĂ, Ed. Junimea, Iaşi, 1997.
8. Voinea, R., Voiculescu, V., Simion, F.P., INTRODUCERE IN MECANICA SOLIDULUI CU APLICAŢII ÎN INGINERIE, Ed. Academiei, Bucureşti, 1989.
9. Hangan, S., Slătineanu, I., MECANICA, E.D.P., Bucureşti, 1983.
10. Popescu, D., Poterasu, V.F., CULEGERE DE PROBLEME DE MECANICĂ, vol.I, Rotaprint, Iaşi, 1983.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Assist. Prof. Corneliu Eugen ŞFARTZ, PhD.

Instructor: Assist. Prof. Corneliu Eugen ŞFARTZ, PhD.

FIŞA DISCIPLINEI

Denumirea disciplinei	**MECHANICS 2**

Codul disciplinei	**CE113**	Semestrul	**2**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28	14	-	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	CE103
	Recomandate	Mecanica 1, Algebra liniară, geometrie sintetică şi analitică, Analiza matematică, Fizica

Obiective	Dobândirea de către studenţi a cunoştinţelor teoretice şi practice de cinematică, dinamică şi mecanică analitică necesare pentru studierea disciplinelor de specialitate.
Conţinut (descriptori)	Cinematica particulei materiale,cinematica solidului rigid şi a sistemelor de solide rigide. Analiza cinematică a sistemelor cu un grad de libertate; determinarea centrelor de rotaţie. Deplasări reale şi deplasări virtuale. Diagramele deplasărilor virtuale. Noţiuni fundamentale de dinamică. Lucrul mecanic real şi virtual. Determinarea reacţiunilor legăturilor exterioare ale sistemelor static determinate cu ajutorul principiului lucrului mecanic virtual. Dinamica sistemelor de rigide. Teoreme generale şi ecuaţiile de echilibru dinamic

Sistemul de evaluare:					
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)				**E**
	Probele evaluării Lucrare scrisă cu rezolvare de probleme şi prezentare de subiecte teoretice pondere %;				
Stabilirea notei finale (procentaje)	**Evaluare finală prin Colocviu**		**T**		**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**	**T**		**20%**
		Teste pe parcurs [*număr)*	**M**	**2**	**10%**
		Lucrări de specialitate, teme de casă [*număr*]	**M**	**3**	**10%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*					

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr. ing. mat. Corneliu-Eugen ŞFARTZ	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr. ing. mat. Corneliu-Eugen ŞFARTZ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

BUILDING MATERIALS 2

1. Course leader: **Senior Lecturer Livia Groll, Ph.D.**
2. Topic characteristics: DI **code: CE114**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	2	2			E	28	28			56

4. Objectives of the topic:

Presentation of the main construction materials characteristics

5. Concordance between the objectives of the topic and the objectives of the training plan

Its objectives are to harmonize and complete the basic education of the young civil engineer students. The objectives of the course fall in the objectives of the curricula as concerns the use of advanced means of study and the principles of conceiving building materials and solving some problems of building elements design and construction.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *Technical characteristics of the main construction materials and their interpretation to establish their utilization domain according to the European requirements.*
- *Technological condition for construction materials using to ensure the buildings quality*

b. Technical skills and abilities

- *Identification of the optimal using domain of the different advanced materials for construction elements and structures realization.*
- *The design of the constructions elements manufacturing technological processes according to the used advanced materials*

7. Teaching procedures:

Course

- *Power point presentations. The lecturing material will be presented typed or on magnetic suport.*

Applications

- *Materials analisys and testing for technical characteristics determination*

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignements: grid test. The students have to answer at 12 questions from 20 for the minim qualificative. This form represents 35% from the final mark.

b) means and working conditions for reaching the goal: The students will be noted function of the frequency to the course presentations – 10% from the final mark.

c) percentage of the evaluation in the final mark – 45%

Speciality projects(applications)

The students have to know the lab procedure and to present their own notebook. This form represents 20% from the final mark.

***Final evaluation*:** **Examination** **Percentage of the final mark**: 45%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Mineral binders *Classifications. Clay. Lime. Gypsum. Cement. Manufacturing. Setting time and hardening. Technical characteristics. Mechanical testing. Utilizations.*	8
2. Concretes and mortars with mineral binders *Components, structure, fresh and hardened concrete properties. Factors that affect the concrete's characteristics, Special concretes. Principles for concretes composition establishment. Mortars .Components, classification, composition, utilizations.*	10
3. Organic binders *Bitumen products. Composition, structure, manufacturing, technical characteristics. Bituminous materials.*	4
4. Wood and timber *Composition, structure, manufacturing, technical characteristics. Wood's. protection.Timber*	2
5. Isolation and finishing materials *Principles for hydro, thermo and sound isolation. Principii şi materiale pentru hidro, termo şi fonoizolaţii. Finishing materials.*	4

Cumulated 28 hrs

a) 9.2. Applications

	Name of task and content	
1.	**Natural stone**. Rocks. Minerals.	2
2.	**Lime.** Hydration speed. Lime's manufacturing. Consistency and density.	2
3.	**Gypsum.** Milling fineness. Mixing water. Setting time. Expansion during setting time and hrdening. Diffusion coefficient.	2
4.	**Portland Cement.** Preservation. Milling fineness. Mixing water. Setting time. Volume constant parameters (stability). Cement's class.	4
5.	**Cement concrete.** Workability characteristics. Apparent density for fresh concrete. Concrete's recipe establishment.	8
6.	**Mineral binder- mortars.** Consistency. Water retaining capacity. Mechanical strength.	2
5	**Wood.** Types of wood. Densities. Growing and shrinkage. Compression and tensile strength.	4
7.	**Organic Binders.** Sliminess. Penetration. Softening point. Ductility	2

Cumulated 28 hrs

10. References

10. Groll L., Hîrhui I., s.a., Materiale pentru construcţii – Bazele fizico – chimice ale studiului materialelor de construcţii, I.P.I. „Gh. Asachi" Iaşi, 1988.
11. Hîrhui I., Groll L., Babor D., Materiale pentru construcţii, Editura VESPER 1997
12. Hîrhui I., Conglomerate artificiale cu lianţi minerali, Ed. „Gh. Asachi" Iaşi, 1999.
13. Rujanu M., Groll Livia, -Materiale pentru construcţii, Ed. „Gh. Asachi" Iaşi, 1999.
14. Teoreanu I., Nicolescu I., Ciocea N., Moldovan V., Introducere în ştiinţa materialelor anorganice, Ed. Tehnică Bucureşti, 1987.
15. Bob C., Velica P., Materiale pentru construcţii, EDP,Bucureşti, 1978.
16. Groll L. ş.a., Materiale pentru construcţii, Îndrumător de laborator, Rotaprint U.T.I. 1992.
17. Groll Livia, Babor D., Covatariu Daniel, Raluca Iordăchescu, Materiale pentru construcţii – lucrări practice de laborator, Ed. Societăţii academice „Teiu Botez", 2001.
18. Groll L. ş.a., Materiale pentru construcţii, Caiet de lucrări practice, Rotaprint U.T.I. 2002.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Groll Livia Ingrid, Ph.D.	
Instructor:	Senior Lecturer Dănuţ Babor, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**BUILDING MATERIALS 2**

Codul disciplinei	**CE114**	Semestrul	**2**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Building materials 1

Obiective	Information on the principles of obtaining construction materials, the fundamental laws governing the physical and chemical phenomena specific construction materials, and the criteria for use in construction materials. Discipline is targeted, mainly to prepare graduated engineers for users of the materials and not as producers of material.
Conţinut (descriptori)	Mineral binders. Concrete and mortar with mineral binders. Organic binders - bitumen and tars. Materials made of wood. Plastics. Isolation materials, and protective finishings.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.**test gridă** ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin EXAMEN (test gridă, urmat de examinare orală)**			**45%**
	Evaluarea pe parcurs*)	Activitatea la seminar / lucrări		**35%**
		Teste pe parcurs [*număr)*		
		Lucrări de specialitate, teme de casă [*număr*]		**10%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Livia Ingrid GROLL	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Dănuţ Babor	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

COMPUTER USAGE

1. Course leader: Profesor Păulet-Crăiniceanu Fideliu, Ph.D.
2. Topic characteristics: DI code: CE115
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	1		2		VP	14		28		42

4. Objectives of the topic:
The course has the goal to create to students abilities in the use of computers and specific computer programs, in order to solve problems imposed by Civil Engineering study courses. At the same time, this course realize the formation of skills in using computers for writing reports, table calculations, schemes and diagrams useful for civil engineers. Also, fundamentals elements for computer programming needed in processing engineering data and concepts (appearing during bachelor studying, engineering career or researcher career) are given.

5. Concordance between the objectives of the topic and the objectives of the curriculum
The topic's objective firstly is in concordance with those of the curriculum because (being a fundamental subject) assures a support for the specialty education. This topic helps the student in being able to easily use information processing means. The gained skills will help him/her in solving problems/homework of other subjects and for accomplishing a part of his/her professional obligations required by employers as: reports editing, costs calculations, tasks progress, work graphics, technological diagrams, some operational programming and so on.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
The students' gained knowledge is useful in understanding principles, finalities and the way of working for some computer application specific to office work (text editors, table calculation editors, statistical representations). Also, the student is getting knowledge referring to the method of composing and understanding flowcharts useful in describing processes and procedures. Learning notions from programming in the field of general engineering computer programming environments determine students' algorithmic, ordered and accurate thinking reflexes.
b. Technical skills and abilities
Using typical notions, skills and reasoning (but also through Civil Engineering domain specific applications) the student will know to answer to current requirements of other topics from the study program as well as to the requirements for graduate students as: reports and technical articles editing, explanatory drawings, graphics, tables with calculations, flowcharts, programming of solvers for medium complexity applications (as: dimensioning, systems of equations, eigenproblems, various matrical computations, differential and integrals calculus, elementary stresses diagram drawing, inertia moments calculations, etc.).

7. Teaching procedures:
A projector connected to a computer is the main device used in teaching. The projection is referring not only to describing the notions, concepts, relations and assertions, but also images and/or short movies clarifying particular aspects are used. Another method is that of presenting computer programs and applications that are directly run in order to better learn of computational techniques. The blackboard and

the chalk are also used for presentation of algorithms and flowcharts (when the skills of conceiving and constructing are induced through hand drawing). Feedback from audience is permanently monitored and the exposure is adapted in accordance with it. At the application hours, direct constructing and run applications are projected. At the same time, each student is performing the same on his/hers computer. This is allowing the students to better understand and learn the menus and, also, it permits the students to notice the studied software possibilities.

8. Evaluation system:

Stages:

Continuous assessment

a) There are 4 tests along the semester: 1. technical/scientific text editing; 2. table calculus tasks; 3. algorithms and flowcharts; 4. elementary computer programs using computer programming environments. The tests are passed during the application hours in the computer laboratories.

b) Means and working conditions for reaching the goal: each student has a computer for solving his/hers test (for the tests 1, 2 and 4); traditional, on paper, test is performed for the test number 3.

c) Percentage of the evaluation in the final mark: the average of the tests is weighting 70% in the final mark.

Specialty projects (applications)

During the application hours (in the computer laboratory), learning of the notions and skills required, shown on point 6, is assured. Also the laboratory classes assure the best environment for adapting to the computational means and assure the support for testing.

***Final evaluation*: Continuous assessment** **Percentage of the final mark**: 70%

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
1. Short introduction in Computer Science *- History of data and information processing seen through the engineering point of view and into Civil Engineering history.* *- Computers' architecture. Hardware and software. Data processing and storage.* *- Operating systems and application software.*	2
2. Use of computer programs in solving office and engineering problems *- Texts, formulas, tables and drawing processors/editors - MS Word 2007.* *- Data processing with tables (spreadsheets) – MS Excel 2007.*	4
3. Programming technical-scientific problems' solvers with computers *- Steps in solving technical-scientific problems with computers.* *- Algorithms: history, definition, examples.* *- Flowcharts:* *- Graphical symbols.* *- Linear and branched flowcharts.* *- Simple loops and nested loops flowcharts.*	4
4. Use of computer programming environments in solving technical-scientific problems – Matlab *- Notions about programming environments and their use by students and engineers.* *- Elementary matrical operations in Matlab.* *- Programming principles and basic statements in Matlab.* *- Programmed graphics in Matlab.*	4

Cumulated 14 hrs

9.2. Applications

1	**Computer Laboratory and its functional rules presentation. Work safety. Fire prevention and fire extinction.**	1
2	**Hardware and Software**	1

	- Discussion and physical presentation on hardware components of the equipments in use. - Dialogs on software used during laboratory hours and on software generally needed by civil engineers.	
3	**Text processors/editors – MS Word 2007** - Each student receives a printed copy from a scientific-technical article (3 pages length). This paper must be later reproduced by students using laboratory's computers (one for each student). - The instructor leads the class through presenting on projector the way the students must manipulate main components of the printed paper that has to be reproduced: text (alignment, font types etc.), formulas, tables and elementary graphics. - The students' achievements are supervised. Some experience of the students on text writing (supposed to be acquired from high school studies) is taken into account. - Students are advised on home work they should perform.	4
4	**Test on text processors/editors – MS Word 2007** - Each student receives a printed copy from a scientific-technical article (1 page length). This paper must be reproduced by students using laboratory's computers (one for each student). This is an individual task. - At the end, the class' instructor copies the students' works for later evaluation.	2
5	**Data processing with tables (spreadsheets) – MS Excel 2007** - A low complexity problem is presented and solved together with the students. It allows understanding and acquiring the skills needed to use Excel (2 hours). Then an application with a higher complexity is solved. This problem requires also graphical representations (2 hours). - The instructor leads the class through presenting on the projector's screen the way the students should manipulate the main elements that lead to solving the proposed problem. - The students' achievements are supervised. Some experience of students on table data calculus (supposed to be acquired from high school studies) is taken into account, if it is the case. - Students are advised on home work they should perform.	4
6	**Test on data processing with tables (spreadsheets) – MS Excel 2007** - Students are required to solve two problems (similar in complexity and goals with those solved during laboratory and lecture classes) on the computers they individually work in the Laboratory. - At the end, the class' instructor copies the students' works for later evaluation.	2
7	**Algorithms and flowcharts** - At the blackboard, the students solve 3-4 problems with the aid of the instructor. These problems belong to the category: Linear and branched flowcharts (2 hours). - At the blackboard, the students solve 3-4 problems with the aid of the instructor. These problems belong to the category: Simple loops and nested loops flowcharts (2 hours). - The students' achievements are supervised. Usual lack of experience of students on flowcharts is taken into account. - Students are advised on home work they should perform.	4
8	**Test on algorithms and flowcharts** - Two problems are given for solving by students: one from the Linear and branched flowcharts category; another from the Simple loops and nested loops flowcharts category. Solving is done on paper, in order to stimulate the creativity and imagination of the students. - At the end, the class' instructor takes the students' papers for later evaluation.	2
9	**Use of computer programming environments in solving technical-scientific problems – Matlab** - The instructor presents on the projector the operations that must be reproduced by the students in order to acquire the way of work and main facilities offered by the Matlab programming environment. Small tasks are given to students for solving. After some time, the same tasks are solved by instructor, on projector. - Firstly, small arithmetical operations are introducing the students to the way the commands are interpreted and main menue's elements of Matlab are presented.	6

	- Then, matrices' composition and elementary matrical operations are performed. Useful applications (as solving systems of equations) are done. - The Matlab computer programming language in presented through examples. Basic instructions, programs' composition, program's storage and run. The knowledge is applied on problems already solved from algorithmic point of view during previous classes. - Statements for programmed graphics in Matlab are presented through examples. Also, import of graphics in MS-Word 2007 is shown. - The students' achievements are supervised. Lack of experience of students on Matlab is taken into account. - Students are advised on home work they should perform.	
10	**Test on use of computer programming environments in solving technical-scientific problems – Matlab** - Students are required to individually solve in Matlab two problems very similar to those previously studied during the laboratory classes. - At the end, the class' instructor copies the students' works for later evaluation.	2

Cumulated 28 hrs

10. References

1. Păuleţ-Crăiniceanu Fideliu, *Lecture Notes*, www.ce.tuiasi.ro/~fideliu
2. Word 2007 Tutorial, http://www.fgcu.edu/support/office2007/Word/index.asp
3. Excel 2007 Tutorial, http://www.fgcu.edu/support/office2007/excel/index.asp
4. Matlab Tutorial, http://www.mathworks.com/academia/student_center/tutorials/launchpad.html
5. Flowcharts Tutorial, http://home.att.net/~dexter.a.hansen/flowchart/flowchart.htm
6. Flowcharting, http://www.nos.org/htm/basic2.htm
7. Algorithms Tutorial, http://www.topcoder.com/tc?module=Static&d1=tutorials&d2=alg_index
8. Stephen J. Chapman, *Introduction to Fortran 90/95*, Chapter 3: *Control Structures and Program Design*, McGraw-Hill, New York, 1998

Date: 25.03.2009

		Name and surname	**Signatures:**
Course leader	:	Professor Păuleţ-Crăiniceanu Fideliu, Ph.D.	
Instructors:		Professor Păuleţ-Crăiniceanu Fideliu, Ph.D.	
		Eng. Covatariu Gabriela	

FIŞA DISCIPLINEI

Denumirea disciplinei	**COMPUTER USAGE**

Codul disciplinei	**CE115**	Semestrul	**2**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	14		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	Cursul urmăreşte crearea abilităţii cursanţilor în a folosi calculatoarele şi programele specificate în conţinut pentru rezolvarea problemelor impuse de studiul disciplinelor de construcţii. În acelaşi cursul realizează formarea deprinderilor de utilizare a calculatoarelor pentru realizarea de rapoarte, calcule tabelare, scheme şi diagrame utile inginerilor constructori. De asemenea, sunt date elemente fundamentale de programare necesare în prelucrarea datelor şi conceptelor inginereşti ce apar atât în timpul studiilor de licenţă cât şi ulterior în cariera de inginer sau cercetător.
Conţinut (descriptori)	1. Short introduction in Computer Science - History of data and information processing seen through the engineering point of view and into Civil Engineering history. - Computers' architecture. Hardware and software. Data processing and storage. - Operating systems and application software. 2. Use of computer programs in solving office and engineering problems - Texts, formulas, tables and drawing processors/editors - MS Word 2007. - Data processing with tables (spreadsheets) – MS Excel 2007. 3. Programming technical-scientific problems' solvers with computers - Steps in solving technical-scientific problems with computers. - Algorithms: history, definition, examples. - Flowcharts: Graphical symbols; Linear and branched flowcharts; Simple loops and nested loops flowcharts. 4. Use of computer programming environments in solving technical-scientific problems – Matlab - Notions about programming environments and their use by students and engineers. - Elementary matrical operations in Matlab. - Programming principles and basic statements in Matlab. - Programmed graphics in Matlab.

Sistemul de evaluare:		
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)	**VP**
	Probele evaluării Se dau patru teste. Media lor are o pondere de 70% în stabilirea notei finale. Testele se referă la: - Editare de text cu caracter tehnico-ştiinţific în MS Word 2007. Test CC - Procesare date tabelare. Două probleme în MS Excel 2007. Test CC - Scheme logice. Două probleme. Test tradiţional, pe hârtie	

	- Rezolvarea de probleme folosind mediul de programare Matlab. Două probleme. Test CC			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**0 %**
	Evaluarea pe parcurs*)	**Activitatea la lucrări**		**20 %**
		Teste pe parcurs (4)		**70 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	prof.dr.ing. Păuleţ-Crăiniceanu Fideliu	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	prof.dr.ing. Păuleţ-Crăiniceanu Fideliu drd.ing. Covatariu Gabriela	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

PHYSICS 1

1. Course leader: **Professor dr. Irina RADINSCHI**
2. Topic characteristics: DI **code: CE116**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	2	1			C	28	14			42

4. Objectives of the topic:
The intended scope of the physics course is to lead the students to a thorough understanding of the basic concepts of physics and to help them to comprehend the unfolding of the events in the whole world, to create a world view.

5. Concordance between the objectives of the topic and the objectives of the training plan The thorough understanding of the basic concepts of physics is one of the main requirements that must be satisfied by a civil engineer.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
The aim is the correct understanding of priciples, laws and physics phenomena.
b. Technical skills and abilities
The development of skills for using the principles and laws of physics for solving problems. The students will be able to demonstrate an understanding of physics phenomena and apply this knowledge in practical situations.

7. Teaching procedures: Beside the oral teaching method, the teaching based on the use of the IBM PC computer will be considered too. A continue communication with the students will be established through e-mail and the content of the physics course and seminars is posted on Internet at the address: http://www.ce.tuiasi.ro/index.html On-line lectures and text books. At the seminar, the students discuss the content of the course and solve problems.

8. Evaluation system:
Stages: The students will be informed about the evaluation system at the first course.

Continuous assesment
The seminar activities will count for 10% of the course grade. Examination form: Traditional.
The 20% of the course grade will be derived from two written midterm exams. Examination form: Traditional (knowledge test).

***Final evaluation*:** **Colloquy** **Percentage of the final mark**: 60 %
The final colloquy will count for 60% of the course grade. Examination form: Traditional (knowledge test).

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. INTRODUCTION. CLASSICAL MECHANICS Kinematics and Dynamics of Material Point. Fundamental Quantities. Principles of Classical Mechanics. Conservative Forces. Potential Energy and Work, Connections. Laws of Conservation. Mechanics of a System of Point Particles. External and Internal Forces. Laws of Conservation. Rigid Body. Characteristics of the Rotation Motion. (Force's Momentum, Angular Momentum, Angular Momentum Conservation, The Moment of Inertia, Steiner's Theorem, Kinetic Energy of Rotation). Applications.	6
2. OSCILlATORY MOTION. ELASTIC WAVES Harmonic Oscillations. Damped Oscillations. Forced Oscillations. Resonance. Propagation in Elastic Media. Elastic Waves. The Wave Equation. The Equation of a Plane Wave. Wave Speed in a Stretched String. Velocity of Elastic Waves in a Solid Medium. Velocity of Elastic Waves in a Fluid Medium. Power and Intensity of Wave. Energy of an Elastic Wave. Fundamental of Acoustics. Ultrasonics. Ultrasonic Defectoscopy. Applications.	10
3. FLUID MECHANICS General Properties of Fluids. Fluid Statics. Fundamental Equation of Hydrostatics. Pascal's Principle. Arhimede's Principle. The Barometric Formula. Fluid Dynamics. Fundamental Equation of Hydrodynamics. The Continuity Equation. Bernoulli's Equation. Viscosity. Laminar Flow. Navier-Stokes Equations. Turbulence Phenomenon. Applications.	6
4. THERMODYNAMICS Fundamental Concepts. First Law of Thermodynamics. Caloric Capacity. Processes of Ideal Gas. Carnot Cycle. Entropy of an Ideal Gas. Second Law of Thermodynamics. Third Law of Thermodynamics. Phase Transformations. Vaporization and Condensation. Heat Transfer. Applications.	6

Cumulated 28 hrs

9.2. Applications

1	Elements of Vector Analysis. The Gradient of a Scalar Field. Physical Meaning of Gradient. The Divergence of a Vector Field. Physical Meaning of Divergence. The Curl (Rotation) of a Vector Field. Physical Meaning of Rotation. Stokes' Theorem. Green-Gauss-Ostrogradski Theorem. Operations with Vector Operators.	2
2	Motion in Central Forces Field. Kepler's Laws.	2
3	Damped oscillations. Discussion. Problems.	2
4	Forced Oscillations. Discussion. Problems. Nonlinear Oscillations.	2
5	Elastic Waves. Discussion. Problems.	2
6	Physics of Fluids. Atmospheric Turbulence. Deterministic Chaos. Tornados. Discussion. Problems.	2
7	Thermodynamics. Discussion. Problems.	2

Cumulated 14 hrs

10. References

1. I. Radinschi, (2008), Lecture in physics. First part. http://www.ce.tuiasi.ro/index.html On-line lectures and text books
2. I. Radinschi, (2008), Lecture in physics. First part. Seminar 1, Seminar 2, Seminar 3, Seminar 4, Seminar 5, Seminar 6, Seminar 7 http://www.ce.tuiasi.ro/index.html On-line lectures and text books
3. I. Radinschi, (2007), Physics, Editura Junimea, Iaşi
4. E. Luca, C. Ciubotariu, Gh. Zet, A. Vasiliu, (1976), Fizica, Editura Didactică şi Pedagogică, Bucureşti

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Prof. Irina Radinschi, Ph.D.	
Instructor:	Prof. Irina Radinschi, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PHYSICS 1**

Codul disciplinei	**CE116**	Semestrul	**2**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28	14		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Analiză matematică, algebră superioară

Obiective	Însuşirea de către studenţi a conceptelor de bază ale fizicii şi formarea unei imagini ştiinţifice despre lumea înconjurătoare. Iniţierea şi antrenarea studenţilor în activitatea de cercetare.
Conţinut (descriptori)	1. Introducere. Elemente de mecanică clasică. 2. Oscilaţii şi unde elastice. 3. Elemente de mecanica fluidelor. 4. Termodinamică.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1. lucrare scrisă; sarcini: tratarea integrală a unui subiect de curs, rezolvarea unui exerciţiu de la seminar, enunţul a 3 definiţii; condiţii de lucru: lucrare individuală, timp de lucru 2 ore, T pondere 60 %			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**60 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar T**		**10 %**
		Teste pe parcurs 2 T		**20 %**
		Lucrări de specialitate, teme de casă [*număr*]		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Prof. dr. Irina RADINSCHI	

Titular aplicaţii	Prof. dr. Irina RADINSCHI	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

STRENGTH OF MATERIALS 1

1. Course leader: **Assoc professor Mihaela IBĂNESCU, Ph.D.**
2. Topic characteristics: DID **code: CE 117**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	3		2		E	42		28		70

4. Objectives of the topic:

The course gives:

- the physical laws which govern the stress – strain relations;
- the methods and procedures for computing the stresses, strains and displacements in linear structural elements subjected to simple states of loading;
- two- dimensional stress analysis;
- the design of linear structural elements subjected to simple states of loading according to strength and stiffness requirements.

5. Concordance between the objectives of the topic and the objectives of the training plan

The students become able to recognize the simple states of loading of linear structural elements subjected to loads of different types and to design them according to strength and stiffness requirements.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- Classification of structural elements, supports and loads
- Mechanical properties of materials
- Identification of simple states of loading
- Basic concepts like: internal forces, state of loading, stresses, strains, displacements and strain energy

b. Technical skills and abilities

- To plot diagrams of internal forces and moments
- To use proper methods for different types of linear structural elements (statically determinate or indeterminate elements) subjected to simple states of loading
- To design the structural elements subjected to simple states of loading according to strength and stiffness requirements

7. Teaching procedures:

The theoretical aspects (demonstrations, relations, complex figures, experimental tests) are presented by using the projector. Some applications, additional explanations and demonstrations are given by using traditional procedures. The students study the references in the library and they receive supplementary teaching materials from the course leader, by internet. During application classes, they solve by themselves different problems using adequate soft (MathCAD, Matlab).

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: individual (home)works referring to each chapter of the subject and tests during the application classes.

b) means and working conditions for reaching the goal: the students are given the most important examples for all types of problems and the results of works and tests are discussed with each of them in order to clarify the

unknown aspects.

c) percentage of the evaluation in the final mark: individual (home)works – 20%; tests – 10%

Final evaluation: Examination: Written paper which contains questions referring to the most important engineering problems and relevant applications. **Percentage of the final mark**: 60%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Introduction. Classification and Idealized Representation of Structural Elements. Strength of Materials Objectives. Classification of Structural Elements. Idealized Representation of Structural Elements. Reference Systems. Supports.	2
2. Loads. Equilibrium of Structural Elements Classification of Loads. Equilibrium Equations Expressed in Vector and Scalar Forms.	2
3. Internal Forces and Moments Internal Resistant Wrench. Diagrams of Internal Forces and Moments. Differential Relations between Loads and Internal Forces and Moments. States of Loading.	4
4. Stresses. Strains. Displacements. Total Stress. Normal Stress. Shear Stress. Stress Tensor. Equivalence Relations. Axial Strains. Shear Strains. Strain Tensor. Displacements.	3
5. Strength of Materials Background Hypotheses. Characteristic Diagram of the Specimen. Characteristic Diagram of the Material. Mechanical Properties of Materials. Hooke's Law. Work and Strain Energy. Design Methods in Strength of Materials	4
6. Plane Stress. Plane Strain Stresses on Inclined Planes. Principal Stresses. Extreme Shear Stresses. Mohr's Circle for Plane Stress. Isostatics. Strains along Different Directions. Principal Strains. Mohr's Circle for Plane Strain. Hooke's Law for Plane Stress and Strain.	4
7. Concentric Tension or Compression General Considerations. Normal Stresses Formula. Strains and Displacements. Stress Concentration. Own Weight Effect.. Member of Constant Strength. Stepped and Tapered Members. Statically Indeterminate Structural Elements and Systems. Strain Energy. Design Aspects.	6
8. Pure Shear. Joints. General Considerations. Shear Stress Formula. Strains and Displacements. Strain Energy. Design Aspects Joints (by using rivets, bolts, welding).	3
9. Free Torsion General Considerations. Shear Stress Formula (for Circular Sections, Rectangular Sections, Thin – Walled Open Sections, Thin – Walled Closed Sections). Strains. Displacements. Strain Energy. Design Aspects.	4
10. Bending General Considerations. Normal Stress Formula (Navier's Formula). Extreme Normal Stresses. Beam of Constant Strength. Arm of the Internal Resisting Couple. Strains. Strain Energy. Design Aspects.	3
11. Combined Bending and Shear General Considerations. Shear Stress Formula (Juravski''s Formula). Plane Stress at a Point of a Beam Subjected to Combined Bending and Shear. Isostatics. Longitudinal Shear Force. Shear Center. Strain Energy. Design Aspects.	7

Cumulated =42 hrs

9.2. Applications

1	**Geometrical Properties of Plane Areas** Centroid Location. First Moment of Area. Product of Inertia. Moment of Inertia. Principal Axes. Principal Moments of Inertia. Gyration Radius. Modulus of Section.	2
2	**Diagrams of Internal Forces and Moments for Straight Members** Reactive Forces. Internal Forces and Moments Functions. Graphical Representations of these Functions (Diagrams).	6

3	**Experimental Analysis of Displacements, Strains and Stresses** Theoretical Background and Laboratory Tests	1
4	**Tensile Test for Low Carbon Steel** Characteristic Diagram of the Material. Strength Values. Elastic Constants of the Material (E, □)	1
5	**Plane Stress** Stresses on Inclined Planes. Principal Stresses. Extreme Shear Stresses. Mohr's Circle. Strains.	2
6	**Concentric Tension or Compression** Design of Statically Determinate and Indeterminate Structural Elements Subjected to Different Loads According to Strength and Stiffness Requirements	5
7	**Pure Shear** Design of Welded and Riveted Joints.	2
8	**Free Torsion** Design of Structural Elements with Different Cross-Sectional Shapes According to Strength and Stiffness Requirements	2
9	**Bending** Experimental Analysis of Stresses at a Point of a Beam	1
10	**Combined Bending and Shear** Design of Beams with Different Cross-Sectional Shapes. Distribution of Normal and Shear Stresses on Different Cross-Sections.	6

Cumulated =28 hrs

10. References

A. Course

1. Bia C., Ille V., Soare M., (1983), Rezistenţa materialelor şi teoria elasticităţii, EDP, Bucureşti.
2. Boazu Rodica, (vol. 1 – 2001, vol. 2 – 2002), Mecanica construcţiilor, Ed. Cermi, Iaşi.
3. Buzdugan Gh., (1986), Rezistenţa materialelor, Ed. Academiei, Bucureşti.
4. Diaconu M., (1998), Rezistenţa materialelor * Aide-mémoire, Ed. CERMI, Iaşi.
5. Diaconu M., Gorbănescu D., (1990), Rezistenţa materialelor, vol.3, I.P. Iaşi.
6. Murăraşu V., (2002), Rezistenţa elementelor structurale, vol. I, Ed. Cermi, Iaşi.
7. Precupanu D., (1984), Rezistenţa construcţiilor, vol. I, I.P.Iaşi.
8. Precupanu D., (2000), Fundamente de Rezistenţa construcţiilor, Ed. Corson, Iaşi.
9. Ungureanu N., Vrabie M., (1999), Rezistenţa materialelor, vol. 1, Ed. „Gh. Asachi", Iaşi.
10. Ungureanu N., (1979), Rezistenţa materialelor şi teoria elasticităţii, vol.I, I.P. Iaşi.
11. Vlad Missir Ioana, Boazu Rodica, (2001), Rezistenţa materialelor (Résistence de matériaux) Compendium, Ed. „Gh. Asachi" Iaşi.
12. Vlad Ioana, Ibănescu Mihaela, (1998), Strength of Materials, Ed. CERMI Iaşi.

B. Applications

1. Buzdugan Gh. ş.a., (1991), Rezistenţa materialelor - aplicaţii, Ed. Academiei Române, Bucureşti.
2. Diaconu M., (1979), Probleme de rezistenţa materialelor, partea I-a, I.P. Iaşi.
3. Diaconu M., (1987), Rezistenţa materialelor şi teoria elasticităţii, partea I, II, I.P. Iaşi.
4. Diaconu M.ş.a., (1986), Rezistenţa materialelor şi teoria elasticităţii, Lucrări de laborator *, I.P. Iaşi.
5. Marţian I., Cucu H. L., (2004), Probleme de sinteză din rezistenţa materialelor, U. T. Pres, Cluj-Napoca.
6. Posea N., Anghel Al., Manea C., Hotea Gh., (1986), Rezistenţa materialelor - Probleme, Ed. Ştiinţifică şi Enciclopedică, Bucureşti.
7. Precupanu D., ş.a., (1970), Culegere de probleme de rezistenţa materialelor, I.P. Iaşi.
8. Precupanu Dan, (2006), Ibănescu Mihaela, Strength of Materials. Theoretical Synthesis and Engineering Applications, Ed."Ştef".
9. Soare M.V. ş.a., (1996), Rezistenţa materialelor în aplicaţii, Ed. Tehnică, Bucureşti.
10. Vlad Ioana, Ciongradi Camelia, Jerca Şt., (1985), Rezistenţa materialelor şi statica construcţiilor, Culegere de probleme, vol.I, I.P. Iaşi.
11. Vlad Missir Ioana, (2004), Strength of Materials – Selected Problems, Ed. Tehnopress, Iaşi.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc. Prof. Mihaela Ibănescu, Ph.D.	
Instructors:	Assoc. Prof. Mihaela Ibănescu, Ph.D.	
	Asist. Ionuţ Toma, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STRENGTH OF MATERIALS 1**

Codul disciplinei	**CE117**	Semestrul	**2**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Mechanics I
	Recomandate	Physics I

Obiective	*-evaluarea caracteristicilor fizico-mecanice ale materialelor şi a legilor fizice dintre tensiuni şi deformaţii;* *- identificarea tipurilor de elemente structurale liniare în funcţie de starea de solicitare;* *- utilizarea metodelor de calcul specifice pentru dimensionarea elementelor structurale liniare aflate în diverse stări simple de solicitare, conform condiţiilor de rezistenţă şi rigiditate.*
Conţinut (descriptori)	1. Classification and representation of structural elements. Loads. Equilibrium. Internal forces and moments. Stresses. Strains. Displacements. Plane stress. Plane strain. Concentric tension or compression. Pure shear. Joints. Free torsion. Bending. Combined shear and bending.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. examinare scrisă, sarcini: probleme teoretice şi aplicaţii referitoare la proiectarea elementelor, condiţii de lucru: T			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen – tip T**			**60%**
	Evaluarea pe parcurs*) M	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs	**3**	**10%**
		Lucrări de specialitate, teme de casă	**5**	**20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. MIhaela Ibănescu	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Mihaela Ibănescu Asist.dr. ing. Ionuţ Toma	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENGLISH LANGUAGE 2

1. Course leader: **Senior Lecturer TUDOR, Florin Mircea, Ph.D.**
2. Topic characteristics: DI **code: CE118**

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2		1			VP		14			14

4. Objectives of the topic:

The course estimates the knowledge level of English acquired during high school, the revision of the essential grammar structures, the developing of the translation, speaking and writing abilities, fundamentals of English civilization, general technical elements

5. Concordance between the objectives of the topic and the objectives of the training plan

The objectives of the topic are in agreement with the training plan

6. Learning outcomes expressed in knowledge, technical skills and abilities

b. Knowledge

The student must speak and write at least at an intermediate level, must understand when spoken to, must read and understand a common, non-scientific English text at first sight; the student must translate a Romanian text into English with a dictionary.

b. Technical skills and abilities

The student must have a rather good grasp of the essentials of English grammar.

7. Teaching procedures:

Theoretical discussions and practical applications concerning the essentials of English grammar. The applications are done individually and in groups of 2 – 4 students.

8. Evaluation system:

Seminar: individual evaluation depending on the quality of the oral exercises and of the practical applications: 20%
Tests: 2 tests per semester : evaluation: 20%
Homeworks: 2 homeworks: evaluation: 20%
Final semester examination: practical application with or without a dictionary: evaluation: 60%

Stages:

Continuous assessment

a) type of imposed assignments: 2 homeworks, 2 test papers per semester : 40% (20% + 20%)
b) means and working conditions for reaching the goal: books, dictionaries
c) percentage of the evaluation in the final mark

Speciality projects(applications)

***Final evaluation*:** **Examination** **Percentage of the final mark**: 30%

9. Content of the subject:

9.2. Applications

1	Steels and Alloys. Present Conditional Tense	2
2	Modern Buildings. Past Conditional Tense	2
3	Great Britain. Sequence of Tenses	4
4	London. Subjunctive Mood. Conditional Clauses	4
5	The United States Of America. Direct and Indirect Speech. Passive Voice	4
6	Pages from the History of Science (I, II, III). Modal Verbs	6
7	On British Art. The Accusative with the Infinitive Constructions	2

Cumulated 14 hrs

10. References

xxx A Practical Guide to English Grammar, IPI, 1982
Allen, J. P. B., Widdowson, H.G, English in Physical Science, London, 1974
Bantaş, Andrei, Popescu, Rodica, Vîlceanu-Ionescu, Irina, Tudor, Florin Mircea, Ciobanu, Georgeta, Bejan, Nicolae, Limba engleză pentru ştiinţă şi tehnică, ed. rev., Bucureşti, 1995
Bădescu Alice, Gramatica limbii engleze, Bucureşti, 2000
Close R. A., The English We Use for Science, London, 1975
Ewer, J. R., Latorre G., A Course in Basic Scientific English, London, 1976
Hall, Eugene J., The Language of Civil Engineering in English, Englewood Cliffs, 1977
Koch, Paul, Engineering: Civil and Mechanical Engineering, New York, London, 1984
Quirk, Randolph, et al., A Grammar of Contemporary English, London, 1976
Tudor, Florin Mircea, Textbook for the Students in Mechanics, IPI, 1983

Date: 25.03.2009

Name and surname **Signatures:**

Instructor: Senior Lecturer. TUDOR Florin Mircea, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENGLISH LANGUAGE 2**

Codul disciplinei	**CE118**	Semestrul	**2**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul II**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	14		14		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Limba engleză în şcoala generală şi liceu minim 4 ani
	Recomandate	

Obiective	*The course estimates the knowledge level of English acquired during high school, the revision of the essential grammar structures, the developing of the translation, speaking and writing abilities, fundamentals of English civilization, general technical elements*
Conţinut (descriptori)	Steels and Alloys. Present Conditional Tense Modern Buildings. Past Conditional Tense Great Britain. Sequence of Tenses London. Subjunctive Mood. Conditional Clauses The United States Of America. Direct and Indirect Speech. Passive Voice Pages from the History of Science (I, II, III). Modal Verbs On British Art. The Accusative with the Infinitive Constructions

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		20 %
		Teste pe parcurs [*număr)* 2		20 %
		Lucrări de specialitate, teme de casă [*număr***]** 2		20 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lec.dr. Florin Mircea TUDOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

PHYSICAL TRAINING 2

2. Course leaders: Senior Lecturer BORDEA CONSTANTIN, Ph.D.
Assoc. Lecturer PARASCHIV PETRONELA
2. Topic characteristics: DI code: CE119
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	TOTAL
2			1		VP			14		14

4. Objectives of the topic:
a) Strengthening of health and the harmonious development of the body
b) Improvement of basic movement qualities
c) Learning and consolidation of some basic procedures and elements in athletics, gymnastics, games, fitness, their appliance in bilateral games or individual activities
d) Learning of some basic notions of rules in carrying on a sports competition
e) Creations of habituation in respecting sports hygiene norms and learning of schematic physical exercise with daily and weekly schedule

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum):

Physical education and sports come to fulfill the learning plan of this engineering profile, contributing at the more useful scheduling of leisure, in the creation of premises for approaching professional qualities in good health conditions and with increased working strength. It is a mobilizing factor especially for team work.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

Theoretical and practical knowledge required to develop activities at the respective course.

b. Technical skills and abilities

- To identify the structural and functional purpose of physical exercise, basic mean in physical education;
- To identify the proper means of developing physical activity;
- To know the meaning of specialty documents in organizing the learning process
- To individualize the physical effort based on particularities, options and preferences;
- To identify actions and to dose the physical means used depending on the team
- To adapt the possessed materials to the student groups and working methodology.

7. Teaching procedures:
- Repeated actions in different conditions based on pace, strength and complexity of the movements;
- Individual practicing of different exercises, their application in team play;
- Individualizing of physical effort and work based on options and preferences with owned materials

8. Evaluation system:
Stages:
Continuous assessment:

a) type of imposed assignments: participating in non-representative teams activity in sport types or in performance sport;
b) means of working conditions for reaching the goal: sports hall, the used didactic materials are from the basic equipment(barbells, fitness devices, materials for games)

c) percentage of evaluation in the final mark.

Specialty projects (applications)

Final evaluation(T): preliminary examination

-grading of knowledge accumulated during the scholar year by comparative tasks, tests; **percentage 45%**

-grading the regular and active participation in practical assignments, representative teams in sport branches or in performance sports. **percentage 45%**

9. Content of the subject:

9.2. Applications:

Name of task and content
1)Athletics • running elements • jumping and standing start technique • middle-distance running • jogging **2) Basic, aerobics and artistic gymnastics** • front and formation exercises, walking and running variety, simple ground exercises • game exercises and dynamic simple elements from acrobatic gymnastics(rollovers, rolling etc.) • combined course paths with equilibrium elements, climbing, transport • classic, modern and traditional dancing steps on the appropriate music 3) Sport games: basketball, handball, football, volleyball, badminton. • Basic positions, pacing and field crossing • Easy hits, serves, first-touch exercises, still and motion grabbing and passing of the ball • Elementary technique action finishing exercises, marking exercising • Global participation in games on small and normal fields with different purposes 4) improvement of basic motion qualities and specific to some sport branches, by using some fitness, athletics and body-building • Strength and muscular mass improvement by proper use of weights and barbells • Shape adjusting exercises and turning fat into active tissue • Improvement of speed characteristics(reaction, repeating, movement, execution) by specific exercises • Increasing mobility and fitness at different levels • Increasing stamina

Total 14 hours

10. Selective bibliography:

a) Ionescu, A., V., -Exercitiul fizic in slujba sanatatii, Stadion publisher, Buc, 1971.
b) Ulmeanu, Constantin, -Notiuni de fiziologie cu aplicatii la exercitiile fizice, UCFS publisher, Buc, 1966.
c) Dragnea, A., Bota, Aura, -Teoria activitatii motrice, Editura Didactica si Pedagogica publisher, R.A., Buc., 1999.
d) Teodorescu, Leon.- Terminologia educatiei fizice si sportului, Stadion publisher, Buc., 1973.

Date: 25.03.2009

	Name and surname	**Signatures:**
Instructors:	Lect. BORDEA CONSTANTIN, Ph.D.	
	Assoc. Lecturer PARASCHIV PETRONELA	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PHYSICAL TRAINING 2**

Codul disciplinei	**CE119**	Semestrul	**2**	Număr de credite	**1**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	14			14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	Mărirea capacităţii de efort fizic şi intelectual Îmbunătăţirea capacităţii motrice de bază Stimularea practicării independente a exerciţiului fizic Învăţarea unor noţiuni de bază legate de regulamentele de desfăşurare a competiţiilor sportive
Conţinut (descriptori)	To identify the structural and functional purpose of physical exercise, basic mean in physical education; To identify the proper means of developing physical activity; To know the meaning of specialty documents in organizing the learning process To individualize the physical effort based on particularities, options and preferences; To identify actions and to dose the physical means used depending on the team To adapt the possessed materials to the student groups and working methodology.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări T**		**45%**
		Teste pe parcurs (numar) **T**		**45%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titulari disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. Constantin Bordea Prep. drd. Petronela Paraschiv	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
PRACTICE IN CIVIL ENGINEERING

1. Course leaders: **Associate Professor Gabriel OPRIŞAN, Ph.D.**
Senior Lecturer Ioana ENŢUC, PhD
Lecturer Vlad MUNTEANU, PhD

2. Topic characteristics: **DI, DID** **code: CE120**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2			30		C			60		60

4. Objectives of the topic:
The main object is to obtain adequate information on representative constructive solutions building materials as well as modern and traditional building services, equipments and execution technologies. Students should be able to assimilate general practical knowledge related to representative examples of finished or ongoing building works.

5. Concordance between the objectives of the topic and the objectives of the training plan
This topic sets the general knowledge about chemistry and building materials required for a better understanding of building materials field of applications and their behaviour under environmental factors.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
1. Assimilation of communication skills in reading and writing; interpreting plans, details and technological sheets regarding the overall conceptual aspects as well as proper quality, security and economical efficiency of the labour.

b. Technical skills and abilities
2. Knowledge enhancement in the field of construction works technology and management and broaden to conceiving and execution of buildings.
3. Instruction of students in daily activities carried out by site managers in completing of construction tasks. This kind of activities are characterizing the first period of faculty alumnae.

7. Teaching procedures:
1. *Site visits*
2. *Documentary work;*
3. *Analysis activity related to technological execution.*

8. Evaluation system:
Stages:
Continuous assesment
a) Continuous assessment: content of practice notebook in final grade: 20 %
b) Final evaluation: 70 %
Students are informed at the first meeting, on the main requirements of the discipline and the final evaluation procedure.

***Final evaluation*: Examination** **Percentage of the final mark**: 90%

9. Content of the subject:

9.1. Course

9.2. Applications

1	**1. Documentary work refers to:** a) Systematization and organization of the site where the engineering structure is located: in the practice notebook is drawn the site plan. b) Functional features of the engineering structure: in the practice notebook are completed starting from existing technical documentation in terms of details, plans and notes. c) Structural characteristics of engineering structure in terms of plans, sections for main structural elements sketched in the practice notebook. d) Description of erection technology of the engineering structure with main sketches drawn in the notebook. e) Management of site activities depicted in the practice notebook by complete plans containing the location of construction equipments, materials deposits, fire prevention and extension procedures, access roads, electricity networks and transportation distances for concrete and precast elements. f) Management of the construction site, pointing out the chain of commands, work teams, etc.	30
2	**2. The analysis activity concerning the information about the technological execution represents the central activity of the students in the technological practice time:** a) Completing, in the practice notebook, of the erecting time table or reconsideration of this, under the tutor's guide having in mind: - main technological steps and their succession and conditioning; - planned overall and step-wise time durations of phases until the end of the practice stage; b) Description of the main complex technological processes such as: - excavation works; - reinforced concrete works; - precast, steel mounting; - strengthening works; - road maintenance works.	30

Cumulated 60 hrs

10. References

1. Giuşcă, R., CONSTRUCTIONS TECHNOLOGY, Ed. "Gh. Asachi", Iaşi, 2003;
2. Giuşcă, R., TECHNOLOGICAL WORKS – STUDENT'S HANDBOOK, Ed. Politehnium, Iaşi, 2007;
3. Giuşcă, N., INGINERIA PROCESELOR DE CONSTRUCŢII, Ed. "Gh. Asachi", Iaşi, 1997;
4. Pamfil, E., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII, vol. I, Cofraje, Ed. Societăţii Academice „Matei-Teiu Botez", Iaşi, 2006;
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6. Vasilescu, A., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII – EXEMPLE DE PROIECTARE TEHNOLOGICĂ, Editura Politehnium, Iaşi, 2004.
7. Trelea, A., ş. a., TEHNOLOGIA CONSTRUCŢIILOR, Ed. Dacia, Cluj-Napoca, vol. 1, 1997.

Date: 25.03.2009

Name and surname **Signatures:**

Instructors, Associate Professor Gabriel Oprişan, Ph.D.
Senior Lecturer Ioana Enţuc, PhD
Lecturer Vlad Munteanu, PhD

FIŞA DISCIPLINEI

Denumirea disciplinei	**PRACTICE IN CIVIL ENGINEERING**

Codul disciplinei	**CE120**	Semestrul	**2**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	60	-	-	60	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Chimie, Materiale de Construcţii
	Recomandate	Rezistenţa materialelor; Elemente de arhitectură şi sistematizare, Construcţii civile

Obiective	The main object is to obtain adequate information on representative constructive solutions building materials as well as modern and traditional building services, equipments and execution technologies. Students should be able to assimilate general practical knowledge related to representative examples of finished or ongoing building works.
Conţinut (descriptori)	Systematization and organization of the site where the engineering structure is located; Functional features of the engineering structure; Structural characteristics of engineering structure; Description of erection technology of the engineering structure with main sketches drawn in the notebook; Management of site activities depicted in the practice notebook by complete plans containing the location of construction equipments, materials deposits, fire prevention and extension procedures, access roads, electricity networks and transportation distances for concrete and precast elements; Management of the construction site, pointing out the chain of commands, work teams, etc.; Main technological steps and their succession and conditioning; Planned overall and step-wise time durations of phases until the end of the practice stage; Main complex technological processes such as: - excavation works; - reinforced concrete works; - precast, steel mounting; - strengthening works; - road maintenance works.

Sistemul de evaluare:			
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**C**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu (T)**		**70%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari (T)**	**20 %**
		Teste pe parcurs [1] **(T)**	**%**
		Lucrări de specialitate, teme de casă [*număr***]**	**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titulari disciplină	**Gradul didactic, titlul, prenume, NUME**	Semnătura
	Conf.dr.ing. Gabriel Oprişan	
	Şef lucr.dr.ing. Ioana Enţuc	
	Asist.dr.ing. Vlad Munteanu	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

AESTHETICS

1. Course leader: **Lect. dr. CHIRIAC Horia Costin**
2. Topic characteristics: DL **code:**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
1	2				VP	28				28

4. Objectives of the topic:
The Knowledge of Trends, Tendencies and Categories in Aesthetics and Design.

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum)
The main purpose of the object is to develop for the future engineers the capacity of identifying and evaluating the aesthetical characteristics of different types of buildings and the capacity of analyzing the aesthetical influence of the buildings on the inhabitants.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
The knowing of the main principles, concepts and trends in Aesthetics and Design.
b. Technical skills and abilities
The development of the capacity of analyzing and evaluating the aesthetical influence of the buildings on the inhabitants and their stilistic framing in the general town-planning.

7. Teaching procedures:
Exposure with projections.

8. Evaluation system:
Stages:
Continuous assesment
a) type of imposed assignements: 1. written test (T) ; 2. essay (M);
b) means and working conditions for reaching the goal: bibliographical study
c) percentage of the evaluation in the final mark: 45%

Speciality projects(applications)
Students are informed from the beginning of the first class about the main requirements and the evaluation programme.
The knowledge of aesthetical cathegories
The knowledge of main tendencies and trends in Aesthetics and Design

***Final evaluation*:** **Examination (coloquium)** **Percentage of the final mark**: 45%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
Nr and title I. The Realm and the Problems of Aesthetics. The object of Aesthetics and Design. The values of Aesthetics. Judgement of value and the aesthetic taste. Trends in the Aesthetics.	6
Nr and title II. The Axiology of Art. The realm of Aesthetics: Nature, Society and Arts. The Aesthetics and Industry. Basic Concepts of Aesthetics. The Laws of the Beauty.	5
Nr and title III. The Artistic Creation. Similitude and Differences between Artistic Creation and Creation in Design. Work of Art and his meaning. The image in the Art. Analysis of the Image. Image as Pattern. Image and Message. The role of Colours and Forms in the Artistic Image. The Truth in the Art.	10
Nr and title IV. Aesthetics in Practice. The influence of Art upon the Working Place. Colours and Forms. Aesthetic properties of Forms derived from Bearing Systems. Geometry of the Form and Static Function of the Form.	7

Cumulated 28 hrs

10. References

1. XXX, Estetica, Ed. Academiei, Bucureşti, 1983
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5. Zamfir Dumitrescu, Structuri geometrice-structuri plastice, Ed. Meridiane, Bucureşti, 1984
6. Herbert Read, Originile formei în artă, Ed. Univers, Bucureşti, 1971
7. Gheorghe Săsărman, Funcţiune, spaţiu, arhitectură, Ed. Meridiane, Bucureşti, 1979
8. Joseph-Emile Muller, Arta modernă, Ed. Ştiinţifică, Bucureşti, 1975
9. Hermann Istvan, Kitschul, fenomen al pseudo-artei, Ed. Politică, Bucureşti, 1973
10. Roger Avermaiete, Despre gust şi culoare, Ed. Meridiane, Bucureşti, 1971
11. René Huyghe, Puterea imaginii, Bucureşti, Ed. Meridiane, 1971
12. Nathan Knobler, Dialogul vizual, Ed. Meridiane, Bucureşti, 1983
13. Malcolm Budd, Values of Art, London, 1995
14. Mary Acton, Learning to Look at Painting, London, New York, 1997
15. Maurice Deribere, La couleur, PUF, Paris, 1963
16. Edouard Ferre, Solfege de la couleur, Dunod, Paris, 1962
17. Mihai Păstrăguş, Aesthetics and Axeology, Canova, Iaşi, 1999
18. Eliel Saarinen, The Search fo Form in Art and Architecture, Dover Publications, New York, 1985
19. Ossi Naukkarinen, Olli Immonen, Art and Beyond, Lahti (Finland), 1995.
20. Mihai Pastragus, Estetica in amfiteatru,Editura Performantica, Iasi,2004
21. Mihai Pastragus, Aesthetic Horizons, Performantica Publishing House,Isi, 2004

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: lect. Chiriac Horia-Costin, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**AESTHETICS**

Codul disciplinei		Semestrul	**1**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	28			

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	The Knowledge of Trends, Tendencies and Categories in Aesthetics and Design.			
Conţinut (descriptori)	I. The Realm and the Problems of Aesthetics. II. The Axiology of Art. III. The Artistic Creation. IV. Aesthetics in Practice.			
Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1. written test (T) ; 2. essay (M);			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**45%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs (1)		**25%**
		Lucrări de specialitate, teme de casă (1)		**20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	lector dr. Chiriac Horia-Costin	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: I** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

HISTORY OF CONSTRUCTION TECHNIQUES

1. Course leader: Professor Nicolae ŢĂRANU, Ph.D.
2. Topic characteristics: DC code:
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
2	2				VP	28				28

4. Objectives of the topic:

The course "History of construction techniques" has main objective a chronological presentation of the construction evolution due to construction materials used, in different development stages of constructions with emphasizing the quality and quantity of each type of building material.

5. Concordance between the objectives of the topic and the objectives of the training plan

Discipline "History of construction techniques" promotes the improvement of civil engineer knowledge and completes the training of civil engineers besides other disciplines: building materials, mechanics of materials, statics, timber structures, masonry reinforced concrete, and steel structures.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- Critical Thinking (Identify personal assumptions, Collect, Analyse, interpret Information's, Draw conclusions)
- Communication skills (speak clearly, read with comprehension, work effectively in groups, interpret/use graphic communication);

b. Technical skills and abilities

Upon successful completion of this course, the student should be able to:

- To understand and apply ideas and plans;
- To know different constructive systems;
- To choose proper solution base of material types for structural systems and for elements;
- To use the nomenclature of construction technology for buildings;
- To understand the aim and the intervention procedure of existing structural systems.

7. Teaching procedures:

Relationship between student and professor is a partnership type, where everybody assumes the responsibility to reach the learning results. Learning results are clearly explained and debated with students from their relevance perspective for their professional enhancement. In the teaching process, professors utilized the resources of the new technologies: powerpoint slides.

8. Evaluation system:

Stages:

Continuous assessment

a) every student will present three solved subjects imposed by professor

- final examination test paper: 90 %

9. Content of the subject:

9.1. Course

Chapter	Content	Hour
1.	***Generalities*** 1.1 Introduction. Raw materials used in the construction of buildings. 1.2 Clasification of used materials in construction industry	4
2.	***Timber in constructions*** 2.1 Application 2.2 Timber processing 2.3 Structural systems specific for timber structures 2.4 Principles of modern timber structures	4
3.	***Stone – main material for constructions*** 3.1 Stone processing 3.2 Binders used to stone masonry 3.3 Execution technique in case of stone masonry 3.4 Structural systems specific to stone constructions	4
4.	***Concrete – artificial stone*** 4.1 Raw materials for concrete preparation 4.2. Placing of concrete technologies 4.3. Structural systems specific to concrete structures	4
5.	***Masonry –Brick units and structure made of brick masonry*** 5.1. Materials for masonry structures: ceramics and mortars 5.2. Mortars for masonry 5.3. Execution technique in case of brick masonry	4
6.	***Steel–a modern material for constructions*** 6.1. Advantages of steel as a building material 6.2. Execution technique in case of steel structures-connections 6.3. Structural systems specific to steel structures	4
7.	***Composite materials for structures in constructions*** 7.1. Definitions. Raw materials. 7.2. Unconventional technologies of execution for elements and structures made of composite materials 7.3. Structural systems specific to composite materials constructions	4

Cumulated 28 hrs

10. References

1. Garth Watson - The Civils – The story of the Institution of Civil Engineers, Ed. Thomas Telford Ltd, 1988;
2. Flămând M. – Aventura lemnului, Ed. Albatros, Bucureşti, 1982;
3. Julius Lips – Obârşia lucrurilor, o istorie a culturii omenirii, Ed. Ştiinţifică Bucureşti, 1958;
4. Ionescu G. – Istoria arhitecturii în România, vol. I şi II, Ed. Academiei RSR, Bucureşti, 1965;
5. Bălan Şt. Dicţionar Cronologic al Ştiinţei şi Tehnicii Universale, Ed. Ştiinţifică şi Enciclopedică, Bucureşti, 1979.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Professor Nicolae ŢĂRANU, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**HISTORY OF CONSTRUCTION TECHNIQUES**

Codul disciplinei		Semestrul	**2**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	28			

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Materiale de constructii, rezistenta materialelor
	Recomandate	Desen tehnic

Obiective	*The course "History of construction techniques" has main objective a chronological presentation of the construction evolution due to construction materials used, in different development stages of constructions with emphasizing the quality and quantity of each type of building material.*
Conţinut (descriptori)	Timber in constructions Stone – main material for constructions Masonry –Brick units and structure made of brick masonry Steel–a modern material for constructions Composite materials for structures in constructions

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**VP**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin colocviu		**60 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**0 %**
		Teste pe parcurs [*număr)*	**0 %**
		Lucrări de specialitate, teme de casă [*număr***]**	**30 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof.dr.ing. Nicolae ŢĂRANU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
STATICS OF CONSTRUCTIONS 1

1. Course leader: **Senior Lecturer Octavian Victor ROŞCA, Ph.D.**
2. Topic characteristics: DI **code: CE201**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	3		2		E	42		28		70

4. Objectives of the topic:
The course of Structural Statics – part 1 holds a leading position inside the engineering formation framework of the civil engineering domain; the main aim is to provide the student with abilities and competences regarding the structural design and computation. The other goals are:
The development of the student capacities to identify the usual structural bearing systems and the structural elements;
The setting and modelling of the various structural connections to ground (restraints) and to the compponent subsystems;
Learning of the concepts and fundamental methods used in the structural computation, with case-studies of certain 2D structure classes, isostatic and hyperstatic, thus building the basis for the further advanced calculus, oriented towards more complicated structures and the use of dedicated computer software for the construction and solution of the advanced models.

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum)
The students will accumulate a volume of theoretical and practical knowledge in the field of structural mechanics of buildings, that is compulsory for the comprehension and study of the other computational subjects (Numerical Methods, Structural Dynamics, Computer Aided Structural Design, Earthquake Engineering) and civil specializations (Timber Structures, RC Structures, Steel Structures, Industrial Buildings);
The develpoment of the engineering way of thinking and computation, the skills regarding analysis and synthesis, the qualitative and quantitative interpretation of the results.

Previous curricula requirements (reccomended):
Liniar Algebra 1, 2 Mechanics 1, Mechanics 2, Strength of Materials 1.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The student will acquire a technical, engineering background: the classification and characteristics of several structure types; general methods for the solution of the isostatic systems (the computation of the internal efforts, the plotting of the force diagrams on the strucctue; the methods for the computation of the elastic deflections of the characteristic model points); the concept of the convoy mobile loads; the influence lines – characteristics, way to build, physical interpretation; case studies to fiind out the maximum efforts; the Forces Method for the solution of the hyperstatic structures.

b. Technical skills and abilities

The graphical representation and the modelling of several elements and plane (2D) structures composed of bars;
The modelling of several actions characterized as static (external forces, base settlements, uniformly and non-uniformly temperature changes);

The use of the computational methods specific to the studied structures;
The achievement of certain design background.

7. Teaching procedures:

The lecture presentation is carried on by the means of several procedures, by alternating the multimedia presentations using the PC + video projector, Powerpoint slideshows with the classical methods (verbal exposures, directly or at the blackboard). By the means of these procedures one will establish the junctions with the engineering topics, specializations. By taking into account the students feedback, some chapters may be deeply explained, by the means of discussions and supplemetary explanations.
The reference resources can be accessed by several ways: student's own annotations, lending books directly from the Faculty library and the TU library, edited and printed chapters, downloading from the professor's internet sites, CDs with manuals in the electronic format.
The students must realize 5 laboratory assignements during the 3rd semester. These personal works have individual subjects and contain problems and case-studies from the topics presented during the lectures. The students are encouraged to work alone as well as in teams. During the laboratory classes there are granted explanations and guidelines, following the questions arized. Discussions are carried on; pocket calculators are used. The students are granted with the access to the computer stations inside the 5 computer rooms. Some specialized software for which there are available educational licences (i.e. Matlab, Mathcad) are used for the solution of some engineering problems.

8. Evaluation system:

Continuous assesment

1. Laboratory Works:

The students will carry on 5 practical works with similar topics but individual design values and personal data. The practical works will be solved during the laboratory works and some components should be solved as individual preparation assignements. The delivery of the all the personal assignements represents the necessary condition for the admission of each student to the exam for the final evaluation.
The students may use the Faculty computer network and the dedicated software inside the computer labs of the Faculty of Civil Engineering and Building Services.

2. Intermediate testing: Percentage of the final mark: 30%

The students will attend 3 announced verification tests during the semester. Each test will be ranked from 1 to 10 and will participate with 10% to the final rank.

***Final evaluation*: Exam. Percentage of the final mark: 60 %**

The exam for the final evaluation consists of a written paper on the basis of an individual ticket; the ticket contains problems from each studied chapter. The students are allowed to use the pocket calculators for the necessary calculations.

The students receive at the first lecture about the information regarding the subject requirements, the methods and the evaluation program.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. The Composition of the Plane Structures *The general hypothesis that underlie at the basis of the plane structures calculus; conditions for the restraints and geometric invariability; the static equillibrium condition; the static structural analysis. Examples.*	3
2. The Calculus of the Isostatic Structures Subjected to the Fixed Loads *The classification of the isostatic structures; the calculus of the isostatic frames (fiind aut the reactions; differential relationship between internal efforts and external loads, physical interpretation; the plotting of the structure force diagrams; checking of the joint equillibrium). Case-studies.*	12
3. The Virtual Work Principle *Virtual displacement; virtual work; the kynematic analysis of the mechanisms (finding out of the instant rotation centers – co-linearity theorems); displacement diagrams; the use of the virtual work principle for the computation of the reactions and internal efforts. Examples.*	3

4. The calculus of the simply supported beams subjected to mobile loads *The statement and the modelling process of the convoys and mobile actions. The influence lines for reactions and internal forces. The computation of the maximum bending moment on a specific section and the maxim-maximorum bending moment. Case-study.*	3
5. The computation of the elastic displacements *The virtual work of the external forces; the Betti and Betti-Maxwell theorems; the internal virtual work (of efforts) and the potential strain energy; the Möhr-Maxwell relationship. The computation of the elastic displacements due to non-uniform temperature variation and base settlements. Case-studies.*	9
6. The forces Method. Frame Structures *Basic systems and elastic unknowns; the conditions for geometrical compatibillity in case of external forces, base settlements and non-uniform temperature variations; the significance, the calculus and checking of the system coefficients and free terms; the plotting of the internal force diagrams. Case-studies.*	12

Cumulated 42 hrs

b) 9.2. Applications

	Chapter	**Nr. of hrs.**
1	**The Isostatic beams** - plotting of the N, V, M diagrams**.**	2
2	**The Isostatic frames** – the static analysis and the plot of the internal force diagrams; the computation of some reactions and efforts by the means of the virtual work principle.	8
3	**The Influence Lines.** The computation of the maximum beding moment for one cross-section and the maxim-maximorum bending moment.	4
4	**The Computation of the Elastic Displacements** of the frame structures subjected to the forces, non-uniform temperature variations and base settlements.	6
5	**The Solution of the Hyperstatic Frame Structures** by the means of the Forces Method.	8

Cumulated 28 hrs

10. References

1. Amariei C, Vulpe A., Dumitraş AL., Jerca Şt., Strat L., Schärf F., Budescu M., Statica construcţiilor Teorie şi aplicaţii, Rotaprint I.P.Iaşi, 1990.
2.Amariei C., Jerca Şt., Dumitraş Al., Focşa G., Schärf F., Probleme de Statica construcţiilor. Sisteme static determinate, Rotaprint I.P. Iaşi, 1980.
3. Amariei C., Budescu M., Ciupală A., Statica construcţiilor (română-franceză), Ed. Vesper Iaşi, 1996
4. Amariei C., Budescu M., Ciupală A., Statica construcţiilor (română-engleză), Ed. Soc. Acad. "Matei-Teiu Botez", Iaşi, 2006.
5. Dumitraş Al., Florea V., Statica construcţiilor, Teorie şi aplicaţii, Structuri static determinate, Ed. Cermi, Iaşi, 2005.
6. Gheorghiu AL., Statica construcţiilor, vol. I şi II, Ed. Tehnică, Bucureşti, 1957, 1965.
7. Ivan M., Vulpe A., Bănuţ V., Statica, stabilitatea şi dinamica construcţiilor, E.D.P., Bucureşti, 1982.
8. Jerca Şt., Schärf F., Mecanica construcţiilor 3, Statica, Rotaprint, I.P.Iaşi, 1979.
9. Strat L., Aanicăi C., Structural Statics, Ed. „Gh. Asachi", Iaşi, 1995.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lect. Octavian Victor ROŞCA, Ph.D.
Instructor: Senior Lect. Octavian Victor ROŞCA, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**STATICS OF CONSTRUCTIONS 1**

Codul disciplinei	**CE201**	Semestrul	**3**	Număr de credite	**6**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Algebra liniară 1, 2 Mecanica 1, Mecanica 2, Rezistenţa materialelor 1.

Obiective	The course holds a leading position inside the engineering formation framework of the civil engineering domain; the main aim is to provide the student with abilities and competences regarding the structural design and computation. The other goals are: The development of the student capacities to identify the usual structural bearing systems and the structural elements; The setting and modelling of the various structural connections to ground (restraints) and to the compponent subsystems; Learning of the concepts and fundamental methods used in the structural computation, with case-studies of certain 2D structure classes, isostatic and hyperstatic, thus building the basis for the further advanced calculus, oriented towards more complicated structures and the use of dedicated computer software for the construction and solution of the advanced models.
Conţinut (descriptori)	The Composition of the Plane Structures. The Calculus of the Isostatic Structures Subjected to the Fixed Loads. 3. The Virtual Work Principle The calculus of the simply supported beams subjected to mobile loads The computation of the elastic displacements The forces Method. Frame Structures

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. Probă scrisă individuală pe bază de bilet; tipul evaluării: T şi discuţii pe baza modului de rezolvare a subiectelor; pondere: 100%;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**60%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**0%**
		Teste pe parcurs [*3-T*]		**30%**
		Lucrări de specialitate, teme de casă [*număr***]**		**0%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Şef lucrări dr. ing. Octavian Victor ROŞCA	Semnătura

Titularul aplicaţiilor	Şef lucrări dr. ing. Octavian Victor ROŞCA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

DESCRIPTIVE GEOMETRY

1. Course leader: **Senior Lecturer DĂNĂILĂ Vanda – Ligia, Ph.D.**
2. Topic characteristics: DI **code: CE202**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	2		1		E	28		14		42

4. Objectives of the topic:

The course allows the students to assimilate the fundamental notions of descriptive geometry which represents the basis for technical drawing and enable the engineers to plot technical ideas. This topic helps to train and increase the spatial skills, it provides the future specialists the instruments with the help of which they can correctly read and elaborate a plotting.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic enables the Civil Engineering bachelor with advanced knowledge of spatial and plane plotting of geometric elements, beginning with the simple ones (point) up to the complex elements (polyhedra).

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The knowledge the students obtain refers to their ability to identify and to plot in draught geometric elements (points, lines, planes, solids), to plot plane sections through polyhedra, solids' intersections.

b. Technical skills and abilities

Technical skills consist of abilities to plot in plane the spatial geometric elements, as well as to spatial reconstitute the solids based on their plane plottings.

7. Teaching procedures:

The course is classically taught, explanations are accompanied by plotting on the blakboard, with the help of specific instruments of the topic, all the drawings included on studied chapters. For the first chapters (plotting of the point, the line, the plane) the draught plottings are preceeded by spatial sketches with the purpose to ease the understanding of the method that allows to pass from three – dimensional to bi – dimensional plotting. At the end of each chapter solutions of some important problems requiring the use of the respective chapter explained knowledge are depicted.

As written support of the course, the library Faculty has a number of 32 copies of the book „Descriptive Geometry" containing all the knowledge the course taught and, even more, solved and explained problems and problems proposed to be solved.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements:

Continuous assesments consist of written solution, during practical works, of some descriptive geometry problems. The problems proposed to be solved are alike the problems solved during the course or previous practical works. The percentage in the final mark: 20%.

b) means and working conditions for reaching the goal:

During the evaluation students are allowed to consult the book, the course note book, as well as the practical work copy book having solved problems.

c) percentage of the evaluation in the final mark

Speciality projects (applications)

The students will receive, at the very first course, as speciality project working out the course and applications copy book. This subject is worked throughout the whole semester, and the final mark is granted on the last practical work of the semester.

The percentage of the speciality project in the final mark is 10%.

***Final evaluation*: Examination Percentage of the final mark**: 60%

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
1. Introduction *Short hisory. Projection systems: the system of central projection the system of parllel projection.*	1
2. The point *Plotting of the point in double othogonal projection. Plotting of the point in treble orthogonal projection. Characteristic positions of a point.. Descriptive alphabet of the point..*	3
3. The line *Projections of a line. Traces of a line. Characteristic positions of a line. Relative positions of two lines. Determining the true length of a line – segment.*	4
4. The plane *Specifying a plane. Traces of a plane. Planes parallel to a projection plane. Planes perpendicular to a projection plane. Relative positions of two planes.*	4
5. The line and the plane *Determining the distance from a point to a plane. Visibility in draught..*	2
6. Methods of the descriptive geometry *The method of replacing the projection planes. The method of revolution. The folding method.*	3
7. Polyhedra *Plotting of polyhedra. Plane sections through polyhedra. The development of the polyhedral surfaces. The intersection of a line with a polyhedron. Polyhedra intersections.*	11

Cumulated 28 hrs

9.2. Applications

1	**The point** – Execises and problems about the point.	1
2	**The line** - Execises and problems about the line.	1
3	**The plane** - Execises and problems about the plane. Review problems about the point, the line, the plane.	2
4	**Test** - about the point, the line, the plane.	2
5	**The methods of the descriptive geometry. Polyhedra** – Exercises and problems about the methods of the descriptive geometry. Problems about plane sections through polyhedra and the development of the polyhedral surfaces.	2
6	**Test** – about plane sections through polyhedra and the development of the polyhedral surfaces.	2
7	**Polyhedra** – Problems about polyhedra intersections.	2
8	**Test** – about polyhedra intersections.	2

Cumulated 14 hrs

10. References

1. Dănăilă, V. L., Anghel, A., DESCRIPTIVE GEOMETRY, Ed. Tehnopress, Iaşi, 2006
2. Prună, L., Slonovschi, A., Antonescu, I., GEOMETRIE DESCRIPTIVĂ, Ed. Societăţii Academice „Matei – Teiu Botez", Iaşi, 2006

3. Slonovschi, A., Prună, L., Antonescu, I., GEOMETRIE DESCRIPTIVĂ. APLICAŢII, Ed. Tehnopress, Iaşi, 2006
4. Anghel, A., Dănăilă, V. L., GEOMETRIE DESCRIPTIVĂ, Ed. Performantica, Iaşi, 2004
5. Mănescu, M., Rizea, N., Mănescu, C., GEOMETRIE DESCRIPTIVĂ. APLICAŢII, Ed. Didactică şi Pedagogică, Bucureşti, 1996
6. Precupeţu, P., Dale, C., GEOMETRIE DESCRIPTIVĂ CU APLICAŢII ÎN TEHNICĂ, Ed. Tehnică, Bucureşti, 1987
7. Matei, A., Gaba, V., Tacu, T., GEOMETRIE DESCRIPTIVĂ, Ed. Tehnică, Bucureşti, 1982
8. Iancău, V., Moldovan, M., GEOMETRIE DESCRIPTIVĂ ŞI DESEN TEHNIC DE CONSTRUCŢII, Ed. Didactică şi Pedagogică, Bucureşti, 1975
9. Arustamov, Kh. A., PROBLEMS IN DESCRIPTIVE GEOMETRY, Ed. Mir, Moscova, 1974
10. Tănăsescu, A., GEOMETRIE DESCRIPTIVĂ. PROBLEME, Ed. Didactică şi Pedagogică, Bucureşti, 1967

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Dănăilă Vanda – Ligia, Ph.D	
Instructor:	Senior Lecturer Dănăilă Vanda - Ligia, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**DESCRIPTIVE GEOMETRY**

Codul disciplinei	**CE202**	Semestrul	**3**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Geometrie plană, Geometrie în spaţiu, Trigonometrie

Obiective	The course allows the students to assimilate the fundamental notions of descriptive geometry which represents the basis for technical drawing and enable the engineers to plot technical ideas. This topic helps to train and increase the spatial skills, it provides the future specialists the instruments with the help of which they can correctly read and elaborate a plotting.
Conţinut (descriptori)	The point. The line. The plane. The line and the plane. Methods of the descriptive geometry Polyhedra

Sistemul de evaluare:				
Evaluarea finală (T)*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %; 1. Evaluarea finală constă într-o probă scrisă, care presupune rezolvarea a două probleme într-un anumit interval de timp. Problemele sunt asemănătoare cu cele rezolvate pe parcursul semestrului. Studenţii nu au la dispoziţie nici un fel de material documentar. Ponderea acestei probe în nota finală este de 60%.			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen (T)**			**60%**
	Evaluarea pe parcurs (T)*)	**Activitatea la seminar / lucrări**		**10%**
		Teste pe parcurs [3*)*		**10%**
		Lucrări de specialitate, teme de casă [*1*]		**10%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef de lucrări dr. ing. Vanda – Ligia DĂNĂILĂ	

Titularul aplicaţiilor	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef de lucrări dr. ing. Vanda – Ligia DĂNĂILĂ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

INFOGRAPHICS AUTOCAD

1. Course leader: **Professor GRAŢIELA HÎNCU, Ph.D.**
2. Topic characteristics: DF **code: CE203**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	1		2		C	14		28		42

4. Objectives of the topic:

The course provides the students with information on Computer Graphics fundamental concepts under AutoCAD program graphical interface and trains their skills in using the modern drawing instruments.

5. Concordance between the objectives of the topic and the objectives of the training plan

The aims and the content of this discipline agree with the licensing field and curriculum which have been elaborated and provide the students with valuable information on AutoCAD program.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- theoretic and practical concepts necessary to understand and assimilate the AutoCAD commands;
- AutoCAD facilities concerning the intervention, configuration, adaptation and customising means to solve any requirement by integrated particular commands.

b. Technical skills and abilities

- acquisition of a good competence in 2D objects' design based on the facilities offered by the AutoCAD program.

7. Teaching procedures:

The course presentation uses logistics created by the teaching staff members including colour slides, overhead-projector (OHP) and films, alongside the classic delivery of the course.
The students apply the course information, receiving the individual tasks which are solved during classes. All the exercises are helpful in developing such skills as: reading, understanding and executing drafts. Sketches on the blackboard and some plottings, for the individual tasks, are used too.
During the semester, the students are provided with two consultation hours to clarify all the problems related to this discipline.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements:

Students receive individual examination tickets and their answers are evaluated by mark.s

b) means and working conditions for reaching the goal:

Students use the Computer Graphics Laboratory facility (aquisition equipment, programs and computer network).

c) percentage of the evaluation in the final mark: **10**%

Speciality projects(applications)
Students receive a project work which has been executed during the Technical Drawing classes.
Percentage of the evaluation in the final mark: **30**%

***Final evaluation*:** **Colloquy** **Percentage of the final mark**: **50**%

9. Content of the subject:

9.1. Course

Chapter	No. of hrs.
1. AutoCAD. Introduction. Utility commands. Display controls • NEW Command • OPEN Command • SAVE (SAVE As) Commands • EXIT Command • CLOSE Command • LIMITS Command • UNITS Command. Application. • REDRAW Command • REGEN Command • ZOOM Command • PAN Command.	2
2. Inquiry commands • STATUS Command • ID Command • AREA Command • DIST Command • LIST Command • MASSPROP Command. Application	1
3. Drawing aids • SNAP Command • OSNAP Command • GRID Command • ORTHO Command • POLAR Command • OTRACK Command • DYNCommand	2
4. 2D entity draw commands • LINE Command • POINT Command • CIRCLE Command • ARC Command • TRACE Command • PLINE Command • ELLIPSE Command • SOLID Command • POLYGON Command • TABLE Command • TEXT Command etc.	4
5. Edit commands • ERASE Command • MOVE Command • COPY Command • SCALE Command • ROTATE Command • MIRROR Command • STRETCH Command • BREAK Command • TRIM Command • PEDIT Command • EXTEND Command • OFFSET Command • FILLET Command etc	3
6. Dimensioning commands Dimensioning terms. Dimensioning types and styles.	1
7. Hatching commands BHATCH Command	1

Cumulated 14 hrs

9.2. Applications

1	**Acquaintance with the AutoCAD program**. AutoCAD graphic screen, utility commands, command entry, systems of coordinates. **Display controls**. **Drawing aids**. Applications	2
2	**Entity properties**. Colour, line type, line weight, layer	2
3	**2D entities draw commands**. Commands used to draw lines, plotlines, circles, ellipses, polygons, text entities etc. Applications.	6
4	**Edit** commands. Commands used to erase, copy, move, mirror, scale, rotate, extend, trim objects etc. Applications	6
5	**Hatching**. Patterns, styles, properties, hatching area, visualization. Applications.	1
6	**Dimensioning**. Terms, types and styles of dimensioning, edit commands. Applications.	1
7	**Individual assignments** regarding the drawings executed during the technical drawing classes.	8
8	**Colloquy**	2

Cumulated 28 hrs

10. References

1. *Hîncu, G., GHID DE DESENARE ÎN AutoCAD, Ed. Soc. Academice Matei-Teiu Botez, Iaşi, 2007.*
2. *Zirbel, J., Combs, S., UTILIZAREA PROGRAMULUI AutoCAD, Ed. Teora, Bucureşti, 2006.*
3. *Anghel, A., Prună, L., DESEN TEHNIC CU AutoCAD, Ed. Tehnopress, Iaşi, 2005.*
4. *Segal, L., Ciobănaşu, G., GRAFICĂ INGINEREASCĂ CU AutoCAD, Ed.Tehnopress, Iaşi, 2003.*
5. *Marinescu, Gh., APLICAŢII AUTOCAD ÎN CONSTRUCŢII, Ed.Contegedo, Bucureşti, 2002.*
6. **** Colecţia de STAS-uri şi normative în vigoare în domeniul construcţiilor.*

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Professor Hîncu Graţiela, Ph.D.	
Instructor:	Professor Hîncu Graţiela, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**INFOGRAPHICS AUTOCAD**

Codul disciplinei	**CE203**	Semestrul	**3**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	14		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Desen tehnic de construcţii
	Recomandate	

Obiective	The course provides the students with information on Computer Graphics fundamental concepts under AutoCAD program graphical interface and trains their skills in using the modern drawing instruments.
Conţinut (descriptori)	1. AutoCAD. Introduction. Utility commands. Display controls 2. Inquiry commands 3. Drawing aids 4. 2D entity draw commands 5. Edit commands 6. Dimensioning commands 7. Hatching commands

Sistemul de evaluare:			
Evaluarea finală*	**Forma de evaluare finală(E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**C**
	Probele evaluării sarcini: bilet de examen ; condiţii de lucru: CC pondere 50 %;		
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**		**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**%**
		Teste pe parcurs [*2*], CC	**10%**
		Lucrări de specialitate, teme de casă [*1*], CC	**30%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof.dr.ing. Graţiela HÎNCU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

PHYSICS 2

1. Course leader: **Senior Lecturer STANCU Viorel, Ph.D.**
2. Topic characteristics: DI **code: CE 204**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	2		1		C	28		14		42

4. Objectives of the topic:

Physics is a fundamental science. It is a search for an explanation of the behaviour of objects in the universe. The intended scope of the physics course is to lead the students to a thorough understanding of the basic concepts of physics and to help them to comprehend the unfolding of the events in the whole world, to create a world view. Physics is an adventure of knowledge which students should share in.

5. Concordance between the objectives of the topic and the objectives of the training plan

The thorough understanding of the basic concepts of physics is one of the main requirements that must be satisfied by a civil engineer.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge *The basic concepts of physics*

b. Technical skills and abilities *The understanding of the basic processes of physics can to determine the development of the new technologies.*

7. Teaching procedures:

Beside the oral teaching method, the teaching based on the use of a computer will be considered too.

For the nonlinear modelling of the physics phenomena, numerical simulations and teaching based on the use of a computer, the Nonlinear Dynamics Laboratory will be used, where three computers and also the following software packages are available:

INSITE - (**Interactive Nonlinear Systems Investigative Toolkit for Everyone**)**,** donation from Berkeley University California, USA,

PHYSICS. Computer Aided Instruction, donation from Cross Education, USA

CHAOS II (Chaos Programs to go with Baker, G. L. and J. P. Gollub (1991) Chaotic Dynamics. Cambridge, Cambridge Univ.) donation from Gregory Baker, USA.

8. Evaluation system:

Stages:

Continuous assesment

The laboratory activities will count for 10% of the course grade. Examination form: Traditional. The 20% of the course grade will be derived from two written midterm exams. Examination form: Traditional. The final examination will count for 60% of the course grade. Examination form: Traditional (knowledge test).

***Final evaluation*:** **Examination** **Percentage of the final mark**: 60 %

9. Content of the subject:

9.1. Course PHYSICS II

Chapter	Nr. of hrs.
CHAPTER 5 THERMODYNAMICS Lecture 1 Fundamental Concepts. The First Principle of Thermodynamics. Lecture 2 The Second Principle of Thermodynamics. The Third Principle of Thermodynamics. Lecture 3 Heat transfer. Applications.	6
CHAPTER 6 ELECTROMAGNETIC PHENOMENA Lecture 4 Electric Field. Fundamental Laws and Quantities. Lecture 5 Magnetic Field. Fundamental Laws and Quantities. Lecture 6 Electromagnetic Field. Maxwell's Equations. Lecture 7 Electromagnetic Waves. Applications.	8
CHAPTER 7 OPTICAL PHENOMENA Lecture 8 Nature of Light. Photometric Quantities and Units. Interference of Light. Lecture 9 Difraction of Light. Polarization of Light. Lecture 10 The Photoelectric Effect. The Compton Effect. X-Rays. Lecture 11 Thermal Radiation. Laws of black body radiation. Planck's Formula. Applications. Photoelasticity.	8
CHAPTER 8 QUANTUM MECHANICS Lecture 12 Wave Nature of Matter. De Broglie's Hypothesis. The Heisenberg Uncertainty Relation. Lecture 13 The Schrödinger Wave Equation. Lecture 14 The Particle in a Infinite Square Potential Well.	6

Cumulated 28 hrs

9.2. Applications

1	Measurement Errors.	2
2	The Study of Absorption of the Gamma Rays in Pb. Determination of the Attenuation Coefficient.	2
3	Experimental Verification of the Law of Energy's Transport by Radiation.	2
4	Determination of Planck's Constant.	2
5	Determination of the Activation Energy for an Intrinsic Semiconductor.	2
6	Polarization of Light. Experimental Determination of a Sugar Solution Concentration.	2
7	Final evaluation.	2

Cumulated 14 hrs

10. References

1. Luca, E., Ciubotariu, C., Zet, Gh., Vasiliu, A., 1976, FIZICA , Editura didactică şi pedagogică, Bucureşti.
2. Kirkpatrick, L.D., Wheeler, G.F., 1992, PHYSICS A WORLD VIEW, Saunders College Publishing, Fort Worth.
3. Hangentoft, C.E., 1988, INTRODUCTION TO BUILDING PHYSICS, Studentlitteratur, Lund.
4. Tuck, A. F., 2008, ATMOSPHERIC TURBULENCE: A Molecular Dynamics Perspective, Oxford University Press,.
5. Merken, M., 1989, .PHYSICAL SCIENCE WITH MODEN APPLICATIONS, Saunders Golden, Philadelphia,
6. Krauskopf, . K.B., Beise, A., 1991, THE PHYSICAL UNIVERSE, McGRAW-Hill, Inc., New York.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Stancu Viorel, Ph.D.	
Instructor:	Senior Lecturer Stancu Viorel, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PHYSICS 2**

Codul disciplinei	**CE 204**	Semestrul	**3**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	FIZICA I
	Recomandate	ANALIZA MATEMATICĂ ALGEBRA SUPERIOARĂ

Obiective	Physics is a fundamental science. It is a search for an explanation of the behaviour of objects in the universe. The intended scope of the physics course is to lead the students to a thorough understanding of the basic concepts of physics and to help them to comprehend the unfolding of the events in the whole world, to create a world view. Physics is an adventure of knowledge which students should share in
Conţinut (descriptori)	THERMODYNAMICS ELECTROMAGNETIC PHENOMENA OPTICAL PHENOMENA QUANTUM MECHANICS

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.test scris ; sarcini: referat ; condiţii de lucru T pondere 60 %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**60%**
	Evaluarea pe parcurs*)	**Activitatea la laborator T**		**10%**
		Teste pe parcurs [*2*] T		**20%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. VIOREL STANCU	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. VIOREL STANCU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

STRENGTH OF MATERIALS II

1. Course leader: **Assoc professor Mihaela Ibănescu, Ph.D.**
2. Topic characteristics: DID, DI **code: CE205**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	3		2		E	42		28		70

4. Objectives of the topic:

The course gives .

- the methods and procedures for computing the stresses, strains and displacements in linear structural elements subjected to combined states of loading;

- the design of linear structural elements and structures subjected to combined states of loading according to strength and stiffness requirements;

- three- dimensional stress analysis

- buckling analysis for linear structural elements acted by axial and transverse loads;

- inelastic analysis of linear elastic structural elements.

5. Concordance between the objectives of the topic and the objectives of the training plan

The students who become bachelor engineers are able to recognize the combined states of loading of linear structural elements subjected to loads of different types and to design them according to strength, stiffness and stability requirements.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- Identification of combined states of loading
- Assessment of stresses, strains, displacements and strain energy in case of combined states of loading

b. Technical skills and abilities

- To design the structural elements subjected to combined states of loading according to strength and stiffness requirements
- To perform the buckling analysis of structural elements subjected to axial and transverse loads
- To perform the analysis of structural elements subjected to different states of loading in the inelastic range

7. Teaching procedures:

The theoretical aspects (demonstrations, relations, complex figures, experimental tests) are presented by using the projector. Some applications, additional explanations and demonstrations are given by using traditional procedures. The students study the references in the library and they receive supplementary teaching materials from the course leader, by internet. During application classes, they solve by themselves different problems using adequate soft (MathCAD, Matlab).

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: individual (home)works referring to each chapter of the subject and tests during the application classes.

b) means and working conditions for reaching the goal: the students are given the most important examples for all types of problems and the results of works and tests are discussed with each of them in order to clarify the unknown aspects.

c) percentage of the evaluation in the final mark: individual (home)works – 20%; tests – 10%

***Final evaluation*: Exam Examination: Written paper which contains questions referring to the most important engineering problems and relevant applications. Percentage of the final mark**: 60%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Deflections of Elastic Beams. *Generalities. Direct Integration Method. Moment Area Method. Conjugate Beam Method. Step Functions. Mohr-Maxwell Method. Finite Differences Method. Design According to the Stiffness Requirement.*	8
2. Three-Dimensional Stress *Stresses on Inclined Planes. Principal Stresses. Extreme Shear Stresses. Octahedral Stresses. Mohr's Circles.*	3
3. Three-Dimensional Strain *Strains along Different Directions. Principal Strains. Maximum Shear Strain. Octahedral Strains. Mohr's Circle.*	3
4. Failure Theories *Maximum Normal Stress Theory. Maximum Axial Strain Theory. Maximum Shear Stress Theory. The Deviatoric Strain Energy Theory. Mohr's Theory*	4
5. Skew Bending *Generalities. Stresses. Strains. Displacements. Strain Energy. Design Aspects.*	3
6. Eccentric Tension or Compression *Generalities. Stresses. Strains. Displacements. Strain Energy. Central Core. Active Area. Design Aspects.*	6
7. Buckling Analysis *Generalities. Buckling of Axially Loaded Bars in the Elastic and Plastic Range. Lateral Buckling of Beams. Slender Beams Subjected to Combined Compression and Bending.*	9
8. Plastic Analysis *General Considerations and Hypotheses. Plastic Analysis of Axially Loaded Members. Plastic Analysis of Beams. Plastic Analysis of Structural Elements Subjected to Torsion.*	6

Cumulated 42 hrs

9.2. Applications

1	**Design of Compound Steel Beams** Design of Beams Made of Steel Rolled Shapes Connected by Welding.	2
2	**Deflections of Elastic Beams** Evaluation of Deflections and Slopes for Beams by Using Analytical and Numerical Methods.	6
3	**Experimental Evaluation of Deflections and Slopes for Beams.** Laboratory Test for Determining the Deflections and Slopes for a Steel Beam Subjected to Bending.	1
4	**Three-Dimensional Stress** Evaluation of Principal Stresses and Their Directions, of Extreme Shear Stresses and Octahedral Stresses at a Point of a Deformable Loaded Body.	1
5	**Failure Theories** Checking up the Strength Requirement according to Failure Theories for a Structural Element Subjected to a Combined State of Loading.	2
6	**Skew Bending** Design of a Beam according to Strength and Stiffness Requirements.	3
7	**Experimental Analysis Of Stresses in Case of Eccentric Tension** Laboratory Test for the Assessment of Stresses on the Cross-Section of a Steel Beam by Using Strain Gages.	1

8	**Eccentric Compression** Design of a Structural Elements according to the Strength Requirement.	3
9	**Buckling Analysis** Critical Load Evaluation for an Axially Loaded Member. Design of the Member by Using the Buckling Coefficient Method.	3
10	**Slender Beams Subjected to Combined Compression and Bending** Design of a Slender Beam according to Strength, Stiffness and Stability Requirements..	3
11	**Plastic Analysis** Design of an Axially Loaded Member and of a Beam in the Plastic Range.	3

Cumulated .28.hrs

10. References

A. Course

1. Bia C., Ille V., Soare M., (1983), Rezistenţa materialelor şi teoria elasticităţii, EDP, Bucureşti.
2. Buzdugan Gh., (1986), Rezistenţa materialelor, Ed. Academiei, Bucureşti.
3. Diaconu M., (1978), Rezistenţa materialelor, partea I, vol. I, II, I.P. Iaşi.
4. Diaconu M., Gorbănescu D.,(1990), Rezistenţa materialelor, vol.3, 4, I.P. Iaşi.
5. Gorbănescu D., (1992), Rezistenţa materialelor, vol.I, I.P. Iaşi.
6. Ibănescu Mihaela, Ungureanu Nicolae (2003), Strength of Materials. Advanced Topics., Ed. Media-Tech, Iaşi.
7. Murarașu V., (2001), Rezistenţa materialelor, Editura Tehnica-Info, Chişinău.
8. Precupanu D., (1984), Rezistenţa construcţiilor, vol.I, I.P.Iaşi.
9. Precupanu D., (2000), Fundamente de Rezistenţa construcţiilor, Iaşi, Ed. Corson.
10. Ungureanu N., (1979), Rezistenţa materialelor şi teoria elasticităţii, vol.I, I.P. Iaşi**.**
11. Ungureanu N., Vrabie M., (19999), Rezistenţa materialelor, Ed. Gh. Asachi Iaşi.
12 Vlad Missir Ioana, (2002), Strength of Materials. Combined States of Loading, Ed. Tehnica-Info Chişinău.

B. Applications

1. Buzdugan Gh. ş.a., (1991), Rezistenţa materialelor- aplicaţii, Ed. Academiei Române, Bucureşti.
2. Diaconu M., (1979), Probleme de rezistenţa materialelor, partea I-a, I.P. Iaşi.
3. Diaconu M., (1987), Rezistenţa materialelor şi teoria elasticităţii, partea I,II, I.P. Iaşi.
4. Diaconu M. ş.a., (1986), Rezistenţa materialelor şi teoria elasticităţii, Lucrări de laborator *,I.P. Iaşi.
5. Precupanu Dan, Ibănescu Mihaela, (2006), Strength of Materials. Theoretical Synthesis and Engineering Applications, Ed.”Ştef”.
6. Jerca Şt., Ciongradi Camelia, Vlad Ioana, (1992), Rezistenţa materialelor - Culegere de probleme, vol.2, I. P. Iaşi.
7. Posea N., Anghel Al., Manea C., Hotea Gh., (1986), Rezistenţa materialelor - Probleme, Ed. Şt. şi Enciclopedică, Bucureşti.
8. Precupanu D., s.a , (1970), Culegere de probleme de rezistenţa materialelor, I.P. Iaşi.
9. Vlad Ioana, Ciongradi Camelia, Jerca Şt., (1985), Rezistenţa materialelor şi statica construcţiilor, Culegere de probleme, vol.I, I.P. Iaşi.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc. Prof. Mihaela Ibănescu, Ph.H.	
Instructors:	Assoc. Prof. Mihaela Ibănescu, Ph.H.	
	Asist. Ionuţ Toma, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STRENGTH OF MATERIALS II**

Codul disciplinei	**CE205**	Semestrul	**3**	Număr de credite	**6**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Strength of Materials I
	Recomandate	

Obiective	The course gives . - the methods and procedures for computing the stresses, strains and displacements in linear structural elements subjected to combined states of loading; - the design of linear structural elements and structures subjected to combined states of loading according to strength and stiffness requirements; - three- dimensional stress analysis - buckling analysis for linear structural elements acted by axial and transverse loads; - inelastic analysis of linear elastic structural elements.
Conţinut (descriptori)	Deflections of elastic beams Three-dimensional stress. Three-dimensional strain. Failure theories. Skew bending. Eccentric tension or compression. Buckling analysis. Plastic analysis.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. 1. examinare scrisă, sarcini: probleme teoretice şi aplicaţii referitoare la proiectarea elementelor, condiţii de lucru: T			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen – tip T**			**60%**
	Evaluarea pe parcurs*) M	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs	**3**	**10%**
		Lucrări de specialitate, teme de casă	**5**	**20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. MIhaela Ibănescu	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Mihaela Ibănescu Asist. dr. ing. Ionuţ Toma	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENVIRONMENTAL ENGINEERING

1. Course leader: **Senior Lecturer Irina BARAN, Ph.D.**
2. Topic characteristics: DI **code: CE206**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	2		1		E	28		14		42

4. Objectives of the topic:

The objective of course is to introduce the theory and knowledge of pollution sources and the ways to reduce the ecologic problems in the sustainable development context. The course focuses on understanding the best solutions for buildings with low impact on the environment.

5. Concordance between the objectives of the topic and the objectives of the training plan

The class provides a comprehensive education in fundamentals and completes the basic training of the civil engineers to conceive clean technologies.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

1. To identify the pollution sources;
2. To understand the effects of pollution process on the environment;
3. To select the measures to prevent and reduce the risk of contamination the environment.

b. Technical skills and abilities

After completing of this course the students must identify the different types of pollution and choose the optimum solutions to decrease the buildings impact on the environment.

7. Teaching procedures:

The courses are presented in form of lecture using drawings, power point presentations, and video films that emphasize the main problems that humankind is facing today.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: The periodical examination will be individualized and checked by the course leader.

b) means and working conditions for reaching the goal: students are allowed to use the recomended references.

Speciality projects (applications)

The students will assess the impact of a dwelling building on the environment and will propose an improvement solution to decrease this impact.

***Final evaluation*:** **Examination** **Percentage of the final mark**: 60 %

On the final examination students must solve 3 subjects of a written test concerning the course topics.

The course grade will be determined by the students' performance during project work using the following procedures:

- final examination test paper: 60%
- project evaluation: 30%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Introduction *General notions of environment protection and sustainable development*	2
2. Population, resources, environmental degradation and pollution *Human population growth, resources and environmental degradation, types, sources and effects of pollutants, pollution control*	2
3. Energy resources and matter cycling *Energy resources used by humans, increasing energy efficiency, the Earth's life-support system, matter cycling*	2
4. Air pollution *Types and sources of air pollution, industrial and photochemical smog, urban heat islands and acid deposition, effects of air pollution on the ozone layer and global climate, chlorofluorocarbons and ozone layer depletion, increased global warming from the greenhouse effect, air pollution and meteorology, dispersion of pollutants in the atmosphere, effects of air pollution, controlling air pollution*	8
5. Pollution from radioactive substances *Radioactive substances, measuring radiation effects, sources of radiation, the peculiar case of radon gas*	3
6. Water pollution Sources, types and effects of water pollution, water pollution control	1
7. Other forms of pollution Soil pollution, solid waste and hazardous waste	2
8. Noise pollution *Sources and effects of noise pollution*	2
9. Energy sources *Energy, alternative energy resources (solar radiation, wind energy, power from water, power from biomass, hydrogen as a possible replacement for oil), thermal comfort, energy conservation*	2
10. Economics and environment *The built environment and sustainable development, current energy use patterns, life cycle awareness, environmental evaluation of buildings for resource conservation, buildings and energy balances, intelligent buildings*	2
11. Elements of environment law *European politics for environment, Romanian legislation concerning the environment*	2

Cumulated 28 hrs

9.2. Applications

	Name of task and content Assessment of a dwelling building impact on the environment	**Nr. of hrs.**
1.	Project requirement	1
2.	Assessment of thermal characteristics of the building envelope	3
3.	Calculus of the global coefficient of thermal insulation	4
4.	Assessment of thermal energy consumption for heating the inside spaces	4
5.	Assessment of CO_2 for a dwelling building	2

Cumulated 14 hrs

10. References

1. Baran I. – ENVIRONMENTAL ENGINEERING, Ed. "Gheorghe Asachi", Iaşi, 230 pagini, ISBN 973-8292-49-2, 2001
2. M. Vasilache, 1998, - Protéction de l'environnement - Protecţia mediului,Editura Cermi, Iaşi
3. Legea mediului inconjurator
4. Normativ C 107/2005 – Normativ privind calculul termotehnic al elementelor de construcţie ale clădirilor

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Irina Baran, Ph.D.	
Instructors:	Senior Lecturer Irina Baran, Ph.D.	
	Senior Lecturer Daniel Covatariu, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENVIRONMENTAL ENGINEERING**

Codul disciplinei	**CE206**	Semestrul	**3**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Desen tehnic

Obiective	The objective of course is to introduce the theory and knowledge of pollution sources and the ways to reduce the ecologic problems in the sustainable development context. The course focuses on understanding the best solutions for buildings with low impact on the environment.
Conţinut (descriptori)	General notions of environment protection and sustainable development, Population, resources, environmental degradation and pollution, Energy resources and matter cycling, Air pollution, Pollution from radioactive substances, Other forms of pollution, Noise pollution, Energy sources, Economics and environment, Elements of environment law.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**60%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**30%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Sef lucrări dr. ing. Irina BARAN	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Sef lucrări dr. ing. Irina BARAN Sef lucrări dr. ing. Daniel COVATARIU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ECONOMICS AND MARKETIG

1. Course leader: **Professor Rodica BOIER, PH.D.**
2. Topic characteristics: DI **code: CC207**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	2	-	-	-	C	28	-	-	-	28

4. Objectives of the topic:

- Understanding economic and marketing concepts.
- Understanding how to operate economic and marketing methods, techniques and strategies.
- Aquiring abilities to make technical decisions – effectively and efficiently – based on economic and market analysis.
- Fostering the antrepreneurial attitudes of the future civil engineer.

1. Concordance between the objectives of the topic and the objectives of the training plan

Following the established objectives, the topic *Economics and Marketing* will enable the future specialist to acquire specific competences that will help him/her act as a professional civil engineer, as well as design and create commercially successful products. By being acquainted with the customer behaviour and competition reactions, placed against an ever complex, dynamic and globalizing marketing environment, the future civil engineer will be more easily involved in the company's efforts to offer customer value, differentiated on the market by a durable competitive advantage.

2. Learning outcomes expressed in knowledge, technical skills and abilities

Knowledge

- micro- and macro-economics and marketing core concepts;
- relationships between company's resources, customer value and quality , satisfaction and market competitiveness;
- analyzing major challenges facing the civil engineer – markets globalization and fragmentation, the changing terms of competition, impact of IT and technological change etc.;
- describe and use the elements of a customer-driven marketing strategy and the forces that influence it.

Technical skills and abilities

managing company's offer and bulding profitable customer relationships;
dealing with costs, wages, prices, productivity, competitive advantage on the market etc.;
making technical decisions based on economic and markets factors.

Teaching procedures:

- interactive teaching (21 hours)
- case studies (2 hours)
- team works (5 hours)
- home work (5)

Teaching and learning aids:

- *Foundamentals of Economics and Marketing* textbook
- *Foundamentals of Economics and Marketing* Study Guide

- *Foundamentals of Economics and Marketing* PowerPoints
- List of Web ressources for individual study

3. Evaluation system
Stages:

Continuous assesment - 50%

10% of the final mark – interactive class participation
40% of the final mark – assignments (home works)

→ type of imposed assignements **– home works** (HW)
HW 1. Reaching information for economic and market decisions
HW 2. Making cost decisions.
HW 3. Making production decisions.
HW 4. Customer value of the construction offer
HW 5. Making technical decisions based on market information
→ **means and working conditions** for reaching the goal
HW 1. – individual identifying and team work to analyze the most valuable web resources of information for economic and marketing decision in the civil engineering area (*Foundamentals of Economics and Marketing* Textbook; *Economics and Marketing* Study Guide; Marketing Web resources; team work).
HW 2. - Identifying and analyzing the costs involved, choosing the most appropriate ways of cost reducing (*Foundamentals of Economics and Marketing* Textbook; *Economics and Marketing* Study Guide; team work).
HW 3. – Deciding the level of production based on the break-even point analysis (*Foundamentals of Economics and Marketing* Textbook; *Economics and Marketing* Study Guide; team work).
HW 4. – Identifying and analyzing elements of the customer value for a specific construction product. Identifying solutions to gain this way durable competitive advantage for the company's product.
HW 5. – Formulation marketing research objectives, hypothesis and expected results from an civil engineer point of view (*Foundamentals of Economics and Marketing* Textbook; *Economics and Marketing* Study Guide; team work).

Final evaluation – **written examination** – **40 %** of the final mark

1. **Knowlege test** – Developing a theoretical subject asking students to explain a concept using economic and marketing knowledges acquired –; research resources acces available; mixed* – **20%**;
2. **Technical skills and abilities test** – Solving a technical/technological situation wich asks for information identification, analysis and understanding, and decision-making based on economic and marketing knowledges –, research resources acces available; mixed* – **50%**;
3. **Antrepreneurial attitude test** – the subject asks student to comment a schallenging aspect descovered during the study of the discipline *Economics and Marketing* –; research resources acces available; mixed * – **20%**

* **Mixt** = a combination of traditional and computerized teaching / learning approaches.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Market economy; why *Economics and Marketing* for civil engineers Understanding the marketplace and customer needs ▪ Designing a customer-driven marketing strategy ▪ Bulding customer relationships ▪ Capturing value from customers ▪ The changing marketing landscape ▪ The global marketplace ▪ Marketing ethics and social responsability The company's microenvironment ▪ The company's macroenvironment ▪ Responding to the marketing environments	2

2. Strategic planning and marketing planning Companywide strategic planning ▪ GE Model of portfolio analysis ▪ Marketing planning ▪ Marketing strategy and marketing mix ▪ Managing the marketing effort ▪	2
3. Managing marketing information to gain customers insights Marketing information and customers insights ▪ Assessing marketing information needs ▪ Developing marketing information ▪ Marketing research ▪ Analyzing and using marketing information	2
4. Customer behaviour in consumer and organizational markets Consumer markets and consumer buyer behavior ▪ Business markets and business buyer behaviour	2
5. Customer-driven marketing strategy Market segmentation ▪ Market targeting ▪ Differentiation and positioning	2
6. Product strategies; design and marketing of new products What is a product ▪ Product and service decisions ▪ Branding strategy ▪ Services marketing	2
7. New product development and product life-cycle strategies New product development strategy ▪ The new product development process ▪ Managing the new product development ▪ Produ ct life-cycle strategies	2
8. Fundamentals of microeconomics – resources and revenues Production factors; production costs; ways of reducing production costs ▪ Revenue of production factors – wage; profit; interest, the interest rate ▪ Company's profitability; ways to increase company's profitability	2
9. Fundamentals of microeconomics – raising the economic efficiency Factors' productivity; ways to increase labour productivity; investments and investments' efficiency; product quality; total quality management	2
10. Fundamentals of macroeconomics Demand factors and demand elasticity; supply, factors and supply elasticity; specific decisions Market equilibrium; market dis-equilibriums – inflation and unemployment	2
11. Price strategies Factors to consider when setting prices ▪ New-product pricing strategies ▪ Product mix pricing strategies ▪ Price-adjustement strategies ▪ Price change ▪ Public policy and pricing	2
12. Placement strategies Supply chaines and the value delivery network ▪ Channel management decisions ▪ Marketing logistics and supply chain management ▪ Retailing and wholesaling	2
13. Promotion strategies – Integrated marketing communication The promotion mix ▪ Integrated marketing communications ▪ Advertising ▪ Public relations ▪ Personal Selling ▪ Managing sales force ▪ The personal selling process ▪ Sales promotion ▪ Direct Marketing ▪ Online Marketing	2
14. Marketing ethics and social responsibility Social criticisms of marketing ▪ Citizen and public action to regulate marketing ▪ Business action toward socially responsable marketing	2

Cumulated 28 hrs

10. References

1. Armstrong, Gary, Philip Kotler (2009), *Marketing. An Introduction*, 9th Edition, Pearson Education International, Upper Saddle River, New Jersey.
2. Boier, Rodica (2008), *Fundamentals of Marketing*, Suport de curs (format electronic).
3. Boier, Rodica (2001), *Fundamentals of Economics*, Sedcom Libris, Iaşi.
4. Kotler, Philip, Kevin Keller (2008), *Marketing Management*, 13th Edition, Prentice Hall.
5. Newman, Donald G., Ted G. Eschenbach, Jerome P. Lavelle (2008), *Engineering Economic Analysis*, 10th Edition, Oxford University Press.
6. Schiller, Bradley R. (2008), *Essentials of Economics*, 7th Edition, McGraw-Hill/Irwin.

Date: 25.03.2009

Professor Rodica Boier, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ECONOMY**

Codul disciplinei	**CE207**	Semestrul	**3**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	28	-	-	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Nu există cerinţe specifice
	Recomandate	Nu există cerinţe specifice

Obiective	▪ Understanding economic and marketing concepts. ▪ Understanding how to operate economic and marketing methods, techniques and strategies. ▪ Aquiring abilities to make technical decisions – effectively and efficiently – based on economic and market analysis. ▪ Fostering the antrepreneurial attitudes of the future civil engineer.
Conţinut (descriptori)	1. Market economy; why economics and marketing for civil engineers 2. Company and marketing strategy; analysing marketing environment 3. Strategic planning and marketing planning 4. Marketing information system; marketing research; managing marketing information to gain customers insights 5. Customer behaviour in consumer and organizational markets 6. Building a marketing strategy – segmentation; targeting; and strategic positioning on the market 7. Product strategies; design and marketing of new products 8. Fundamentals of pricing – production factors; technical capital; production costs 9. Revenue of production factors: wage; profit; interest 10. Economic efficiency – productivity; Investments; product quality 11. Demand; supply; elasticity; market equilibrium; market dis-equilibriums – inflation and unemployment 12. Price strategies 13. Placement strategies 14. Integrated marketing communication

Sistemul de evaluare:		
Evaluarea finală	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)	**C**
	Probele evaluării 1. Test de cunoştinţe – tratarea unui subiect teoretic prin care studenţilor li se solicită explicarea unui concept combinând aspecte economice cu cele de marketing (acces la bibliografie disponibil, mixt *) – 20% 2. Test de abilităţi – rezolvarea unei situaţii de ordin tehnic, ce solicită identificare informaţii economice şi de marketing, analiza şi înţelegerea acestora, şi luarea deciziei (acces la informaţie disponibil, mixt*) – 60% 3. Test de atitudine antreprenorială – se solicită studenţilor să comenteze un aspect de interes particular descoperit pe parcursul studiului disciplinei Economie şi Marketing (acces la informaţie disponibil, mixt*) – 20%	

Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu – M**			**40%**
	Evaluarea pe parcurs*)	**Participare interactivă la curs**		**20%**
		Teste pe parcurs [*număr)*		**-**
		Teme de casă [5] – M		**30%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof. dr. ec. Rodica Boier	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENGLISH LANGUAGE 3

1. Course leader: **Senior Lecturer TUDOR Florin Mircea, Ph.D.**
2. Topic characteristics: DI **code: CE208**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3		1			VP		14			14

4. Objectives of the topic:

The course estimates the knowledge level of English acquired during the first academic year, the revision of the essential grammar structures, the developing of the translation and writing abilities in what the civil engineering texts are concerned

5. Concordance between the objectives of the topic and the objectives of the training plan
The objectives of the topic are in agreement with the training plan

6. Learning outcomes expressed in knowledge, technical skills and abilities
c. Knowledge
The student must translate from English into Romanian an easy technical text without a dictionary and a difficult one with a dictionary. He must also translate a text from Romanian into English with a dictionary
b. Technical skills and abilities
The student must have a rather good grasp of some of the technical English terms used in civil engineering.

7. Teaching procedures:
Practical applications concerning civil engineering English texts. The applications are done individually and in groups of 2 – 4 students.

8. Evaluation system:
Seminar: individual evaluation depending on the quality of the oral exercises and of the practical applications: 20%
Tests: 2 tests per semester : evaluation: 20%
Homeworks: 2 homeworks: evaluation: 20%
Final semester examination: practical application with or without a dictionary: evaluation: 60%

Stages:

Continuous assessment

a) type of imposed assignments: 2 homeworks, 2 test papers per semester : 40% (20% + 20%)
b) means and working conditions for reaching the goal: books, dictionaries
c) percentage of the evaluation in the final mark

Speciality projects(applications)

***Final evaluation*:** **VP** **Percentage of the final mark**: 30%

9. Content of the subject:

9.2. Applications

1	London Buildings. Revision of Main Tenses (1)	2
2	Washington and New York Buildings. Revision of Main Tenses (2)	2
3	Civil Engineering (I). Revision of Main Tenses (3)	2
4	Civil Engineering (II)	2
5	Structural Materials. Steel, Concrete, Composites	2
6	Test Paper	2
7	Transportation Systems	2

Cumulated 14 hrs

10. References

- Allen, J. P. B., Widdowson, H.G, English in Physical Science, London, 1974
- Close R. A., The English We Use for Science, London, 1975
- Ewer, J. R., Latorre G., A Course in Basic Scientific English, London, 1976
- Hall, Eugene J., The Language of Civil Engineering in English, Englewood Cliffs, 1977
- Koch, Paul, Engineering: Civil and Mechanical Engineering, New York, London, 1984

Date: 25.03.2009

	Name and surname	**Signatures:**
Instructor:	Senior Lecturer Tudor Florin Mircea, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENGLISH LANGUAGE 3**

Codul disciplinei	**CE208**	Semestrul	**3**	Număr de credite	**1**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul I**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	14		14		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Limba engleză în anul I de facultate
	Recomandate	

Obiective	The course estimates the knowledge level of English acquired during the first academic year, the revision of the essential grammar structures, the developing of the translation and writing abilities in what the civil engineering texts are concerned
Conţinut (descriptori)	London Buildings. Revision of Main Tenses (1) Washington and New York Buildings. Revision of Main Tenses (2) Civil Engineering (I). Revision of Main Tenses (3) Civil Engineering (II) Structural Materials. Steel, Concrete, Composites Test Paper Transportation Systems

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		20 %
		Teste pe parcurs [*număr)* 2		20 %
		Lucrări de specialitate, teme de casă [*număr***]** 2		20 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lect.dr. Florin Mircea TUDOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
PHYSICAL TRAINING 3

1. Course leaders: **Senior Lecturer BORDEA CONSTANTIN, Ph.D.**
Assoc.Lecturer PARASCHIV PETRONELA

2. Topic characteristics: DI code: CE209

3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	TOTAL
3			1		VP			14		14

4. Objectives of the topic:
a) Strengthening of health and the harmonious development of the body
b) Improvement of basic movement qualities
c) Learning and consolidation of some basic procedures and elements in athletics, gymnastics, games, fitness, their appliance in bilateral games or individual activities
d) Learning of some basic notions of rules in carrying on a sports competition
e) Creations of habituation in respecting sports hygiene norms and learning of schematic physical exercise with daily and weekly schedule

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum):
Physical education and sports come to fulfill the learning plan of this engineering profile, contributing at the more useful scheduling of leisure, in the creation of premises for approaching professional qualities in good health conditions and with increased working strength. It is a mobilizing factor especially for team work.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
Theoretical and practical knowledge required to develop activities at the respective course.
b. Technical skills and abilities
- To identify the structural and functional purpose of physical exercise, basic mean in physical education;
- To identify the proper means of developing physical activity;
- To know the meaning of specialty documents in organizing the learning process
- To individualize the physical effort based on particularities, options and preferences;
- To identify actions and to dose the physical means used depending on the team
- To adapt the possessed materials to the student groups and working methodology.

7. Teaching procedures:
- Repeated actions in different conditions based on pace, strength and complexity of the movements;
- Individual practicing of different exercises, their application in team play;
- Individualizing of physical effort and work based on options and preferences with owned materials

8. Evaluation system:
Stages:
Continuous assessment:
d) type of imposed assignments: participating in non-representative teams activity in sport types or in performance sport;

e) means of working conditions for reaching the goal: sports hall, the used didactic materials are from the basic equipment(barbells, fitness devices, materials for games)
f) percentage of evaluation in the final mark.

Specialty projects (applications)

Final evaluation(T): preliminary examination
-knowledge accumulated during the scholar year by comparative tasks, tests: **percentage 50%**
-grading the regular and active participation in practical assignments, representative teams in sport branches or in performance sports: **percentage 40%**

9. Content of the subject:
9.2. Applications:

Name of task and content
1)Athletics • running elements • jumping and standing start technique • middle-distance running • jogging **2) Basic, aerobics and artistic gymnastics** • front and formation exercises, walking and running variety, simple ground exercises • game exercises and dynamic simple elements from acrobatic gymnastics(rollovers, rolling etc.) • combined course paths with equilibrium elements, climbing, transport • classic, modern and traditional dancing steps on the appropriate music 3) Sport games: basketball, handball, football, volleyball, badminton. • Basic positions, pacing and field crossing • Easy hits, serves, first-touch exercises, still and motion grabbing and passing of the ball • Elementary technique action finishing exercises, marking exercising • Global participation in games on small and normal fields with different purposes 4) improvement of basic motion qualities and specific to some sport branches, by using some fitness, athletics and body-building • Strength and muscular mass improvement by proper use of weights and barbells • Shape adjusting exercises and turning fat into active tissue • Improvement of speed characteristics(reaction, repeating, movement, execution) by specific exercises • Increasing mobility and fitness at different levels • Increasing stamina

Total 14 hours

10. References

1. Ionescu, A., V., -Exercitiul fizic in slujba sanatatii, Stadion publisher, Buc, 1971.
2. Ulmeanu, Constantin, -Notiuni de fiziologie cu aplicatii la exercitiile fizice, UCFS publisher, Buc, 1966.
3. Dragnea, A., Bota, Aura, -Teoria activitatii motrice, Editura Didactica si Pedagogica publisher, R.A., Buc., 1999.
4.Teodorescu, Leon.- Terminologia educatiei fizice si sportului, Stadion publisher, Buc., 1973.

Date: 25.03.2009

	Name and surname	**Signatures:**
Instructors:	Senior Lecturer BORDEA CONSTANTIN, Ph.D. Assoc. Lecturer PARASCHIV PETRONELA	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PHYSICAL TRAINING 3**

Codul disciplinei	**CE209**	Semestrul	**3**	Număr de credite	**1**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28			14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	Mărirea capacităţii de efort fizic şi intelectual Îmbunătăţirea capacităţii motrice de bază Stimularea practicării independente a exerciţiului fizic Învăţarea unor noţiuni de bază legate de regulamentele de desfăşurare a competiţiilor sportive
Conţinut (descriptori)	To identify the structural and functional purpose of physical exercise, basic mean in physical education; To identify the proper means of developing physical activity; To know the meaning of specialty documents in organizing the learning process To individualize the physical effort based on particularities, options and preferences; To identify actions and to dose the physical means used depending on the team To adapt the possessed materials to the student groups and working methodology.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări T**		**50%**
		Teste pe parcurs (numar) **T**		**40%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titulari disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. Constantin Bordea Prep. drd.. Petronela Paraschiv	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

STATICS OF CONSTRUCTIONS 2

1. Course leader: **Senior Lecturer Anca Mihaela COSTIN, PhD.**
2. Topic characteristics: DI **code: CE210**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	3		2		E	42		28		70

4. Objectives of the topic:
The learning and use of the principles and computational methods of the efforts for the hyperstatic structures subjected to static loads using the Slope-Deflection Method.
Forming the student skills concerning the computer aided structural programs for several purposes: finding aut the reactions, efforts and displacements produced by static fixed actions. The achievement of the basic knowledge for the structural stability analysis. The fundamentals of the post-elastic calculus.

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum)

The students will accumulate a volume of theoretical and practical knowledge in the fiecld of structural mechanics of buildings, that is compulsory for the comprehension and study of the other computational subjects (Numerical Methods, Structural Dynamics, Computer Aided Structural Design, Earthquake Engineering) and civil specializations (Timber Structures, RC Structures, Steel Structures, Industrial Buildings);
The develpoment of the engineering way of thinking and computation, the abbilities for analysis and synthesis, the qualitative and quantitative interpretation of the results.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The student will learn the Slope-Deflection Method (fundamental, in the analytical form, classical, and the new one in the matrix format, adaptable to the computers) for the solution of the hyperstatic structures.

There will be acquired knowledges regarding the structural overall stability computation, also the basis of the modelling process that depicts the non-linear structural behavior (2D structures and pushover analysis).

One will apprentice the way of working with several computer programs, the static and quasi-static load modelling; the philosophy of the computer aided structural design software.

b. Technical skills and abilities

The learning of certain computer programs dedicated to the design of the building structures; these programs will be used for the projects developed at the specific topics from the following years, in the framework of the continous training stage and finishing with the licence project;

The achievement of some modelling mechanisms of the structural systems and the interpretation of the results obtaind using the computer;

The use of the computational methods specific to the studied structures;

The achievement of certain design background.

7. Teaching procedures:

The lecture presentation is carried on by the means of several procedures, firstly computer programs for the structure analysis shall be used; direct presentations on the video projector shall be performed; significant case-studies shall be emphazised by the means of multimedia presentations (PC + video projector), ppt slideshows; in certain circumstances the classical methods shall be used (direct verbal presentations and the use of the blackboard). The connections with the engineering topics shall be carried on. By taking into account the students feedback, some chapters may be deeply explained, by the means of discussions and supplemetary explanations.

The reference resources can be accessed by several ways: distributed model files, student's own annotations, lending books directly from the Faculty library and the TU library, edited and printed chapters, downloading from the professor internet site, CDs with manuals in the electronic format.

The students must realize 3 laboratory assignements during the 4th semester. These personal works have individual subject and contain problems and case-studies from the topics presented during the lectures. The students are encouraged to work alone as well as in teams. During the laboratory classes there are granted explanations and guidelines, following the questions arized.

The students are granted with the access to the computer stations inside the 5 computer rooms. The computers have installed the CAD structural programs. Several kinds of structures are modelled, the tutor use the multimedia systems (PC + video proiector + audio HI-FI system). Some specialized software for which there are available educational licences (i.e. Matlab, Mathcad) are used for the solution of some engineering problems.

8. Evaluation system:

Continuous assesment

1. Laboratory Works:

The students will accomplish 3 practical works with similar topics but individual design values and personal data. The practical works will be solved during the laboratory works and some components should be solved as individual preparation assignements. The delivery of the all the personal assignements represents the necessary condition for the admission of each student to the exam for the final evaluation.

The students may use the Faculty computer network and the dedicated software inside the computer labs of the Faculty of Civil Engineering and Building Services.

2. Intermediate testing: Percentage of the final mark: 30%

The students will attend 3 announced verification tests during the semester. Each test will be ranked from 1 to 10 and will participate with 10% to the final rank.

***Final evaluation*: Exam. Percentage of the final mark: 60 %**

The exam for the final evaluation consists of a written paper on the basis of an individual ticket; the ticket contains problems from each studied chapter. The students are allowed to use the pocket calculators for the necessary calculations.

The students receive at the first lecture about the information regarding the subject requirements, the methods and the evaluation program.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. The Slope-Deflection Method The degree of kynematic-elastic redundancy; basic system and unknowns; stiffness and load characteristics; the analytical form of the Slope-Deflection Method in case of 2D frames composed of linear elements subjected to constant forces; the Slope –Deflection Method, the moment transmission and redistribution approach; the calculus of the fixed end moments in the case of the base settlements action and uniform temperature variation. Case-studies.	9

2. The Matrix Approach for the Solution of the Plane Frames The Slope-Deflection Method in the matrix format; general principles. The element stiffness matrices. General (UCS) and local (LCS) coordinate systems. Geometrical matrices, rotational matrices. The assemblage of the structure stiffness matrix in general coordinates. The assemblage of the external load vector. The algebraic solution of the equation system derived in the method: the displacement vector, the local strain vectors and the force vectors at the bar ends. Examples. Case-studies.	6
3. Structural Modelling The modelling criteria applied for plane structures made of linear beams, shear walls and dual systems frames – shear walls. Examples.	3
4. The Computation of the Efforts and Displacements Due to the Static Loads – Computer Aided Structural Design The presentation of several computer programs dedicated to the plane structures and the way of working with them. Computational Examples.	12
5. The Analysis of the Structural Stabillity and the Second Order Effects. Plane Structures The stable and unstable equillibrium; geometrical liniarity and non- linearity; Differential relationships between efforts and loads in the 2nd order calculus; The computation of the elastic displacements; The use of the Forces Method for the Stabillity Calculus and the 2nd order structural analysis. Examples.	6
6. Elements of the Structural Postelastic Analysis The general hypothesis used in the post-elastic analysis; Non- linear material models; Adaptation over the cross-section; Collapse mechanisms; Pushover analysis; Means of control; Structural behavior factor. Case-studies.	6

Cumulated: 42 hrs

9.2. Applications

	Chapter	**Nr. of hrs.**
1	The Computation of the Internal Forces State for the Hyperstatic Frame by the Means of the Slope-Deflection Method – the Analytical Form	4
2	The Computation of the Internal Forces State for the Hyperstatic Frame by the Means of the Slope-Deflection Method – the Iterative Approach	2
3	The Computation of the Effort State and the Deflections for Plane (2D) Structures by the Means of Computer Software	22

Cumulated: 28 hrs

10. References

1.Amariei C, Statica Construcţiilor, Structuri static nedeterminate, Rotaprint I.P.Iaşi, 1981.
2.Amariei C., Dumitraş Al., Elemente de analiză matriceală a structurilor, Ed. Soc. Acad. „Matei Teiu Botez", Iaşi, 2003.
3. Dumitraş Al., Amariei C., Hobjilă V., Florea V., Statica construcţiilor, Teorie şi aplicaţii, Structuri static nedeterminate, Vol. 1 şi 2 , Ed. PIM, Iaşi, 2004.
4. Ciongradi I., Missir I., Utilizarea calculatoarelor la proiectarea structurilor, vol. 1, Rotaprint I.P. Iaşi, 1975.
5. Ciongradi I., Amariei C., Budescu M., Schärf F., Atanasiu G., Păuleţ F., Jerca Şt., Programe de calcul în mecanica construcţiilor, Rotaprint I.P. Iaşi, 1990.
6. Gheorghiu Al., Concepţii moderne în calculul structurilor, Ed. Tehnică, Bucureşti, 1975.
6. Ivan M., Vulpe A., Bănuţ V., Statica, stabilitatea şi dinamica construcţiilor, E.D.P., Bucureşti, 1982.
7. Jerca Şt., Schärf F., Mecanica construcţiilor 3, Statica, Rotaprint, I.P.Iaşi, 1979.
8. Roşca O., Ciongradi I., Metode numerice utilizate în programele de calcul automat al structurilor, Ed. Soc. Acad. "Matei-Teiu Botez", Iaşi, 2003.

Date: 25.03.2009

		Name and surname	**Signatures:**
Course leader	:	Senior Lect. Anca Mihaela COSTIN, Ph.D.	
Instructor:		Senior Lect. Anca Mihaela COSTIN, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STATICS OF CONSTRUCTIONS 2**

Codul disciplinei	**CE210**	Semestrul	**4**	Număr de credite	**6**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Statica construcţiilor 1
	Recomandate	Rezistenţa materialelor 1, Rezistenţa materialelor 2.

Obiective	Însuşirea şi utilizarea principiilor şi metodelor de calcul al eforturilor la structuri static nedeterminate solicitate la acţiuni statice fixe prin metoda deplasărilor. Deprinderea studenţilor cu modul de lucru cu programe de calcul automat al structurilor plane în vederea determinării reacţiunilor, eforturilor şi a deplasărilor produse de acţiuni statice fixe. Însuşirea cunoştinţelor de bază pentru calculul la stabilitate al structurilor. Dobândirea noţiunilor fundamentale privind calculul din domeniul post- elastic.
Conţinut (descriptori)	Metoda deplasărilor (metodă fundamentală, în formularea analitică, clasică şi în cea modernă, matriceală, adaptabilă pentru calculul automat) pentru rezolvarea structurilor static nedeterminate. Calculul la stabilitate generală a structurilor Modelarea comportării neliniare a structurilor plane şi elemente de calcul biografic. Deprinderea modul de lucru cu mai multe programe de calcul automat.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. Probă scrisă individuală pe bază de bilet; tipul evaluării: T şi discuţii pe baza modului de rezolvare a subiectelor; pondere: 100%;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**60%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**0%**
		Teste pe parcurs [3-M]		**30%**
		Lucrări de specialitate, teme de casă [*număr***]**		**0%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Şef lucrări dr.ing. Anca Mihaela COSTIN	Semnătura

Titularul aplicaţiilor	Şef lucrări dr.ing. Anca Mihaela COSTIN	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
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Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

THEORY OF ELASTICITY AND PLASTICITY

1. Course leader: **Assoc. Prof. Mihaela IBĂNESCU, Ph.D.**
2. Topic characteristics: DI **code: CE211**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	2		1		E	28		14		42

4. Objectives of the topic:

The course gives .

- *methods and procedures for the assessment of stresses and strains in continuous deformable bodies subjected to different loads, in the elastic and inelastic range;*
- *design of two and three – dimensional structural elements in the elastic and inelastic range, according to strength, stiffness and stability requirements.*

5. Concordance between the objectives of the topic and the objectives of the training plan

The subject offers to bachelor engineers the possibility of computing the stresses and strains in all types of structural elements than the linear ones, that is, the possibility of designing them in the elastic and inelastic range.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- Identification of the main types of structural elements and their states of loading;
- Approach of elasticity problems in Cartesian and polar coordinates;
- Different methods for solving the plane elasticity problems (in terms of stresses or strains).

b. Technical skills and abilities

- Methods and procedures for the assessment of internal forces and moments, stresses and strains in different types of structural elements;
- Design of deep beams;
- Design of rectangular and circular thin plates in the elastic and inelastic range;
- Design of disks and tubes with thick walls
- Stability analysis for plates compressed along one or two directions.

7. Teaching procedures:

The theoretical aspects (demonstrations, relations, complex figures, experimental tests) are presented by using the projector. Some applications, additional explanations and demonstrations are given by using traditional procedures. The students study the references in the library and they receive supplementary teaching materials from the course leader, by internet. During application classes, they solve by themselves different problems using adequate soft

8. Evaluation system:

Stages:

Continuous assessment

- type of imposed assignments: individual (home)works referring to each chapter of the subject and tests during the application classes
- means and working conditions for reaching the goal: the students are given the most important

examples for all types of problems and the results of works and tests are discussed with each of them in order to clarify the unknown aspects.

- percentage of the evaluation in the final mark: individual (home)works – 20%; tests – 10%

***Final evaluation*: Exam Examination : Written paper which contains questions referring to the most important engineering problems and relevant applications Percentage of the final mark**:60 %

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1 Basic Concepts Theory of Elasticity Aim. Equilibrium Problem in Theory of Elasticity. Theory of Elasticity Hypotheses. Three-Dimensional Elasticity. Plane Elasticity.	1
2 Plane Elasticity in Cartesian Coordinates Equilibrium Equations. Geometric Equations. Constitutive Law of the Material. Continuity Equations. Solution of Plane Elasticity Problem.	2
3 Solution of Plane Elasticity Problem in Terms of Stresses Plane Stress Equations. Plane Strain Equations. Plane Elasticity Equation. Existence and Uniqueness of Plane Elasticity Problem Expressed in Terms of Stresses. Mechanical Interpretation of Stress Function.	2
4 Solution of Plane Elasticity Problem in Terms of Strains Lame's Differential Equations for the General Case. Particular Cases. Existence and Uniqueness of Plane Elasticity Problem Expressed in Terms of Displacements. Boundary Conditions. Stages of Solving the Problem in Terms of Displacements.	2
5 Methods for Solving the Plane Elasticity Problem Analytical Methods. Indirect Method. Direct Method. Algebraic Polynomial Method. Fourier's Series Method.	1
6 Plane Elasticity in Polar Coordinates Equilibrium Equations. Geometric Equations. Constitutive Law of the Material. Plane Elasticity Equation. Stress Function. Symmetrical Plane Stress with Respect to the Pole.	2
7 Disks and Tubes with Thick Walls Stress State. Disks and Tubes Loaded by an Inner Pressure. Disks and Tubes Loaded by an Outer Pressure. Closed Tubes. Displacements. Disks Subjected to Radial Tension. Infinite Elastic Plane with a Circular Hole Subjected to Radial Compression on the Contour.	2
8 Semi Infinite Wedge Wedge Loaded by a Longitudinal Force. Wedge Loaded by a Transverse Force.	1
9 Elastic Semi Plane and Semi Space Elastic Semi Plane Loaded by a Normal Force. Elastic Semi Plane Loaded by a System of Normal Forces. Elastic Semi Plane Loaded by a Continuously Distributed Normal Force. Elastic Semi Space Loaded by a Normal Force.	3
10 Thin Plates Generalities. Hypotheses. Displacements, Deformations and Stresses. Internal Forces. Equivalence Relations. Stresses. Differential Relations between Loads and Internal Forces. Differential Equation of Plates. Support Conditions. Cylindrical Bending of Plates. Methods for Solving Plates (Fourier's Method, Finite Differences Method, Deflection Equivalence Method. Circular Plates. Plate Stability.	8
11 Elements of Theory of Plasticity Virtual Work Principal in Ultimate Load Evaluation. Bending of Rectangular Plates in the Inelastic Range. Bending of Circular and Annular Plates in the Inelastic Range.	4

Cumulated 28 hrs

9.2. Applications

1	**Plane Elasticity Problem Solved in Terms of Stresses** Analysis of a Two-Dimensional Structural Element which Works in Plane Stress by Using the Finite Differences Method and the Analytical Method, provided by Strength of Materials.	2

2	**Plane Elasticity Problem Solved in Terms of Displacements** Analysis of a Two-Dimensional Structural Element by Using the Finite Differences Method, when the Boundary Conditions are Expressed in Terms of Displacements.	2
3	**Elasticity In Polar Coordinates** Design of Tubes with Thick Walls Subjected to Inner and Outer Pressures	2
4	**Thin Plates** Design of Rectangular Plates Subjected to Cylindrical Bending. Design of Rectangular Plates by Using the Deflection Equivalence Method. Design of Circular Plates.	6
5	**Inelastic Analysis of a Thin Plate** Ultimate Load Assessment In Case of Simply Supported Rectangular Plates. Analysis of Stresses and Strains in a Circular Plate.	2

Cumulated 14 hrs

10. References

1. Bia C., Ille V., Soare M., (1983), Rezistenţa materialelor şi teoria elasticităţii, EDP, Bucureşti.
2. Caracostea, A., (1977), Rezistenţa materialelor şi teoria elasticităţii, Secţiunea III, Manual pentru calculul construcţiilor, vol. I, Editura Tehnica Bucureşti.
3. Diaconu M., (1999), Teoria aplicată a elasticităţii liniare, vol. 1, 2, 3, Editura CERMI, Iaşi.
4. Marţian, I., (1999), Teoria elasticităţii şi plasticităţii pentru constructori, Universitatea Tehnică din Cluj-Napoca, Facultatea de Construcţii.
5. Mazilu P., Ţopa N., Ieremia M., (1986), Aplicarea teoriei elasticităţii şi a plăcilor în calculul construcţiilor, Editura Tehnică, Bucureşti.
6. Precupanu, D., (1982), Teoria elasticităţii, Institutul Politehnic Iaşi.
7. Teodorescu, P.P., Ille, V., (1976, 1979, 1980), Teoria elasticităţii şi introducere în mecanica solidelor deformabile, Vol. I, II, III, Editura Dacia, Cluj-Napoca.
8. Teodorescu, P.P., (1996), Probleme plane în teoria elasticităţii, Vol. I, II, Editura Academie RPR, Bucureşti.
9. Ungureanu N., (1988), Rezistenţa materialelor şi teoria elasticităţii, vol II, I.P. Iaşi.
10. Vlad Ioana Anca, (2005), The Plane Elasticity, Ed. „Matei Teiu Botez", Iaşi.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc. Prof. Mihaela Ibănescu, Ph.D	
Instructors:	Assoc. Prof. Mihaela Ibănescu, Ph.D Lecturer Ionuţ Toma, Ph.D. Eng.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**THEORY OF ELASTICITY AND PLASTICITY**

Codul disciplinei	**CE211**	Semestrul	**4**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	DID
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Strength of Materials
	Recomandate	

Obiective	*- identificarea tipurilor de elemente structurale plane şi spaţiale în funcţie de starea de solicitare;* *- utilizarea metodelor de calcul specifice pentru dimensionarea elementelor structurale plane şi spaţiale aflate în diverse stări de solicitare, conform condiţiilor de rezistenţă şi rigiditate.*
Conţinut (descriptori)	1 Plane elasicity in Cartesian coordinates. 2. Solution of plane elasticity problems in terms of stresses and strains. 3. Methods for solving the plane elasticity problems. 4. Plane elasticity in polar coordinates. 5. Disks and tubes with thick walls. 5. Semi infinte wedge. 6. Elastic semi plane and semi space. 7. Thin plates. 8. Elements of theory of elasticity.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. examinare scrisă, sarcini: probleme teoretice şi aplicaţii referitoare la proiectarea elementelor, condiţii de lucru: T			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen – tip T**			**60%**
	Evaluarea pe parcurs*) M	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs	**3**	**10%**
		Lucrări de specialitate, teme de casă	**5**	**20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. MIhaela Ibănescu	

Titularul aplicaţiilor	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Mihaela Ibănescu Asist.dr. ing. Ionuţ Toma	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

REINFORCED CONCRETE

1. Course leader: **Assoc.prof. Marinela BĂRBUŢĂ, PH.D.**
2. Topic characteristics: DI **code: CE212**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	2		1		E	28		14		42

4. Objectives of the topic:

The course gives the necessary data for understanding and to look into the physic and mechanical properties of concrete and steel also for knowledge of behaviour particularities under loading for structural elements (beams, slabs, columns, ties)

5. Concordance between the objectives of the topic and the objectives of the training plan

Reinforced concrete is preceded by Building Materials, Fhysics, Chemie among them existing a complete concordance

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- to know the properties of materials used for preparing concrete;
- to understand the particular behavior of both materials concrete-steel that realiye the structural elements under simple and composed loadings (axial force plus bending, torsion).
- to know the physical models for real behavior of concrete and steel and for the associated materials base on the bond between them

b. Technical skills and abilities

- to identify the efficient using domain of different types of concrete
- to do and coordinate laboratory works that are specific to ordinary and special concretes (mechanical tests, permeability, gelivity);
- to elaborate and execute experimental study of usual elements of reinforced concrete (columns, beams, ties)

7. Teaching procedures:

-Powerpoint presentation
-video movies for case studies
-visits to construction sites or precast-factories
-goups of working in the class for specific themes.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: *laboratory works*
b) means and working conditions for reaching the goal:
- preparing the theoretical data;
- processing the experimental tests results
c) percentage of the evaluation in the final mark 15%

Speciality projects(applications)
-tests during the semester that represent 10% of the final mark
-the students will present raports with laboratory works that represent 15% of the final mark

***Final evaluation*:** **Examination** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Nr and title Chapter	Nr. of hrs.
I. Introduction	2
II.Particularities of concrete structure	2
III. Mechanical strengths of concrete	5
IV. Concrete deformations	5
V. Steel characteristics	4
VI.Bond between concrete and steel	3
VIIBehavior of reinforced concrete elements under loading: tensioned elements, compressed elements, flexured members,members subjected to axial load plus bending, members subjected to torsion	7

Cumulated 28 hrs

9.2. Applications

	Name of task and content	
1.	Statistical processing of experimental data	2
2.	Concrete strengths	2
3.	Concrete deformations	2
4.	Mechanical properties of reinforcement	4
5.	Cond between concrete and steel	2
6.	Behavior of beam under loading	2

Cumulated 14 hrs

10. References

1.M. Bărbuţă *„Concrete”* Editura CERMI 2004 , 150 pagini, Limba engleză
2.M. Bărbuţă *„Reinforced Concrete”*- Editura CERMI 2004, 190 pagini, Limba engleză
2.M. Bărbuţă *„Reinforced Concrete - Laboratory guide”*- Editura „Matei-Teiu Botez” Iasi 2006, 105 pagini, Limba engleza

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc.prof. Bărbuţă Marinela, Ph.D.	
Instructors:	Assoc.prof. Bărbuţă Marinela, Ph.D. Lecturer Roşca Bogdan	

FIŞA DISCIPLINEI

Denumirea disciplinei	**REINFORCED CONCRETE**

Codul disciplinei	**CE212**	Semestrul	**4**	Numărul de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**42**	**28**		**14**	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionare)**	Chimie, Fizică, Materiale de construcţii, Mecanică teoretică
	Recomandate	Rezistenţa materialelor

Obiective	Obiectivele cursului sunt: • cunoaşterea caracteristicilor fizico-mecanice ale materialelor folosite la realizarea betonului armat; • evaluarea eficienţei tehnico-economice a materialelor şi tehnologiilor de execuţie a betonului armat; • însuşirea procedeelor de încercare in situ şi în laborator a probelor de beton şi a elementelor structurale din b.a.
Conţinut (descriptori)	Caracteristicile esenţiale ale betonului armat, particularităţile betonului şi armăturii folosite la confecţionarea elementelor din beton armat, particularităţile de alcătuire constructivă a grinzilor, plăcilor şi stâlpilor din b.a.

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**E**
	Probele evaluării 1. Subiect nr. 1 ; sarcini: concepţie structurală, proiectare şi soluţii de alcătuire; condiţii de lucru: T ; pondere 30%; 2. Subiect nr. 2 ; sarcini: concepţie structurală, proiectare şi soluţii de alcătuire; condiţii de lucru: T ; pondere 30%; 3. Subiect nr. 3 ; sarcini: concepţie structurală, proiectare şi soluţii de alcătuire; condiţii de lucru: T ; pondere 30%;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen		**T50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**T15%**
		Teste pe parcurs	**10%**
		Lucrări de specialitate (M)	**T15%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf Dr. ing. Marinela BĂRBUŢĂ	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr.ing.Bărbuţă Marinela Asist.ing. Roşca Bogdan	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

BUILDINGS

1. Course leader: professor dr. eng. BROSTEANU Magda
2. Topic characteristics: DI code: CE213
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	L	P		C	S	L	P	Total
4	2			2	E	28			28	56

4. Objectives of the topic:

The lectures are intended to provide the knowledge for the subject of "Basis of Design", Sections of Constructive Structures, and Loads in Constructions, and Structural Masonry, and for the subject of "Notions of Building Physics", Section of Introduction in Heat and Mass Transfer.

The project is intended to perform a class-work and a home-work of "Case-Study and Conclusions from the Summary of Case-Study for a 2-storey Dwelling made by Masonry Cross Walls", concerning of Functional Design, Structure of Elements, and Structural Safety.

5. Concordance between the objectives of the topic and the objectives of the training plan:

There is a suitable concordance between both types of the objectives: to draw a residential dwelling, to identify the structural elements, to identify the actions, to evaluate the loads, to apply design methods specific to structural elements.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge: engineering knowledge
b. Technical skills and abilities: from the theory to the engineering design competence.

7. Teaching procedures:
a. conversational method of teaching, e-presentation, and computer-aided methods
b. a quarter of each lecture contains Q/A and a design example made with the students at the blackboard.

8. Evaluation system:

Stages:

Continuous assessment

a) type of the imposed assignements:
a1) to perform Q/A
a2) to make a home-work / documentation
a3) to pass two written grid tests

b) means and working conditions for reaching the goal:
b1) the students' elective interventions at the blackboard and documentation / home-work added by self-appreciation related to the contents are counted into % of qualification;
b2) two notified grid tests have to be performed by students for the evaluation of their theoretic and practic knowledge during the semester's activity.

c) percentages in the final mark: 40%
c1) test 20%
c2) elective contribution 20%

Speciality project
The students will design a residential dwelling made by structural masonry.
Continuous Assessment of the Project Works is made by drawn, written, and computing tools where four compulsory layouts in the elective e-format in AutoCAD will be drawn in the classroom.
The project will be evaluated function of the quality of drawn and written parts by a time-table.
To pass project works means the entrance condition in the final evaluation.
Percentages in the final mark are 25%.

***Final evaluation*:** E **Examination:** written one **Percentages in the final mark:** 25%
To mention: Theory
a) 1Q of the applied knowledge about
b) 1A, none work means
c) 50%.
To mention: Design
a) A design problem
b) Given input data
c) 50%.
For a prequalification greater than 85%, the students will pass the subject without the final evaluation.

9. Content of the subject:

9.1. Courses

Chapter	No of hours
1 ***Introduction*** 1.1 Objects of Course 1.2 Chalenges Addressed to the Market of Constructions 1.3 Classification of Constructions 1.4 Buildings Essential Requirements	2
2 ***Architectural Engineering of Buildings*** 2.1 Elaboration Stages of a Building 2.2 Real Constructive Structures 2.3 Identifying of Building Elements 2.4 Building Modulating Layout Rules	4
3 ***Notions of building Physics: Introduction in Heat and Mass Transfer*** 3.1 Heat Transfer in Building Components by Conduction, Convection, and Radiation 3.2 Thermal Conductivity of Building Materials 3.3 Thermal Resistance of Building Components; Standard R-values; Overall Coefficient of Heat Transmission; Standard U-values 3.4 Mass Transfer in Building Components by Water Vapour Diffusion; Computation of Surface and Interstitial Condensation Risk	6
4 Basis of Design by LSDM (LRFDM): Loads in Constructions 4.1 Definition; Loads Classification; Characteristic and Design Loads 4.2 Dead Loads; Self-weights for Loadbearing Elements and Partitions 4.3 Variable Loads; Snow Load Evaluation on Constructions; Wind Effects; Temperature Variation; Live Loads; Traffic Loads 4.4 Accidental Loads 4.5 Loads Groupings for Ultimate Limit State and Serviceability Limit State; Buildings Importance Classes 4.6 Representation of Actions; Loads Arrangements on Horizontal and Vertical Members; Patterns 4.7 Assessment of Loads Acting on Elements for Buildings and Bridges 4.8 Design Loading Effects	10

5 ***Basis of Design: Structural Masonry*** 5.1 Definition of Terms Used in Masonry 5.2 State of Stress in Masonry; Masonry Strengths and Stress-strain Properties 5.3 Masonry Design for Compressive Loading; Calculation of Eccentricity; Slenderness Ratio; Vertical Loading; Vertical Load Resistance 5.4 Lateral Loading Approach to Brick Shear Wall Structures (optional) 5.5 Fundamental Terms of Structural Masonry Strengthening	6

Cumulated 28 hours

9.2. Applications: ***Project Works: Case-Study for 2-storey Dwelling made by Masonry Cross-Walls***

Stages	**Name of task** and content	
1	Input Data; Design Theme; Functional Layout	2
2	Drawings; Ground Floor; First Floor; Staircase Elevation; 3 Compulsory Wall Layouts will be made in the classroom	6
3	Envelope Components with/without ETICS System; Details; Thermal Insulation Design; Roofing System on Timber Roof Framing; Thermal Insulation; Cold Roof and/or Warm Roof; Structure, Layout, and Computation	4
4	Structural Components; Details; Unitary Loadings: Timber Support, Cross-Walls, Plates, Staircase, Foundations	4
5	Masonry Walls Design; Computation of Vertical Loading on Walls according to EC1; Static Analysis on Wall Pattern; Calculation of Eccentricity; Selection of Brick and Mortar for inner (outer) wall or a leaf of wall; Slenderness Ratio; Vertical Loading; Vertical Load Resistance; Design for Compressive Loading according to EC6	4
6	(Partial) Basement and Continuous Foundation; Thermal Insulation; Structure, Layout, and Computation	2
7	Front Façade; Technical File in e-format (in AutoCAD); Overall Heat Transfer Coefficient per Volume for a Corner Room	4
8	Conclusions from the Summary of Case-study and Deadline of Performing	2

Cumulated 28 hours

10. References

1. *Broşteanu, M., 1998, Constructions. Philosophy of Design. Bilingual Illustrated Text-Book, Cerni Publishing House, Iasi, ISBN 973 9378 13 7. Broşteanu, M., 1998, Construcţii. Filosofia proiectării. Manual ilustrat român-englez, Editura Cerni, Iaşi, ISBN 973 9378 14 5*
2. *xxx SR EN ISO 6946:1996:1998:2004: Building Components and Building Elements. Thermal Resistance and Thermal Transmittance. Calculation Method*
3. *xxx Program SAINT-GOBAIN ISOVER SCE www.isover.com*
4. *Hendry, A.W., Sinha, B.P., Davies, S.R., 1998, Design of Masonry Structures, E&FN Spon Publishing House, London, ISBN 0 419 21560 3*
5. *xxx EN 1991-2-1:1995: Euro-code 1 -Basis of design and actions on structure, Part.2.1: Actions on structures. Densities, self-weight and imposed loads. SR EN 1991-1-1:2002:2004: Euro-code 1*
6. *xxx EN 1991-2-3:2003: Euro-code 1 -Basis of design and actions on structures, Part 2.3: Snow loads. CR 1-1-3:2005: Cod de proiectare. Evaluarea acţiunii zăpezii asupra construcţiilor, Monitorul Oficial al României nr. 148 bis,16.02.2006*
7. xxx *EN 1996: Euro-code 6 -Design of masonry structures. CR 6:2006: Cod de proiectare pentru structuri din zidărie, Monitorul Oficial al României, Partea 1, anul 174 (XVIII), nr.807 bis / 26 Septembrie 2006*

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Prof. Magda BROŞTEANU, Ph. D.
Instructor: Prof. Magda BROŞTEANU, Ph. D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**BUILDINGS**

Codul disciplinei	**CE213**	Semestrul	**4**	Numărul de credite	**4**

Facultatea	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domeniul	Inginerie Civilă		Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**		56	28			28

Categoria formativă a disciplinei DF – fundamentală, DID – în domeniu, DS – de specialitate, DC – complementară	**DI**
Categoria de opţionalitate a disciplinei DI – impusă, DO –opţională, DL –liber aleasă (facultativă)	**DID**

Discipline anterioare	Obligatorii (condiţionare)	STRENGTH OF MATERIALS
	Recomandate	BUILDING MATERIALS

Obiective	To provide knowledge for the subjects of Basis of Structural Design and Introduction in Building Physics; To relate to Civil Engineering.
Conţinut (descriptori)	Notions of Constructive Structures, Loads in Constructions, and Structural Masonry; Heat-Mass Transfer; Case-Study of 2-storey Dwelling made by masonry cross-walls

Final Assessment:			
Evaluarea finală*	Form (E , C , VP)		**E**
	Examination: 1. Theoretic part; loads 3Q/3A; work means none; weight 50 % 2. Design part; loads Audit problem; work means input data; weight 50 %		
Stabilirea notei finale (procentaje)	Final Evaluation		25%
	Evaluarea pe parcurs*	Project activity (M)	25%
		2 Tests (M)	20%
		Elective Contribution: home work, suplementary doc.	20%
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	**Gradul didactic, titlul, prenume, nume**	Semnătura
	Prof.dr.ing. Magda BROŞTEANU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENGINEERING GEOLOGY

1. Course leader: **Assoc.Prof. ROTARU Ancuţa, Ph.D.**
2. Topic characteristics: DI **code: CE214**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	1		1		C	14		14		28

4. Objectives of the topic:

The course is concerned with the application of geology in engineering practice; it requires a quantitative knowledge of the behaviour of rock, soil and water as building materials and support for the foundations of the engineering structures.

5. Concordance between the objectives of the topic and the objectives of the training plan

The Engineering Geology course aims to introduce civil engineering students to those aspects of Geology which they will most need in practice for the purpose of assuring that the geologic factors affecting the location, design, construction, operation and maintenance of engineering works are recognized and adequately provided for.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- To know the importance of Geology on engineering works and the professional relationships between Geology and engineering.
- To know the influence of Geology on methods of material supply, construction and excavation and the methods of ground improvement.

b. Technical skills and abilities

- To control the geotechnical properties using geological materials and processes.
- To design and to analyze the ground investigations.
- To apply the knowledge of Engineering Geology on design, construction and performance of engineering works, including slopes, foundations, groundwater and waste disposal.

7. Teaching procedures:

- PowerPoint presentations;
- Dissertation, observation, explanation, conversation;
- Videos as case studies documentation;
- In situ tours as case studies documentation;
- Task solving in disscution groups.
- Brainstorming group creativity technique.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: laboratory activity
b) means and working conditions for reaching the goal: the presentation of the results obtained in working groups, tests, speciality homeworks.
c) percentage of the evaluation in the final mark: 40%

Speciality projects (applications)

The students will prepare 4 homeworks based on some imposed topics related to Engineering Geology.

***Final evaluation*:** **Examination:** test,oral **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. What is Engineering Geology? Introduction and terminology. Physical Geology and Historical Geology. The geologic time. The geologic time scale: eras, periods, epochs. The theory of uniformitarianism versus the theory of catastrophism.	2
2. Planetary Geology The Universe. The Milky Way. Our Solar System. The nine planets of the Solar System. The Earth: dimensions, shape, structure. Physical properties of the Earth. The Earth's interior: the crust, the mantle and the core. The Earth's movements.	1
3. The Earth Dimensions, shape, structure. Physical properties of the Earth. The Earth's interior: the crust, the mantle and the core. The Earth's movements.	1
4. Basic of Mineralogy Forming, structure, classification and physical properties of minerals.	1
5. Basic of Petrology Forming and rock classification. Rocks: igneous, sedimentary and metamorphic.	1
6. Dynamic geology Endogenous processes. Exogenous processes. Oscillatory and tectonic movements.	1
7. Plate tectonics Continental drift and sea-floor spreading theories. Isostasia.	1
8. Volcanoes Structure, types of volcanoes, types of eruptions. Danger, advantages and prediction of volcanic eruptions. Products of volcanoes. The geographic distribution of volcanoes.	2
9. Earthquakes Causes, elements. Seismic waves. Magnitude – Richter Scale. Damage caused by earthquakes – Mercalli Scale. Seismotectonic models of Romania.	2
10. Engineering Geology and environment Groundwater, landslides. The role of Engineering Geology in Civil Engineering.	2

Cumulated 14 hrs

9.2. Applications

1	**The research of the foundation soil.** Test borings. Geotechnical studies.	2
2	**Minerals.** Forming and physical properties of minerals.	2
3	**Rocks.** Forming and rock classification.	2
4	**Igneous rocks**. **Sedimentary rocks. Metamorphic rocks.** Structural and textural properties, classification and engineering properties.	2
5	**Geophysical methods. Seismic methods. Radiometric dating methods. Direct and indirect methods of the foundation soil investigation.**	2
6	**Geological maps.** Elements, legends, classification and use.	2
7	**The emplacement selection for engineering structures.** Geological, hydro-geological and morphological factors.	2

Cumulated 14 hrs

10. References

1. Rotaru A., Răileanu P., (2004), Elemente de geologie inginerească, Editura Academică „Matei-Teiu Botez", Iaşi

2. Băncilă N., (1982) - Geologie inginerească, vol I şi II, Editura Tehnică, Bucureşti

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc.prof. Ancuţa Rotaru, Ph.D.	
Instructor:	Assoc.prof. Ancuta Rotaru, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENGINEERING GEOLOGY**

Codul disciplinei	**CE214**	Semestrul	**4**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	14		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	-
	Recomandate	Fizica Materiale de construcţii Chimie Arhitectura şi sistematizare Protecţia mediului

Obiective	• să identifice elementele şi structura terenului pe care sunt aşezate construcţiile specifice domeniului; • să identifice rolul funcţional şi interacţiunea dintre teren şi elementele unei construcţii; • să identifice tipurile de teren pe care pot fi realizate construcţii specifice domeniului; • să identifice natura resurselor geologice necesare executării construcţiilor; • să identifice atributele geologice specifice fiecărui tip de teren destinat construcţiei.
Conţinut (descriptori)	1. What is Engineering Geology? 2. Planetary Geology; 3. The Earth; 4. Basic of Mineralogy; 5. Basic of Petrology; 6. Dynamic geology; 7. Plate tectonics; 8. Volcanoes; 9. Earthquakes; 10. **Engineering Geology and environment**

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1. prezentare orală ; sarcini: bilet de examen cu 2 întrebări; condiţii de lucru T pondere 25%; 2. testare scrisă; sarcini: alegerea variantelor corecte de răspuns; condiţii de lucru M pondere 25%			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**T-10%**
		Teste pe parcurs [număr]	**1**	**M-10%**
		Lucrări de specialitate, teme de casă [număr]	**4**	**CC-20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr.ing.Ancuţa ROTARU	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr.ing.Ancuţa ROTARU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
HYDRAULICS

1. Course leader: **Professor Iosif BARTHA, PH.D.**
2. Topic characteristics: DI **code: CE215**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	2		1		C	28		14		42

4. Objectives of the topic:
The course objective is to give an extensive coverage of the most important aspects concerning fundamentals of hydraulics. This course examines the action of fluids on constructive structures and hydraulic principles used in constructive process and machineries, respectively in sanitary engineering (water supply sewerage and air conditioning. Fluids give fundamental action on elements of construction, computable by hydrostatics, hydrodynamics and aerodynamics. Installations within buildings for water, heating, air conditioning are designed using hydraulic principles .Equipment used in construction process, mixing fresh concrete or mortar, lifting fluid concrete or mortar use hydro-transport principles, lifting heavy building elements use hydraulic jacks for that knowledge is assured by basic principles of hydraulics. Underground water subject foundations and give troubleshooting in constructive process. Dropping the water table by different type of drainage (vertical, horizontal) is the field of hydraulics where specialists accumulate knowledge about these problems.

5. Concordance between the objectives of the topic and the objectives of the training plan
Hydraulics is a fundamental discipline for civil engineer that help them to determin pressure diagrams on building, to design water supply, sewerage, heating and air conditioning installations, to use in construction technology hydraulic principles. Hydraulics is complementary for strength of materials (explain form of force diagrames), installations, foundation and technology.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- *Critical and logical thinking (Identify personal assumptions, Collect, Analyse, interpret Information's, Draw conclusions)*
- *Communication skills (speak clearly, read with comprehension, work effectively in groups, interpret/use graphic communication);*

b. Technical skills and abilities
Upon successful completion of this course, the student should be able to:
- *Use hydraulic principles in constructions, and technologies used in constructions:;*
- *Use local codes and specifications (Romanian Standards and Euronorms or Eurocodes) frequently used in hydraulics;*
- *Implement the nomenclature of hydraulic in construction technology;*

7. Teaching procedures:
Relationship between student and professor is a partnership type, where everybody assumes the responsibility to reach the learning results. Learning results are clearly explained and debated with students from their relevance perspective for their professional enhancement. In the teaching process,

professors utilized the resources of the new technologies personal web page for themes and references, video tapes and overhead projections, computer programs for hydraulics

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: checking will be for every student, every student will present the solved subject in front of their colleagues

b) means and working conditions for reaching the goal: students will calculate using computer programs

c) percentage of the evaluation in the final mark:

The course grade will be determined by the students' performance during project work using the following procedures:

- final examination test paper: 70%
- activity during the semester: 20%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. INTRODUCTION Historical note. Systems of measurements. Dimensional analyses. Physical properties of fluids.	2
2. HYDROSTATICS Hydrostatic pressure. General law of hydrostatics. Hydrostatic law in gravity and other fields of forces. Pressure diagrams and pressure measurement. Hydrostatic force on open and closed solid, flat and curved surfaces. Buoyancy. Technical application of hydrostatics.	3
3. HYDRO-KINEMATICS Systems of representation. Basic notions of hydro-kinematics. Classification of the movement	2
4. FUNDAMENTALS OF HYDRODYNAMICS Euler's and Navier-Stokes general equations for hydrodynamics. Basic laws of hydromechanics: conservation of mass; conservation of energy (Bernoulli's equation) and its technical applications; momentum equation and its technical use, power of the fluid current. Flow regimes: laminar and turbulent	5
5. STEADY FLOW UNDER PRESSURE IN PIPES AND PIPE NETWORKS Velocity profile. Hydraulic resistance. Head-loss computation, general principles of pipes hydraulics calculus. Short and long pipes. Branch and loop pipe networks.	4
6. STEADY FLOW IN CANALS Velocity profile. Uniform flow in canals. Alternate stages of the flow. Gradually accelerated and retarded flow. Rapidly variable steady flow. Hydraulic jump. Open flow in closed canals. Weirs.	5

7. NON STEADY FLOW IN PIPES AND CHANNELS Water hammer in pipes. Slowly variable non-steady flow in pipes. Non-steady flow in open canals. Stationary and translator waves. The flood wave.	**2**
8. GROUNDWATER HYDRAULICS Basic law of filtration. Hydrodynamic of groundwater flow. Hydrodynamic spectrum of the flow in porous media. Hydraulic theory of filtration. Uniform and gradually accelerated and retarded steady groundwater flow. Non-steady flow of the groundwater. Well, drains.	**5**

Cumulated 28 hrs

9.2. Applications (Practical works and laboratory)

1.Pressure measurement principles and practice; Pressure diagrams, pressure forces. Buoyancy (meta-centre calculus and experimentation	**2**
2. Practical check of momentum equation. Conservation of mass, momentum equation, conservation of energy, power of the flow application	**2**
3. Velocity and discharge measurement in pipes	**1**
4. Experimental check of orifices, tubes, weirs and their use and calculus	**1**
5. Hydraulic resistance calculus. 6. Steady flow in simple pipes and pipe networks	**2**
7. Steady flow in canals. Experimentation of uniform, gradually accelerated flow and the hydraulics jump.	**2**
8.Groundwater hydraulics. Filtration coefficient determination. Hydrodynamic spectrum of the ground water flow. Uniform and gradually variable groundwater flow. Wells and drains calculus.	**2**

Cumulated 14 hrs

10. References

1. Bartha Iosif, Javgureanu V. – *Hidraulică*, vol.I, Ed. Tehnica Chişinău, 1998;
2. Bartha Iosif, Javgureanu V., Marcoie, N. – *Hidraulica,* vol. 2, Ed. Performantica,Iasi, 2004;
3. Bartha Iosif – *Curs de Hidraulică*, Rotaprint U.T.I., 1993;
4. Bartha, I., Luca, M., Popescu, Şt., Popia, A. – *Hidraulica. Culegere de probleme*, Rotaprint, 1991;
5. Luca, M. – *Hidraulică tehnică. Mişcarea permanentă în canale*. Ed. Tehnopress, Iaşi, 1998;
6. Idelcic, E.I. – *Îndrumător pentru calculul rezistenţelor hidraulice*, Ed. Tehnică, Bucureşti, 1984;
7. Blidaru, E., Bartha, I., Luca, M. – *Hidraulica. Îndrumător de laborator*, Rotaprint, Iaşi, 1979;
8. Kiselev, P.G. – *Îndreptar pentru calcule hidraulice*, Ed. Tehnică, Bucureşti, 1988.

Date: 25.03.2009

Course leader: Professor Iosif Bartha, Ph.D.
Instructor: Professor Iosif Bartha, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**HYDRAULICS**

Codul disciplinei	**CE215**	Semestrul	**4**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**42**	**28**		**14**	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, DS – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Analiza Matematica, Mecanica, Analiză numerică, Metode numerice şi programare
	Recomandate	Strength of Materials, Statics, Structural Dynamics, Numerical Methods in Engineering, Finite Element Analysis

Obiective	Formarea aptitudinilor de a rezolva probemele de hidarulică inginerească în inginerie civilă
Conţinut (descriptori)	- Principalele proprietăţi fizice ale fluidelor - Ecuaţiile generale de mişcare ale mediilor continui. Starea de tensiune. - Hidrostatica. Presiunea. Ecuaţiile generale ale hidrostaticii. Ecuaţiile hidrostaticii în câmp gravitaţional şi alte câmpuri de forţe. Forţa hidrostatică pe suprafeţe deschise (plane şi curbe) şi închise. - Hidrocinematica. Sisteme de reprezentare în hidraulică. - Dinamica fluidelor Euleriene. - Dinamica fluidelor reale. Regimuri de mişcare. - Calculul rezistenţelor hidraulice şi al pierderilor de sarcină. - Mişcări permanente în conducte şi reţele de conducte sub presiune. - Mişcări efluente - Mişcări cu nivel liber (uniforme, permanente lent şi rapid variate). Mişcarea apelor subterane.

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**C**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen		**70%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**20%**
		Teste pe parcurs	**-**
		Lucrări de specialitate (M)	**-**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof. Dr. ing. Bartha Iosif	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

SURVEYING

1. Course leader: **Senior Lecturer Daniel COVATARIU, Ph.D.**
2. Topic characteristics: DI **code: CE213**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	2		2		E	28		28		56

4. Objectives of the topic:

- *to present basics notions and instruments which are used in Land Surveying discipline.*
- *to study the apparatus and devices, methods and techniques used in order to measure and describe the land*
- *to realise land surveying' technical documentation.*
- *to study the application methods in order to execute projects and to study the behaviour of a building (displacements and deformations) depending on time.*

5. Concordance between the objectives of the topic and the objectives of the training plan

Land Surveying complete the civil engineer's knowledge with necessary notions in order to recognize the terrain's characteristics and the elements needed to set-up different buildings and its position. This discipline offer, in the same time, characteristics instruments in order to study the "in-time" behaviour of a building.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *to understand and to set-up the the instruments/ devices specifics to the Land Surveying operations;*
- *to understand the methods and technics used to draw and set-up of the buildings;*
- *to understand the topics and the exigences of the topographic plans used in the design process;*
- *to understand the calculus methods specifics to Land Surveying and the applications stages of its.*

b. Technical skills and abilities

- *to identify the building's elements and structures specifics to the domain;*
- *to organise and to lead the setting-up operations of the buildings;*
- *to understand topographical documentation's semnifications;*
- *to identify the ground's details on the topographic plans.*

7. Teaching procedures:

The discipline's presentation will be shown helping with computer program (Microsoft Powerpoint), helping with large explanations on the slides, or detailed on the blackboard (where is necessary. Also the individual studz of the bibliography is encouraged.

This technique present the following advantages:

- *help to send an clear and concived message (course);*
- *the contain's structuration will be very easy to understand*

- *many images, graphics, tabels and other visual aspects (movies) could be easy inserted in presentation;*

8. Evaluation system:

Stages:

Speciality projects (applications)

a) type of imposed assignments: *seminary activity and homework*

b) percentage of the evaluation in the final mark: *30%*

Mid-semester test (in the 7-th week):

a) type of imposed assignments: *written test in order to appreciate the knowledge assumed in the first 7 weeks of the semester*

b) percentage of the evaluation in the final mark: *20%*

***Final evaluation*:**

a) type of imposed assignments:

- written test in order to appreciate the knowledge assumed in the last 7 weeks of the semester (20 %)

- oral presentation in order to appreciate the vocabulary and practically notions assumed (20%)

b) percentage of the evaluation in the final mark: *40%*

Examination	**Percentage of the final mark**: %
- ***Speciality projects (applications)***	***30%***
- ***Mid-semester test (in the 7-th week)***	***20%***
- ***Final evaluation (in the 14-th week)***	***40 %***

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
Chapter 1: BASIC NOTIONS The Land Surveying domain and subjects. Short historic of the land measurements. Land Surveying's importance in study of the Civil Engineering	2
Chapter 2: FUNDAMENTAL NOTIONS ON GEODEZY The shape and dimensions of the Earth. The position of a topographic point on the Earth. Stereographical Projection (Stereo 70) on secant unique plan.	2
Chapter 3: FUNDAMENTAL NOTIONS ON CARTOGRAPHY Plans and maps - generalities. The relief's representations on maps and plans. The determinations of the rectangular co-ordinates of a point. Distances measurements on the map. Scale of the maps or plans. The quote's (altitude) determination of a topographic point. The slope of the ground. Design of topographic profile of the ground.	2
Chapter 4: PLANIMETRY Principles. Marking and signalisations of the topographic points. Direct measurement of the distances on the ground. The angle and distances measurements using the theodolite. Planimetric networks. Triangulation networks. The setting-up of the planimetric details. Planimetric traverse methods. Radiations points. The drawing of the topographic planms. Surface determinations (on ground or on the plans).	6
Chapter 5: LEVELMENT (ALTIMETRY) Principles. Levelment traverse. Marking the levelment landmarks (reference points). Instruments used to determine the level differences – the levelmeter. The geometrical and trigonometrically levelment – networks, methods, principles. The relief's representations by levelment.	4
Chapter 6: TACHEOMETRY Principles. Calculus methods in order to determine the position a topographic point on the space. Classical and modern tachometers. Methods and instruments used in tachometry.	2

Chapter 7: THE LAND SURVEYING APPLICATIONS ON CIVIL ENGINEERING Topographical documentation – contain, descriptions and accuracy. Plan metric methods in order to set-up a building – polar coordinates method, rectangular coordinates method, linear intersections method, angular intersection method. Basic principles in order to set-up a building. Setting-up the angles, distances and axis on the ground. Setting-up the quota's of a point and level differences. The building foundation setting-up. The quota's transfer to different levels.	6
Chapter 8: STUDY THE BEHAVIOUR OF A BUILDING DEPENDING ON TIME Principles and methods. The "in-situ" measurements of the displacement and deformations.	2
Chapter 9: GLOBAL POSITIONING SYSTEMS Basic notions, descriptions, principles and instruments used in GPS systems.	2

Cumulated 28 hrs

9.2. Applications

1	Labour Protection Rules wich will be respect on the laboratory and also in-situ. Recapitulation of some trigonometrically notions. The Topographic circle.	2
2	**Workshop no. 1.** Simple topographically elements calculus. The realtive and absolute spatial coordiantes of a topographic point. The ground and horisontal distances calculus.	2
3	**Workshop no. 2.** Planimetric and leveling notions solved on maps and plans.	4
4	**Workshop no. 3.** The teodolite study. Main parts and devices. The seeting-up in station point. Aiming the point. Readings and recording of its.	2
5	**Workshop no. 4.** The angle and distances measurement using the theodolite	2
6	**Workshop no. 5.** The drawing-up a terrain surface using planimetric traverse methods combined with radiation points. The plan drawing-up and surface calculus.	4
7	**Workshop no. 6.** The study of the leveling instrument. The level diffrences measurement	2
8	**Workshop no. 7.** The levelment method's study. The relief representation on the plans. Topographic profile.	2
9	**Workshop no. 8.** To topographic preparation of a civil engineering project in order to set/up on the ground (in-situ)**.** The setting-up of the basic topographic elements (angles, distances, quotas, inclined distances, zero-quota of a building).	4
10	**Workshop no. 9.** Computed Aided Surveying. Computer program TOPOSY presentation. Total Station presentation.	2
11	Receiving the project (tasks). Assesments.	2

Cumulated 28 hrs

10. References

1. *Covatariu D. – Course Notes, www.ce.tuiasi.ro site*

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Daniel COVATARIU, Ph.D.	
Instructors:	Senior Lecturer Daniel COVATARIU, Ph.D. Lecturer Ana Raluca ROŞU, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**SURVEYING**

Codul disciplinei	**CE216**	Semestrul	**4**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**56**	**28**		**28**	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Geometrie Analitică, Desen tehnic, Geometrie descriptivă, Trigonometrie

Obiective	➢ însuşirea de către studenţi a noţiunilor teoretice si practice privind activitatea de topografie; ➢ cunoaşterea metodelor şi tehnicilor de lucru folosite în ridicarea şi trasarea construcţiilor industriale, civile, de căi ferate, drumuri, poduri si a diferitelor tipuri de instalaţii sau reţele edilitare; ➢ cunoaşterea şi utilizarea aparaturii şi instrumentelor folosite în lucrările de topografie.
Conţinut (descriptori)	Noţiuni introductive în topografie; noţiuni fundamentale in geodezie; noţiuni fundamentale in cartografie; planimetria; nivelmentul (altimetria); tahimetria; aplicatii ale topografiei in constructii; urmarirea în timp a comportării construcţiilor; Sisteme de pozitionare globala – GPS

Sistemul de evaluare:			
Evaluarea finală*	**Forma de evaluare finală** (**C** - *colocviu*)		**E**
	Probele evaluării 1. Test de cunoştinţe – scris 20%. - **M** (Evaluarea cunoştinţelor teoretice acumulate pe parcursul celei de-a doua jumătăţi a semestrului) 2. Prezentare orală – 20%. - **T** (Evaluarea cunoştinţelor practice acumulate pe parcursul orelor de laborator) Ponderea în nota finală: 40% - **M**		
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**		**40 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**	**-**
		Teste pe parcurs [1] **– M**	**20 %**
		Lucrări de specialitate, teme de casă [8] **– M**	**30 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	dr. ing. Daniel COVATARIU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	dr. ing. Daniel COVATARIU dr. ing. Raluca ROŞU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ENGLISH 4

1. Course leader: **Senior Lecturer TUDOR Florin Mircea, Ph.D.**
2. Topic characteristics: DI (DC) **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4		1			VP		14			14

4. Objectives of the topic:

The course estimates the knowledge level of English acquired during the first academic year, the revision of the essential grammar structures, the developing of the translation and writing abilities in what the civil engineering texts are concerned

5. Concordance between the objectives of the topic and the objectives of the training plan
The objectives of the topic are in agreement with the training plan

6. Learning outcomes expressed in knowledge, technical skills and abilities
d. Knowledge
The student must translate from English into Romanian an easy technical text without a dictionary and a difficult one with a dictionary. He must also translate a text from Romanian into English with a dictionary
b. Technical skills and abilities
The student must have a rather good grasp of some of the technical English terms used in civil engineering.

7. Teaching procedures:
Practical applications concerning civil engineering English texts. The applications are done individually and in groups of 2 – 4 students.

8. Evaluation system:
Seminar: individual evaluation depending on the quality of the oral exercises and of the practical applications: 20%
Tests: 2 tests per semester : evaluation: 20%
Homeworks: 2 homeworks: evaluation: 20%
Final semester examination: practical application with or without a dictionary: evaluation: 60%

Stages:

Continuous assessment

a) type of imposed assignments: 2 homeworks, 2 test papers per semester : 40% (20% + 20%)
b) means and working conditions for reaching the goal: books, dictionaries
c) percentage of the evaluation in the final mark

Speciality projects(applications)

***Final evaluation*:** **Examination** **Percentage of the final mark**: 30%

9. Content of the subject:

c) 9.1. Course

d) **9.2. Applications**

1	Bridges	2
2	Tunnels	2
3	Modern Buildings (I)	2
4	Modern Buildings (II)	2
5	Dams	2
6	Test Paper	2
7	Environmental Engineering	2

Cumulated 14 hrs

10. References

Allen, J. P. B., Widdowson, H.G, English in Physical Science, London, 1974
Close R. A., The English We Use for Science, London, 1975
Ewer, J. R., Latorre G., A Course in Basic Scientific English, London, 1976
Hall, Eugene J., The Language of Civil Engineering in English, Englewood Cliffs, 1977
Koch, Paul, Engineering: Civil and Mechanical Engineering, New York, London, 1984

Date: 25.03.2009

Name and surname **Signatures:**

Instructor: Senior Lecturer Tudor Florin Mircea, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ENGLISH 4**

Codul disciplinei	**CE217**	Semestrul	**4**	Număr de credite	**1**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul II**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**14**		**14**		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Limba engleză în anul I de facultate
	Recomandate	

Obiective	*The course estimates the knowledge level of English acquired during the first academic year, the revision of the essential grammar structures, the developing of the translation and writing abilities in what the civil engineering texts are concerned*
Conţinut (descriptori)	Bridges Tunnels Modern Buildings (I) Modern Buildings (II) Dams Test Paper Environmental Engineering

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		20 %
		Teste pe parcurs [*număr)* 2		20 %
		Lucrări de specialitate, teme de casă [*număr***]** 2		20 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular(i) disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	Lect.dr. Florin Mircea TUDOR	

Titular(i) aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	Lect.dr. Florin Mircea TUDOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

PHYSICAL TRAINING 4

1. Course leaders: Senior Lecturer BORDEA CONSTANTIN, Ph.D.
Assoc. Lecturer PARASCHIV PETRONELA

2. Topic characteristics: DI code: CE218

3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	TOTAL
4			1		VP			14		14

4. Objectives of the topic:

a) Strengthening of health and the harmonious development of the body
b) Improvement of basic movement qualities
c) Learning and consolidation of some basic procedures and elements in athletics, gymnastics, games, fitness, their appliance in bilateral games or individual activities
d) Learning of some basic notions of rules in carrying on a sports competition
e) Creations of habituation in respecting sports hygiene norms and learning of schematic physical exercise with daily and weekly schedule

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum):

Physical education and sports come to fulfill the learning plan of this engineering profile, contributing at the more useful scheduling of leisure, in the creation of premises for approaching professional qualities in good health conditions and with increased working strength. It is a mobilizing factor especially for team work.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

Theoretical and practical knowledge required to develop activities at the respective course.

b. Technical skills and abilities

- To identify the structural and functional purpose of physical exercise, basic mean in physical education;
- To identify the proper means of developing physical activity;
- To know the meaning of specialty documents in organizing the learning process
- To individualize the physical effort based on particularities, options and preferences;
- To identify actions and to dose the physical means used depending on the team
- To adapt the possessed materials to the student groups and working methodology.

7. Teaching procedures:

- Repeated actions in different conditions based on pace, strength and complexity of the movements;
- Individual practicing of different exercises, their application in team play;
- Individualizing of physical effort and work based on options and preferences with owned materials

8. Evaluation system:

Stages:

Continuous assessment:

g) type of imposed assignments: participating in non-representative teams activity in sport types or in performance sport;

h) means of working conditions for reaching the goal: sports hall, the used didactic materials are from the basic equipment(barbells, fitness devices, materials for games)
i) percentage of evaluation in the final mark.

Specialty projects (applications)

Final evaluation(T): preliminary examination
-knowledge accumulated during the scholar year by comparative tasks, tests: **percentage 50%**
-grading the regular and active participation in practical assignments, representative teams in sport branches or in performance sports: **percentage 40%**

9. Content of the subject:
9.2. Applications:

Name of task and content
1)Athletics • running elements • jumping and standing start technique • middle-distance running • jogging **2) Basic, aerobics and artistic gymnastics** • front and formation exercises, walking and running variety, simple ground exercises • game exercises and dynamic simple elements from acrobatic gymnastics(rollovers, rolling etc.) • combined course paths with equilibrium elements, climbing, transport • classic, modern and traditional dancing steps on the appropriate music **3) Sport games: basketball, handball, football, volleyball, badminton.** • Basic positions, pacing and field crossing • Easy hits, serves, first-touch exercises, still and motion grabbing and passing of the ball • Elementary technique action finishing exercises, marking exercising • Global participation in games on small and normal fields with different purposes **4) Improvement of basic motion qualities and specific to some sport branches, by using some fitness, athletics and body-building** • Strength and muscular mass improvement by proper use of weights and barbells • Shape adjusting exercises and turning fat into active tissue • Improvement of speed characteristics(reaction, repeating, movement, execution) by specific exercises • Increasing mobility and fitness at different levels • Increasing stamina

Total 14 hours

10. References

1. Ionescu, A., V., -Exercitiul fizic in slujba sanatatii, Stadion publisher, Buc, 1971.
2. Ulmeanu, Constantin, -Notiuni de fiziologie cu aplicatii la exercitiile fizice, UCFS publisher, Buc, 1966.
3. Dragnea, A., Bota, Aura, -Teoria activitatii motrice, Editura Didactica si Pedagogica publisher, R.A., Buc., 1999.
4.Teodorescu, Leon.- Terminologia educatiei fizice si sportului, Stadion publisher, Buc., 1973.

Date: 25.03.2009

	Name and surname	**Signatures:**
Instructors:	Senior Lecturer. BORDEA CONSTANTIN, Ph.D. Assoc.Lecturer PARASCHIV PETRONELA	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PHYSICAL TRAINING 4**

Codul disciplinei	**CE218**	Semestrul	**4**	Număr de credite	**1**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	14			14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	Mărirea capacităţii de efort fizic şi intelectual Îmbunătăţirea capacităţii motrice de bază Stimularea practicării independente a exerciţiului fizic Învăţarea unor noţiuni de bază legate de regulamentele de desfăşurare a competiţiilor sportive
Conţinut (descriptori)	To identify the structural and functional purpose of physical exercise, basic mean in physical education; To identify the proper means of developing physical activity; To know the meaning of specialty documents in organizing the learning process To individualize the physical effort based on particularities, options and preferences; To identify actions and to dose the physical means used depending on the team To adapt the possessed materials to the student groups and working methodology.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări T**		**50%**
		Teste pe parcurs (numar) **T**		**40%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titulari disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Lector dr. Constantin Bordea Prep. drd.. Petronela Paraschiv	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

LAND SURVEYING PRACTICE

1. Course leaders: **Senior Lecturer Daniel COVATARIU, Ph.D.**
Lecturer Raluca ROŞU, Ph.D.

2. Topic characteristics: DI **code: CE216**

3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4			60		C			60		60

4. Objectives of the topic:

- *students must assume practical skills subjected to land surveying activity*
- *to study the practical methods and techniques used in order to set-up the building position on the ground*
- *to study the apparatus and devices used in order to measure and describe the land*

5. Concordance between the objectives of the topic and the objectives of the training plan

Land Surveying completes the student's knowledge acquired at the course and seminary works, by practical application of the theoretically notions. The practice produces skills and usage in apparatus and device's manipulation in order to draw topographic plans, to set-up the main axis and position on ground of the buildings and to study the "in-time" behaviour of buildings and other engineering works.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *to understand and to set-up the the instruments/ devices specifics to the Land Surveying operations;*
- *to understand the methods and technics used to draw and set-up of the buildings;*
- *to understand the topics and the exigences of the topographic plans used in the design process;*
- *to understand the calculus methods specifics to Land Surveying and the applications stages of its.*

b. Technical skills and abilities

- *to identify the building's elements and structures specifics to the domain;*
- *to organise and to lead the setting-up operations of the buildings;*
- *to understand topographical documentation's semnifications;*
- *to identify the ground's details on the topographic plans.*

7. Teaching procedures:

Practical works will be executed on the site and/or other construction fields, helping with the specific topographic apparatus and devices (electronic theodolites, levels, total stations, metric steel bands, station rods, etc)

8. Evaluation system:

Oral presentations of the project as the result of the ground measurements and practical works.
1. Default note – 10%.
2. Note from terrain's activity – 30%
3. Note from oral presentation – 60%

9. Content of the subject:

9.2. Applications

	Practical Works	**Nr. ore**
1	Protection Rules wich will be respect on the laboratory and also in-situ. Short presentation of the activities subjected to practical works	2
2	Field measurements of the topographical elements (distances, angles, quotas, slopes)	6
3	Setting up on the ground of the project's elements (angles, quotas, lengths, slopes, methods used)	6
4	Drawing up of a terrain's surface using the planimetric traverse method, also including the topographic plan's drawing at the 1/50 scale. Terrain surface's calculus using different method	12
5	The determination of the vertical position of the characteristic points of a building by levelling traverse method, also including the draw of the longitudinal an transversal profiles of the given slopes.	12
6	The setting-up on the ground of the characteristic point of a building by the following methods: polar coordinates method, angular intersection method, linear intersection method, using dates from the previous topographic plan.	6
4	Height and vertical position determination of a building	4
5	Computed Aided Surveying. Computer program TOPOSY using in order to solve the problem from the field's dates.	6
6	Closing meeting. Final examination.	6

Cumulated 60 hrs

10. References

2. Covatariu D. – Course Notes, www.ce.tuiasi.ro site

Date: 25.03.2009

	Name and surname	**Signatures:**
Instructors:	Senior Lecturer Daniel COVATARIU, Ph.D.	
	Lecturer Ana Raluca ROŞU, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**LAND SURVEING PRACTICE**

Codul disciplinei	**CE219**	Semestrul	**4**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**60**			**60**	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Geometrie Analitică, Desen tehnic, Geometrie descriptivă, Topografie

Obiective	➢ cunoaşterea şi utilizarea aparaturii şi instrumentelor folosite în lucrările de topografie; ➢ însuşirea de către studenţi a noţiunilor practice privind activitatea de topografie; ➢ cunoaşterea metodelor şi tehnicilor de lucru practice utilizate pentru relevarea şi trasarea construcţiilor.
Conţinut (descriptori)	- Reguli şi măsuri de protecţia muncii aplicabile la lucrările de topografie. Prezentarea activităţilor pentru perioada de practică - Măsurarea pe teren a elementelor topografice (distanţe, unghiuri, cote, pante) - Trasarea pe teren a elementelor din proiect (distanţe, unghiuri, cote, pante, metode de trasare în plan - Efectuarea ridicării unei suprafeţe de teren prin metoda drumuirii planimetrice, inclusiv redactarea planului topografic la scara 1:500 şi calculul suprafeţelor prin diferite metode - Determinarea poziţiei pe verticala (a cotelor) a punctelor caracteristice unei clădiri prin metoda drumuirii nivelitice, inclusiv redactarea profilului longitudinal şi a profilelor transversale prin puncte date. - Trasarea pe teren a unei clădiri prin metoda coordonatelor polare, metoda intersecţiei unghiulare, metoda intersecţiei liniare înainte, utilizând date dintr-un plan topografic întocmit anterior. - Măsurarea înălţimii şi verticalităţii unei construcţii - Topografie asistată de calculator. Prezentarea programului de calcul TOPOSYS. - Încheierea situaţiei lucrărilor. Examinare finală: Colocviu

Sistemul de evaluare:		
Evaluarea finală*	**Forma de evaluare finală** (**C** - *colocviu*)	**C**
	Prezentare orală a proiectului întocmit pe parcursul orelor de practică. *1. Nota din oficiu – 10%.* *2. Nota pentru activitatea din teren – 30%* *3. Nota la prezentarea proiectului – 60%*	
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu – *T***	**90 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*		

Titulari disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Daniel COVATARIU Asist.dr.ing. Raluca ROŞU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

STATISTICS

1. Course leader: **Eng. Gabriela COVATARIU**
2. Topic characteristics: DL, DF **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
3	2	-	2	-	VP	28	-	28	-	56

4. Objectives of the topic:
The goal of the course is to create student's skills in order to use proceedings and techniques to gather the statistical data in order to obtain statistically indicators, and also the methods to discover the regularities, permanencies, laws and tendencies which could be manifest in its evolutions, and extrapolations in uncertain conditions. Also, the course intends to form the understanding skills of the applied procedures, when the laborious calculus could be executed on computer, and correct interpretation of the results.

5. Concordance between the objectives of the topic and the objectives of the training plan
The discipline's objectives are according to those of the general curriculum. Being an optionally discipline, can assure a complementary support in specialty educational. Applied Statistical disciplines help the students to assimilate the processing and analyzing methods of the statistically data from engineering. The knowledge could be useful in order to solve professional themes and also in learning process (in master programs, doctoral studies or researching activity).

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- *to understand the main principles and the statistical indicators.*

b. Technical skills and abilities

- *to identify, to organise and to correct use the informations from the specific disciplines of the Civil Engineer domains in statistically calculus.*

7. Teaching procedures:
The discipline's presentation will be shown helping with computer program (Microsoft Powerpoint), helping with large explanations on the slides, or detailed on the blackboard (where is necessary. Also, specific computer programs will be used in order to have clearly explanations. Individual study of the bibliography will be encouraged.
This technique presents the following advantages:

- *help to send an clear and conceived message (course);*
- *the structure of content will be very easy to understand*
- *many images, graphics, tables and other visual aspects (movies) could be easy inserted in presentation;*

Permanently is indented the feedback from the students and the explanations will be adapted depending from its reactions. At the applications, are shown problems helping with the projector, working together with the students, to achieve more knowledge from the studied software.

8. Evaluation system:

- *Permanent evaluation: Final note sharing: 20%*

Seminary activity and homework: Each seminary work will receive a note which will show the quality and and quantity of the accumulated knowledge.

- *Final evaluation: Colloquium - Final note sharing: 70%*

Oral presentation of an essay of a theme (choused in according with the teacher), which will reflect all the knowledge achieved from the semester.
Final result will be obtained by arithmetical mean of the following:

1. Basic notation – 10%.
2. Seminary activity and homework notation – 20%
3. Final colloquium – 70%

Needed result will by ≥ 5.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Introduction. Definitions. Fundamental concepts. Practical objectives	2
2. Statistically observations. Pattern Theory elements	2
3. Statistically data presentation	2
4. Statistically Indicators to positioning, dispersions, symmetry	4
5. Statistically distributions. Repartitions functions. Most used distribution presentations	4
6. Statistically parameters estimations. Methods in order to determinate the "good" estimation. Trust gaps	2
7. Correlations and regressive in Statistics	6
8. Experiments design	4
9. Viability notions	2

Cumulated 28 hrs

9.2. Applications

1	Introduction. Definitions. Fundamental concepts. Practical objectives	2
2	Statistically observations. Pattern Theory elements	2
3	Statistically data presentation	2
4	Statistically Indicators to positioning, dispersions, symmetry	4
5	Statistically distributions. Repartitions functions. Most used distribution presentations	4
6	Statistically parameters estimations. Methods in order to determinate the "good" estimation. Trust gaps	4
7	Correlations and regressive in Statistics	2
8	Experiments design	2
9	Viability notions	2
10	Colloquium theme preparation	2
11	Colloquium	2

Cumulated 28 hrs

10. References

1. Toplicianu V., *Statistica*, Ed. Cartea Universitara,
2. Ang, A. H. and Tang, W. H., *Probability Concepts In Engineering: Emphasis On Applications In Civil & Environmental Engineering*, Wiley 2007
3. Ross, S. M., *Introduction to Probability and Statistics for Engineers and Scientists.* Amsterdam, Elsevier Academic Press, 2004

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	eng. Gabriela COVATARIU	
Instructor:	eng. Gabriela COVATARIU	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STATISTICS**

Codul disciplinei		Semestrul	**3**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Algebră liniară
	Recomandate	Utilizarea calculatoarelor

Obiective	Cursul urmărește crearea abilității cursanților în a folosi un limbaj de programare și de a crea programele pentru rezolvarea problemelor impuse de studiul disciplinelor de construcții. Se urmareste prin acest curs dezvoltarea elementelor de programare necesare în prelucrarea datelor și conceptelor inginerești ce apar atât în timpul studiilor de licență cât și ulterior în cariera de inginer sau cercetător.
Conţinut (descriptori)	Concepte fundamentale. Obiective practice Observarea statistică. Elemente de teoria eşantionării Prezentarea datelor statistice Indicatori statistici de localizare, dispersie, simetrie Distribuţii statistice. Funcţii de repartiţie. Prezentarea celor mai utilizate distribuţii Estimarea parametrilor statistici. Metode pentru determinarea estimaţiilor bune. Intervale de incredere Corelaţie şi regresie în statistică Proiectarea experimentelor Noţiuni de fiabilitate

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării Prezentare orală, referat 70%:			
Stabilirea notei finale (procentaje)	**Evaluare finală prin prezentare lucrare finala**			**70 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar/lucrări**		**20 %**
		Teste pe parcurs		**%**
		Lucrări de specialitate, teme de casă [1]		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	drd.ing. COVATARIU Gabriela	

Titular aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	drd.ing. COVATARIU Gabriela	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
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Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: II** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
PROGRAMMING LANGUAGES (JAVA)

1. Course leader: eng. Gabriela COVATARIU
2. Topic characteristics: DL, DID code:
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
4	1	-	3	-	VP	14	-	42	-	56

4. Objectives of the topic:
The goal of the course is to create student's skills in order to use an programming language and to create the computer programs needed in order to solve the themes imposed by the study of the Civil Engineering's disciplines. The course is focused to develop programming skills needed to process data and engineering concepts needed on Faculty and later in engineer's carrier or researcher. This discipline completes the notions from Computer Usage discipline by completing with notion concerning Java programming language.

5. Concordance between the objectives of the topic and the objectives of the training plan
The discipline's objectives are according to those of the general curriculum. Being an optionally discipline, can assure an complementary support in specialty educational. These notions are necessary to the learning process, helping the student to solve problems also for alternative discipline from curricula using *programming mediums*. The knowledge could be useful in order to solve professional themes and also in learning process (in master programs, doctoral studies or researching activity).

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- *to understand the main principles and the methods in order to use an programming language (JAVA).*

b. Technical skills and abilities

- *to identify, to organise and to correct use the informations from the specific disciplines of the Civil Engineer domains in personal programs in order to solve the engineering application by medium and high level complexity.*

7. Teaching procedures:
The discipline's presentation will be shown helping with computer program (Microsoft Powerpoint), helping with large explanations on the slides, or detailed on the blackboard (where is necessary. Also, specific computer programs will be used in order to have clearly explanations. Individual study of the bibliography will be encouraged.
This technique presents the following advantages:

- *help to send an clear and conceived message (course);*
- *the structure of content will be very easy to understand*
- *many images, graphics, tables and other visual aspects (movies) could be easy inserted in presentation;*

Permanently is indented the feedback from the students and the explanations will be adapted depending from its reactions. At the applications, are shown problems helping with the projector, working together with the students, to achieve more knowledge from the studied software

8. Evaluation system:

- *Permanent evaluation: Final note sharing: 20%*

Seminary activity and homework: Each seminary work will receive a note which will show the quality and and quantity of the accumulated knowledge.

- *Final evaluation: Colloquium - Final note sharing: 70%*

Oral presentation of an essay of a theme (choused in according with the teacher), which will reflect all the knowledge achieved from the semester.

Final result will be obtained by arithmetical mean of the following:

1. Basic notation – 10%.

2. Seminary activity and homework notation – 20%

3. Final colloquium – 70%

Needed result will by ≥ 5.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Java technology and Web system - Internet, intranet, Web; servers and Web clients. Web design, programming and presentation. Languages and fundamental protocols in Web system: HTML language and HTTP protocol. Web application programming: Web client programming and Web server programming. Web system programming technologies (scripting languages, Java, NET).	2
2. Basics in Java language - Portability and execution security of the Java programs. Data types in Java language. Classes and objects; name spaces and library (packages). Object's creation and destroying. Class's legacy and hierarchy. Abstracts classes and interfaces. Exceptions understanding.	2
3. Main characteristics of the Java language Threads managing. Threads stages. Communications and synchronizations between threads	2
4. Java graphical interfaces - Libraries: AWT and Swing. Graphical components: containers and controls. Positioning managing of the graphical components. Events at the graphical components. Graphical contexts and drawing in drawing surfaces (canvas). Menus and dialogs.	2
5. Streams IO in Java language	2
6. Java applications in network	2
7. Web applications in Java technologies - Languages and basic protocols in Web system (HTML, HTTP). Client Programming (execution): scripts JavaScript, applets. Server Programming (execution) at server: servlets and JSP pages. Servlets structure. Response document's generation to a servlet. JSP pages structure and functions. JSP scripting's elements: expressions, scriptlets and statements. JSP directives. JavaBeans components usage in JSP pages.	2

Cumulated 14 hrs

9.2. Applications

1	Laboratory presentation and Functionality Rules, Protection Rules, Fire Safety Rules	1
2	Java language introduction - Lexical structure of an Java program	5
	- Data, operators and instructions types. Tables	6
	- Classes and objects	6
	- Graphical interfaces – applets	6
	- Menus, dialogs	3
	- RMI Java technologies	3
3	Problems applicable in Civil Engineering	6
4	Colloquium theme preparation–	3
5	Colloquium	3

Cumulated 42 hrs

10. References

1. *** *JDK Documentation*, http://java.sun.com.
2. Bruce Eckel, *Thinking in Java, (3rd edition)*, http://www.bruceeckel.com.
3. Marty Hall, *Core Servlets and JavaServer Pages*, http://coreservlets.com

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	eng. Gabriela COVATARIU	
Instructor:	eng. Gabriela COVATARIU	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PROGRAMMING LANGUAGES (JAVA)**

Codul disciplinei		Semestrul	**4**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	14		42	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	DID
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Utilizarea calculatoarelor
	Recomandate	

Obiective	Cursul urmărește crearea abilității cursanților în a folosi un limbaj de programare și de a crea programele pentru rezolvarea problemelor impuse de studiul disciplinelor de construcții. Se urmareste prin acest curs dezvoltarea elementelor de programare necesare în prelucrarea datelor și conceptelor inginerești ce apar atât în timpul studiilor de licență cât și ulterior în cariera de inginer sau cercetător.
Conţinut (descriptori)	Tehnologia Java si sistemul Web; Caracterisicile de baza ale limbajului Java; Caracterisicile de baza ale limbajului Java; Interfete grafice Java: Biblioteci; Aplicatii Java in retea; Aplicatii Web in tehnologia Java

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării Prezentare orală, referat 70%:			
Stabilirea notei finale (procentaje)	**Evaluare finală prin prezentare lucrare finala**			**70 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar/lucrări**		**20 %**
		Teste pe parcurs		**0 %**
		Lucrări de specialitate, teme de casă [1]		**0 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	drd.ing. COVATARIU Gabriela	

Titular aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	drd.ing. COVATARIU Gabriela	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
ELEMENTS OF STEEL STRUCTURES 1

1. Course leader: **Prof. Nicolae ŢĂRANU, Ph.D.**
2. Topic characteristics: DI **code: CE301**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	2		1		E	28		14		42

4. Objectives of the topic:

Steel Structures 1 gives the opportunity to the students to learn the necessary information on structural steel used in the construction domain, based on the information gathered in the previous years by attending the learning programs of objects specific for the domain of study (Building Materials, Chemistry, Strength of Materials). Specific details of steel manufacturing physic and chemical properties of various brands of structural steel are presented along with their behaviour in the conditions imposed by the service life of the buildings. The fundamental design principals are given to the students, regarding the steel elements and their connections. The practical works in the laboratory enhance the knowledge accumulated during the courses.

5. Concordance between the objectives of the topic and the objectives of the training plan
The topics insure an adequate luggage of information referring to the use of the structural steel for various constructions choosing different manufactured elements; it offers the possibility to understant the connections between steel structural members in order that they comply with the conditions imposed by the Limite States Design criteria- both ultimate strength and stability conditions and serviceability conditions also.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- To know the particular features of the strucutral steel and to choose the quality (brand) of steel elements;
- To know hot rolled sections in order to decide adeqautly upon their form the strucutral criteria point of view;
- To know and prevent the destructiv effects o the corrosion and fire exposure upon the structural steel elements;
- To know the design methods of the steel structures;
- To assimilate the details of designing the connections between the steel elements and their patern of behaviour

b. Technical skills and abilities

-To identify steel grades with chemical, phy sical and mechanical properties and to choose the right grade and quality class
- To evaluate the characteristics for design of the structural steel
- To identify the technologies of making the connections of different elements
- To design specific parts and features of the connections
- To identify the governing role of the connections
- To make computations for the design and verification of the connections

7. Teaching procedures:

- course elaborated in an interactive manner,
- powerpoint presentations,
- discussions on particular examples given,
- information gathered by the students by individual study in the library of the faculty and on internet

8. Evaluation system:

Stages:

Continuous assesment

Activity in class: percentage of the final mark **40%**

The students will make reviews of the laboratory work concerning the physic and mechanical properties of the structural steel and they will participate actively to the different standard tests on steel specimens.. Evaluation in traditional manner.

Final evaluation*:* colloque Percentage of the final mark **50%**

Written paper, 2 examinators, 5 subjects of discussions, minimum mark 5 for solving ½ of every subject + the student must pass the continuous activities.

9. Contents:

9.1. Course

	Chapter	**Nr. hrs.**
1	**STEEL STRUCTURES IN ROMANIA.** Overview of the economic fields for which the steel structural elements are designed. Advantages and disadvantages of using steel structural elements. Directions of future development	**2**
2	**PARTICULAR FEATURES OF THE FABRICATION OF STEEL ELEMENTS** Fabrication, casting, imperfections; steel manufacturing, steel products –hot rolled and cold formed; influece of the chemical composition on the mechanical characteristics of steel shapes; microstructure of structural steel; brands of structural steels; corrosion of steel sections and anti-corrosion protection; Steel structural behaviour at high temperatures; protection agains fire; Mechanical properties of structural steel, mechanical tests for the determination of steel quality, technological tests, physical tests; stress distribution on weakened sections, steel ageing; strain hardening.	**10**
	DESIGN PRINCIPLES OF THE STEEL STRUCTURES Limits states design concept, partial safety factors, evaluation of the strength, stability, stiffness and different manufacturing conditions of structural elements subjected to various efforts	**2**
4	**CONNECTIONS BETWEEN MEMBERS OF STEEL STRUCTURES**	**14**
	Bolted connections: constructive details, behaviour of ordinary bolted connections and high strength friction grip bolted connections; strength capacity of ordinary bolts and prestressed bolt; design and verification of bolted connections.	7
	Welded connections: classification, welding technologies, imerfections due to welding and verifications of the welding quality; thermal effects on welding; methods for diminishing the welding remnant stresses and strains, types of welding, geometry and dimensions, behaviour under stresses, verifications of the welding under various design efforts.	7

Cumulated 28 hrs

9.2. Laboratory works

1	Steel products. Hot rolled and coled formed structural steel shapes. Graphical representations of the steel mebers. Sectional characteristics of the steel structural members.	2
2	Microstructure of the steel, metallic crystal lattice and link; constitutive elements (study under microscope of the metallic microstructure); influence of the constitutive elements upon the mechanical properties, weld ability and sustainability under corrosion conditions of the steel sections.	2

3	Bending in shock of steel specimens with Charpy hammer; quality classes.	2
4	Brinnell hardness test of structural steels; relationship between hardness and strength.	1
5	Fatigue tests for steel specimens ; tests on small specimens with spinning apparatus; Wöhler curve	1
6	Bolted connections: checking the quality of the connection and tests on ordinary bolts; theoretic and experimental values of strength capacity of the bolts.	3
7	Welded connections: presentation of the welding equipment for manual arc welding, semi-automatic and automatic; presentation of connected parts with fillet welds and with groove welds; tests on a specimen made of two parts interconnected with groove welds or with fillet welds; examination of the failure mode and comparison between theoretic and experimental values of the welding strength.	3

Cumulated 14 hrs

10. References

1. Dalban, C., Chesaru, C., Dima, E., Şerbescu, C. (1997)– **Construcţii cu structură metalică**, E.D.P. Bucureşti
2. Serbescu, C**. (**1882)- **Construcţii metalice**, Ed. I.P.Iaşi
3. Tăranu, N., Axinte, E. (1993)- **Construcţii metalice**, Ed. U.T. Iaşi
4. Ţăranu, N., Străteanu, P. (1999) -**Elemente de construcţii metalice,** Ed. Gh. Asachi Iaşi
5. Axinte, E.(2003) – **Bazele proiectării elementelor şi structurilor din oţel după EUROCOD,** E.S.A M-T Botez,
6. Teleman, E-C, Axinte, E. (2002)– **Încercări privind calitatea oţelului şi îmbinărilor elementelor de construcţii metalice,** Edit. Gh. Asachi Iaşi,
7. Axinte, E., Pescaru, V., Roşca, V., Străteanu, P. (1998)– **Construcţii metalice. Incercări**, Ed. VESPER, Iaşi
8. C.Şerbescu, P.Străteanu, E.Axinte (1987) – **Imbinări sudate. Indrumar pentru lucrări de laborator**, Tipar I.P.Iaşi,
9. Axinte, E.(2008) -**Elemente din oţel pentru construcţii**, Ed PIM Iaşi

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Prof. Nicolae Ţăranu, Ph.D.

Instructors: Senior Lecturer Victoria Rosca, Ph.D

Assoc. Lecturer Vlad Munteanu, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ELEMENTS OF STEEL STRUCTURES 1**

Codul disciplinei	**CE301**	Semestrul	**5**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Strength of Materials 1 and 2, Mechanics 1 and 2

Obiective	Se transmit studenţilor cunoştinţele necesare utilizării oţelului în construcţii, cu detalierea proprietăţilor fizico-mecanice în vederea alegerii calităţii acestuia. Sunt fundamentate principiile de calcul ale elementelor metalice şi ale îmbinărilor. Lucrările prevăzute pe parcursul semestrului completează cunoştinţele referitoare la produse laminate, la atestarea prin încercări de laborator a proprietăţilor fizico-mecanice ale oţelului, realizarea şi verificarea îmbinărilor
Conţinut (descriptori)	Constructii metalice in lume si in Romania. Materiale folosite la realizarea construcţiilor metalice Principii de calcul ale structurilor metalice pentru constructii Imbinarile elementelor componente ale structurilor metalice

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu-T (**Lucrare scrisă, 2 examinatori interni, 5 întrebări grupate, nota 5 pentru promovare este rezolvarea a cel puţin ½ din fiecare subiect de pe bilet + promovarea activităţilor pe parcurs)			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări-T (**studenţii vor primi teme individualizate pentru rezolvare şi vor întocmi referate pentru lucrările de laborator, fiind evaluată participarea la efectuarea lucrării practice şi nivelul cunoşterii procedurii de desfăşurare a testelor.)		**40%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof.univ.dr.ing. Nicolae ŢĂRANU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Victoria ROŞCA Asist.dr.ing. Vlad MUNTEANU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
TECHNOLOGY OF CONSTRUCTIONS 1

1. Course leader: **Senior Lecturer Răzvan GIUŞCĂ, Ph.D.**
2. Topic characteristics: DI, DS **code: CE302**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	2		1		C	28		14		42

4. Objectives of the topic:

The actual request regarding the construction elements performances shows the necessity of introducing new technological processes and modern realization procedures that have to eliminate the shortcoming of the jobs made in a traditional way.

The objectives of the topic are referred to the study of technological processes and procedures; the entire didactic activity has as aims quality, productivity and economical efficiency of constructions making – up.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of new, modern technological procedures.

By adopting within technological fluxes, performance technological procedures of concrete, brickworks wood and composite structures making–up, leads to fulfil the buildings behaviour exigencies related to standardized performances levels.

The topic is introduced in the training plan so that it utilizes knowledge given by civil constructions, concrete structures and construction materials.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- To identify technological processes applied in construction;
- To draw up the main elements of a technological sheet;
- To know the properties of the construction materials and the corresponding technologies;
- To analyze and execute a technological project.

b. Technical skills and abilities

- To identify and select the optimum solutions regarding performance technological procedures of construction making up.

7. Teaching procedures:

The courses are presented in form of university lecture by using drawings, power point presentations, and video films that emphasize the technological processes and procedures of buildings making–up.

8. Evaluation system:
Stages:
Continuous assesment

a) type of imposed assignements:

The periodical examination will be individualized and checked by the course leader and materialized by a degree.

b) means and working conditions for reaching the goal:

During the test students are allowed to use the recomended references.

c) percentage of the evaluation in the final mark: 20%.

Speciality projects(applications)

The students will get tasks regarding technological design of medium complexity that will report to: materials transportation with tower cranes, lifting devices, the digging process with front acting excavators, the digging process with back acting excavators, concrete works, precast concrete structures technology, formwork design.

The degrees obtained during the semester represent 20% of the final mark.

***Final evaluation*: Examination** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Industrialised making-up of the constructions. *General aspects. Technology, technological processes and procedures. Industrialization of the construction works. Technological project.*	2
2. Mechanization of construction works. *Small mechanization, mechanization, automation and complex mechanization. Productivity of the construction machines.*	2
3. Building materials transportation. *General notions; Classification and characteristics of constructions transportation. Horizontal transportation. Long distance horizontal transportation. Short distance horizontal transportation.* *Railway transportation. Transportation means productivity. Vertical transportation. Combined transportation (horizontal + vertical).* *Cranes classification taking into consideration the working parameters.*	4
4. Earth – works technology *General aspects; Earth configuration. Earth constituent phases. Mechanized digging of the soil. Digging process particularities.* *General notions regarding the soil digging resistance. Equipments for earth digging and transportation.* *The constructive characteristics and the functional parameters of the front – acting excavators. Optimum characteristics of the working fronts for the frontal method. The optimum dimensions of the ending strips. The optimum dimensions of the current strip.* *Back acting excavators. The organization of a precinct by using front or back acting excavators.* *Dragline excavator. Grab bucket excavator.* *The excavators' stability. Bulldozers. Motor grader. Scraper. Soil bracing. Soil compacting. Water evacuation from a building's precinct.*	6
5. Formworks technology. Scaffoldings. *General aspects; Materials used in formworks make-up. Characteristics and classifications of formworks. Formwork layout. Geometrical and aesthetical deviations.* *Permanent formworks. Universal removable formworks. Formworks dimensional coordination. Basic formulas for dimensioning the formworks. Computation principles. Mobile formworks. Scaffoldings.*	14

Cumulated 28 hrs

9.2. Applications

1	**Horizontal transportation.** Check the tracking possibilities when making up motor trains.	2
2	**Earth works (1).** The digging process with front acting excavators. The main functional parameters of front acting excavator.	2
3	**Earth works (2).** The digging process with back acting excavators. The main functional parameters of back acting excavator.	2
4	**Soil transportation.** Excavated soil transportation; Transportation optimization.	2

5	**Formworks (1).** Formwork panels design with humidity resistance face, for removable shuttering having a high generality degree.	2
6	**Formworks (2).** Universal removable formwork design for horizontal elements.	2
7	**Formworks (3).** Universal removable formwork design for vertical elements.	2

Cumulated 14 hrs

10. References

8. Giuşcă, R., CONSTRUCTIONS TECHNOLOGY, Ed. "Gh. Asachi", Iaşi, 2003;
9. Giuşcă, R., TECHNOLOGICAL WORKS – STUDENT'S HANDBOOK, Ed. Politehnium, Iaşi, 2007;
10. Giuşcă, N., INGINERIA PROCESELOR DE CONSTRUCŢII, Ed. "Gh. Asachi", Iaşi, 1997;
11. Pamfil, E., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII, vol. I, Cofraje, Ed. Societăţii Academice „Matei-Teiu Botez", Iaşi, 2006;
12. Vasilescu, A., Corobceanu, S., TEHNOLOGIA PREFABRICATELOR, U T Iaşi, Rotaprint, 1994;
13. Vasilescu, A., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII – EXEMPLE DE PROIECTARE TEHNOLOGICĂ, Editura Politehnium, Iaşi, 2004.
14. Trelea, A., ş. a., TEHNOLOGIA CONSTRUCŢIILOR, Ed. Dacia, Cluj-Napoca, vol. 1, 1997;

Date: 25.03.2009

Signature:

Course leader: Senior Lecturer Giuşcă Răzvan, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**TECHNOLOGY OF CONSTRUCTIONS 1**

Codul disciplinei	**CE302**	Semestrul	**5**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28	-	14	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, DS – de specialitate, **DC** – complementară	**DIS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Materiale de construcţii; Construcţii civile.
	Recomandate	Geotehnică; Rezistenţa materialelor

Obiective	Studiul proceselor şi procedeelor tehnologice în scopul realizării calităţii, productivităţii şi eficienţei economice la executarea construcţiilor.
Conţinut (descriptori)	Execuţia industrializată a construcţiilor; Mecanizarea lucrărilor de construcţii; Transporturile în construcţii; Tehnologia lucrărilor de cofraje pentru betoane; Schele şi eşafodaje;

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.prezentare orală; sarcini: referat; condiţii de lucru M; pondere 30%; 2. testare scrisă; condiţii de lucru T; pondere 70%.			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări (M)**		**20%**
		Teste pe parcurs [*1*] **(M)**		**20%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	**Gradul didactic, titlul, prenume, nume**	Semnătura
	Şef lucr. dr. ing. Răzvan GIUŞCĂ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
STRUCTURAL DYNAMICS

1. Course leader: **Professor Gabriela M. ATANASIU, Ph.D.**
2. Topic characteristics: DI, DID **code: CE303**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	2		1		E	28		28		56

4. Objectives of the topic:

This course introduces fundamental aspects of modelling and analysis of structural dynamic response for some typical civil engineering constructions, modelled based on finite/ discrete degrees of freedom. This course gives the students the fundamental necessary knowledge to understand, learn and solved basic dynamic analysis of free and forced vibrations of structures.

5. Concordance between the objectives of the topic and the objectives of the training plan

The training plan is conceived in accordance with the fundamental objectives of the course and also in a benchmarking study of courses of Structural Dynamics offered as same level of higher education in European university and USA.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The course on Structural Dynamics allows students to identify the fundamental of dynamic analysis for some classes of elements and structures of the civil engineering domain and also to find solutions for various for the basic response of structures modeled by means of simple approaches to dynamic deterministic loading.

b. Technical skills and abilities

This course will offers students to accummulate new modern use of computational environment given by Matlab or Mathcad to solve engineering problems dealing with dynamic response of finite ord discrete modeled civile engineering structures.

7. Teaching procedures: using video presentation in power point format, examples and study cases based on movies, hard material of the lectures consulted in the faculty library, presentation of lectures summary shall be posted at Course leader Homepage

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: home works

b) means and working conditions for reaching the goal: review of knowledge at each new chapter, permanent communications, tutorial for each students during practical activity, evaluation for the final presentation of results

c) percentage of the evaluation in the final mark is of 50%.

Speciality projects(applications) **–** continuos evaluation of works progress during the works sessions.

Final evaluation**:** **Examination :** writtem. Percentage of the final mark: 40%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
CHAPTER 1. DYNAMIC ANALYSIS OF SINGLE DEGREE OF FREEDOM MODEL Formulation of Equations, Free and Forced Vibrations Response, Response to deterministic and general dynamic loading, evaluation of Equivalent Stress-Displacement State	10
CHAPTER 2. DYNAMIC RESPONSE OF MULTIDEGREE OF FREEDOM MODELS Modeling aapects, Free Vibration Response using Stiffness Matrix and Flexibility Matrix Method	14
CHAPTER 3. NUMERICAL ASPECTS IN STRUCTURAL DYNAMICS USING MATLAB ENVIRONMENT	4

Cumulated 28 hrs

9.2. Applications

	Name of task and content	
1	**Dynamic Response of a single degree of freedom model, SDOFM.** Solving and analyzing the respone for the free and forced vibrations of structures modeled as SDOF Models. Use of Matlab for computation of eigenvalues and vectors and for graphical representation.	10
2.	**Dynamic Response of a multi- degree of freedom model, MDOFM.** Solving and analyzing the respone for the free and forced vibrations of some clases structures modeled as MDOF Models. Use of Matlab for computation of eigenvalues and vectors and for graphical representation.	14
3	**Presentation of homeworks and final evaluation of results**	4

Cumulated 28 hrs

10. References

1) Atanasiu, G.M., Leon, F., 2008, Structural Dynamics Applications Using Matlab, Ed. Tehnopress, Iasi, ISBN 973-702-477-XD, Iaşi, 10 ex.

2) Atanasiu, G.M., 2005, Structural Dynamics, 2nd Edition, Vasile Goldiş University Press, Arad, 10 ex.

3) Atanasiu, G.M., 1995, Structural Dynamics and Stability, Rotaprint IPI, Iaşi, 10 ex.

4) Bârsan, G.M., 1979, Dinamica şi stabilitatea construcţiilor, Ed. Didactică şi Pedagogică, Bucureşti, 1 ex

5) http://www.utexas.edu/its/rc/answers/math/matlab/manual, University of Texas at Austin, Computation Center, Matlab Manual Pages, 1996.

6) http://www.tufts.edu/~rwhite07/Matlab.htm, White R., Matlab Tutorial, 2007.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Professor ATANASIU Gabriela M., Ph.D.	
Instructors:	Senior Lecturer Roşca Octavian, Ph.D.	
	Lecturer Toma Ionuţ, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STRUCTURAL DYNAMICS**

Codul disciplinei	**CE303**	Semestrul	**5**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Statica construcţiilor I şi II Rezistenţa Materialelor Utilizarea calculatoarelor
	Recomandate	Mecanica, sem I şi II, Metode numerice

Obiective	Cursul de Dinamica Construcţiilor introduce studentul în aspecte fundamentale ale modelării şi analizei structurilor din ingineria civilă modelate prin modele cu grade de libertate discrete şi solicitate de acţiuni dinamice deterministe.
Conţinut (descriptori)	Modelarea şi analiza dinamică a modelelor cu grade de libertate dinamică discrete, metode fundamentale de analiză a răspundului în vibraţii libere şi forţate la acţiuni dinamice modelate determinist.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.**prezentare orală** ; sarcini: referat ; condiţii de lucru: M pondere 40%;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**25%**
		Teste pe parcurs [*număr)*		**-**
		Lucrări de specialitate, teme de casă [*număr***]**		**25%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof univ. dr. ing. Gabriela M. ATANASIU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr. ing. Octavian V. ROŞCA	
	As.dr. ing. Ionuţ TOMA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
NUMERICAL METHODS IN ENGINEERING

1. Course leader: **Assoc. Prof. Mihaela IBĂNESCU, Ph.D.**
2. Topic characteristics: DI **code: CC304**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	2		1		C	28		14		42

4. Objectives of the topic:
The course gives the knowledge of modeling and analyzing the structural elements and structures by using the Finite Element Method, which is the most powerful numerical method in the civil engineering design

5. Concordance between the objectives of the topic and the objectives of the training plan
This subject offers to the student the possibility of performing the analysis of different types of structural elements and structures subjected to static and dynamic loads.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge
- Background of the Finite Element Method
- Principles on which the structural model is based on
- Basic concepts, like: nodal displacements, nodal forces, stiffness matrices etc.

b. Technical skills and abilities
- To analyze all kinds of structural elements subjected to static and dynamic loads by using FEM
- To use computer programs based on this method, like AXIS.

7. Teaching procedures:
The course is presented by using the projector. Different applications, additional explanations and demonstrations are performed in the traditional manner.
As concerns the applications, the teaching staff exemplifies the proposed task by using the recommended soft and a projector.

8. Evaluation system:
Stages:
Continuous assessment
a) type of imposed assignments: individual tasks
b) means and working conditions for reaching the goal: computers, adequate soft (MathCad).
c) percentage of the evaluation in the final mark: 40%

***Final evaluation*: Exam Examination: Written paper**
Percentage of the final mark: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Introduction in the Finite Element Method (FEM) Fundamental Concepts in FEM. Modeling Principles	3
2. Finite Element Analysis of Linear Structural Elements or Structures Made of Linear Elements Analysis of Axially Loaded Structural Elements. Analysis of Two- Dimensional and Three-Dimensional Truss Structures. Analysis Of Beams. Analysis of Two- Dimensional and Three-Dimensional Frames.	7
3. Finite Element Analysis of Two-Dimensional Structural Elements which Work In Plane Stress or Strain Triangular and Rectangular Finite Elements in Cartesian and Natural Coordinates. Axi-Symmetrical Finite Elements. Assembly Procedure.	6
4. Finite Element Analysis of Three-Dimensional Structural Elements Tetrahedral Finite Element. in Cartesian and Natural Coordinates. Brick-Shape Finite Element in Cartesian and Natural Coordinates. Assembly Procedure.	4
5.. Finite Element Analysis of Thin Plates and Shells Analysis of Thin Plates by using Rectangular and Triangular Finite Elements. Analysis of Shells	4
6. . Finite Element Method in Second Order Analysis and Buckling Analysis Truss Structure Analysis. Slender Beams Subjected to Combined Bending and Compression	2
7. Finite Element Method in the Dynamic Analysis of Structures Transverse Free Vibrations of Beams	2

Cumulated 28.hrs

e) 9.2. Applications

1	**Numerical Analysis Problems** Applications Referring to Solutions for Different Mathematical Problems (Systems of Algebraic Equations, Equations of n-th Degree, Eigen Values and Vectors in Standard and General Form etc) by Using MathCAD	2
2	**Finite Element Analysis of Axially Loaded Members** Analysis of a Stepped Member by Using MathCAD. Checking Method: FEM1D and AXIS	2
3	**Finite Element Analysis of a Two-Dimensional Truss Structure** Analysis of a Truss Structure by Using MathCAD. Checking Method: TRUSS and AXIS	2
4	**Finite Element Analysis of a Beam** Analysis of a Stepped Beam Subjected to Combined Bending and Shear by Using MathCAD. Checking Method: BEAM and AXIS	2
5	**Finite Element Analysis of a Two-Dimensional Frame** Analysis of a Frame by Using MathCAD. Checking Methods: FRAME and AXIS	2
6	**Finite Element Analysis of a Deep Beam** Analysis of a Deep Beam by Using MathCAD.. Checking up Methods: FE2CST and AXIS	2
7	**Buckling Analysis of an Axially Loaded Column by Using the Finite Element Method** Analysis of a Stepped Column by Using MathCAD. Checking up Method: Finite Differences Method	2

Cumulated 14.hrs

10. References

1. *Atanasiu Gabriela, Vlad Ioana, Brătianu C., (2005), Finite Elements in Structural Analysis, Ed. Cermi, Iaşi*

2. *Chandrupatla T. R., Belegundu A. D., (2002), Introduction to Finite Elements in Engineering, Prentice - Hall Pearson Educational International, Third Edition.*

3. *Cook R. D., (1995), Finite Element Modeling for Stress Analysis, John Wiley&Sons, Inc.*

4. *Diaconu D., Hobjilă V., Ciongradi I., (2000), Principii şi aplicaţii în calculul automat al structurilor termodeformabile, Ed. „Gh. Asachi" Iaşi.*

5. *Gârbea D., (1990), Analiza cu elemente finite, Editura Tehnică, Bucureşti.*
6. *Hutton D.V., (2004), Fundamentals of Finite Element Analysis, McGraw-Hill.*
7. *Jerca St., Ungureanu N., Diaconu D., (1997), Metode numerice în proiectarea construcţiilor, Rotaprint, U.T. Iaşi.*
8. *Mathews J.H., Fink K.D., (1999), Numerical Methods Using Matlab, Third Edition, Prentice Hall.*
9. *Pacoste C., Dubina D., Stoian V., (1988), Metode moderne în mecanica structurilor, Editura Ştiinţifică şi Enciclopedică, Bucureşti.*
10. *Pascariu I., (1985), Elemente finite. Concepte - aplicaţii, Editura Militară, Bucureşti.*
11. *Rao S.S., (2005), The Finite Element Method in Engineering, Fourth Edition, Elsevier Butterworth Heinemann.*

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc. Prof. Mihaela Ibănescu, Ph.D.	
Instructors:	Assoc. Prof. Mihaela Ibănescu, Ph.D.	
	Lecturer Ionuţ Toma, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**NUMERICAL METHODS IN ENGINEERING**

Codul disciplinei	**CE304**	Semestrul	**5**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DF**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Statics
	Recomandate	Strength of Materials, Theory of Elasticity, Dynamics

Obiective	- modelarea diferitelor tipuri de elemente şi structuri conform metodei elementului finit; - utilizarea metodei elementului finit în proiectarea elementelor structurale şi structurilor.
Conţinut (descriptori)	1.Introduction to Finite Element Method. 2. F.E.M. applied to linear structural elements or structures made of linear elements. 3. F.E.M. applied to two-dimensional elements which work in plane stress or strain. 4. F.E.M. applied to three-dimensional structural elements. 5. F.E.M. applied to plates and shells. 6. F.E.M. applied to second order analysis and buckling analysis problems.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1. Examinare scrisă, sarcini: probleme teoretice şi aplicaţii, condiţii de lucru: T			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen (T)**			**50%**
	Evaluarea pe parcurs (M)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**	**5**	**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Mihaela Ibănescu	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Mihaela Ibănescu	
	Dr. ing. Ionuţ Toma	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
REINFORCED AND PRESTRESSED CONCRETE

1. Course leader: **Assoc.prof. Marinela Bărbuţă, Ph.D.**
2. Topic characteristics: DI,DID **code: CE305**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	2			2	E	28		28		56

4. Objectives of the topic:
The course gives to students the knowledge necessary for understanding and to look into the particularities of design of principal elements of reinforced concrete (beams, slabs, columns, ties, walls) and for knowing the fundamental principles for realizing the prestressed concrete elements

5. Concordance between the objectives of the topic and the objectives of the training plan
The reinforced and prestressed concrete is continuing the Reinforced Concrete I, between them existing a complete concordance.
6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- to Know the computation particularities of reinforced concret sections under simple and combined loads (axial force plus bending, torsion plus bending);
- to know the physical models and design mehods for the real behavior of concrete and steel composite
- to know the properties of materials for prestressed concrete and technologies of realizing the prestressed concrete elements.
b. Technical skills and abilities
- to design the sections of structural elements
- to draw execution plans of reinforcing different reinforced concrete elements;
- to identify the efficient use domain of prestressed concrete

7. Teaching procedures:
-Powerpoint presentation
-video movies for case studies
-visits to construction sites or precast-factories
-goups of working in the class for specific themes.

8. Evaluation system:
Stages:
Continuous assesment
a) type of imposed assignements: reinforced concrete design
b) means and working conditions for reaching the goal: working in stages with final mark for project
c) percentage of the evaluation in the final mark: 20%

Speciality projects(applications)
The students will design a slab project; percentage of the evaluation in the final mark: 20%

***Final evaluation*:** **Examination** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
I. Computation principles for reinforced concrete elements	4
II. Limit state design in normal section for memebers subjected to bending plus axial force, torsion	10
III. Limit state design in inclined section	3
IV.Fatigue limit state.checking conditions	2
V. Limit state of cracking	2
VI. Limit state of deformation	2
VII. Provisions for realizing the structural elements of reinforced concrete	2
VIII. Basic principle of prestressed concrete	3

Cumulated 28 hrs

9.2. Applications

1.	Beam and girder floor design :design and reinforcing of the slab	4
2.	Beam and girder floor design :design and reinforcing of the beam	6
3.	Beam and girder floor design :design and reinforcing of the girder	6
4.	Two way edge supported slab: design and reinforcing of the slab	6
5.	Two way edge supported slab: design and reinforcing of the beam network	6

Cumulated 28 hrs

10. References

1.M. Bărbuţă *„Reinforced Concrete”*- Editura CERMI 2004, 190 pagini, Limba engleză
2.M. Bărbuţă *„Prestressed Concrete”*- Editura CERMI 2004, 190 pagini, Limba engleză
3.M. Bărbuţă *„Reinforced Concrete Floor Design”*- Editura TEHNOPRESS 2005, 145 pagini, Limba engleză
4. M. Bărbuţă *„Prestressed Concreted Design”*- Editura TEHNOPRESS 2005, 145 pagini, Limba engleză

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc.Prof. Marinela BĂRBUŢĂ, Ph.D.	
Instructors:	Assoc.Prof. Marinela BĂRBUŢĂ, Ph.D. Lecturer Bogdan ROŞCA	

FIŞA DISCIPLINEI

Denumirea disciplinei	**REINFORCED AND PRESSTRESSED CONCRETE**

Codul disciplinei	**CE305**	Semestrul	**5**	Numărul de credite	**5**

Facultatea	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domeniul	Inginerie Civilă		Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**		56	28			28

Categoria formativă a disciplinei DF – fundamentală, DID – în domeniu, DS – de specialitate, DC – complementară	**DID**
Categoria de opţionalitate a disciplinei DI – impusă, DO –opţională, DL –liber aleasă (facultativă)	**DI**

Discipline anterioare	Obligatorii (condiţionare)	Beton armat
	Recomandate	Rezistenţa materialelor

Obiective	Obiectivele cursului sunt: – să efectueze dimensionări pentru diferite solicitări ale secţiunilor elementelor structurale din beton armat; – să elaboreze planşe de execuţie pentru diferite elemente din beton armat; – să identifice domeniile de folosire eficientă a betonului precomprimat în practica curentă.
Conţinut (descriptori)	Calculul şi alcătuirea elementelor din beton armat, particularităţile betonului precomprimat

Sistemul de evaluare:			
Evaluarea finală*	Forma (E - examen, C - colocviu, VP - verificare pe parcurs)		**E**
	Probele evaluării prin E / C: 1. Subiect nr. 1 ; sarcini: concepţie structurală, proiectare şi soluţii de alcătuire; condiţii de lucru: T; pondere 30 %; 2. Subiect nr. 2 ; sarcini: concepţie structurală, proiectare şi soluţii de alcătuire; condiţii de lucru: T; pondere 30 %; 3. Subiect nr. 3 ; sarcini: concepţie structurală, proiectare şi soluţii de alcătuire; condiţii de lucru: T; pondere 30 %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen / colocviu		T 50%
	Evaluarea pe parcurs*	Activitatea la seminar / colocviu / proiect / practică	T 20%
		Teste pe parcurs [*număr*]	
		Lucrări de specialitate, teme de casă [*număr*]	T 20%
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Marinela BĂRBUŢĂ	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Marinela BĂRBUŢĂ	
	Asist.ing. Bogdan ROŞCA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
GEOTECHNICS

1. Course leader: **Associate professor Nicuţă Ana, Ph.D.**
2. Topic characteristics: DI (DID) **code: CE306**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	3		1		E	42		14		56

4. Objectives of the topic:
- Knowledge assimilation in physics and soil mechanics,
- Assimilation of soil properties determination,
- Knowing the soil pressure and deformation states,
- Assimilation of calculation models for soil pressure, slope stability and establishment of their bearing capacity.

5. Concordance between the objectives of the topic and the objectives of the training plan:
Is compulsory knowledge of mathematics, physics, chemistry, physics and colloidal chemistry, mechanics.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
b. Technical skills and abilities
- To present the capacity of recognizing a site,
- To be able to determine geotechnical indices,
- To present the capacity of replacing a geotechnical and stability study,
- To be able to evaluate the bearing capacity of the foundation soil.

7. Teaching procedures:
- Written dissemination of the study material – set course,
- Power point presentation,
- Realization of practical laboratory works,
- Theoretical analysis by calculus examples of the physical and mechanical properties of the soils.

8. Evaluation system:
Stages:
Continuous assesment
a) type of imposed assignements: Laboratory works
b) means and working conditions for reaching the goal: practical activity
c) percentage of the evaluation in the final mark 20%

Speciality projects(applications)
The exam will be of oral form, with individual ticket which contains three theoretical questions and a problem. The percentage of the answers to each theoretical question is of 20%, and for the problem 10 %.

Final evaluation: **70%** **Laboratory works 20%** **Percentage of the final mark**: **40** %

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
I. **Introduction, discipline objective, short history, connection with other discipline**	**1**
II. **Physical properties of soils;**	**8**
1. Structure and texture of soils as disperse systems,	2
2. Solid phase: grain size distribution, soils classification, chemical – mineralogical composition of the soils,	2
3. Liquid and gaseous phase; Interactions between soils component phases,	2
4. Geotechnical indices of soils.	2
III. Soils mechanical properties;	**8**
1. Soils compressibility,	4
2. Soils resistance to shear strength.	4
IV. Stresses and Strains in Soils;	**8**
1. Stresses state in soil as foundation area,	3
2. Unitary stresses state in limit equilibrium conditions,	2
3. Deformation state in soils.	3
V. Lateral Earth Pressure;	**8**
1. Calculus of soil pressure in Rankine hypothesis,	2
2. Calculus of soil pressure in Coulomb hypothesis,	2
3. Graphical – Analytical Methods (Culmann, Poncelet)	2
4. Projection and dimensioning of retaining walls,	2
VI. Stability of Slopes;	**5**
1. Slope stability for cohesive and cohesion-less soils,	3
2. Slope Stability Determination Methods,	2
VII. Bearing capacity	**4**
1. Phenomena and phases which appear in soil due to the soil failure by loading	2
2. Methods for Bearing Capacity Calculus	1
3. Calculation of foundation soil considering the method STAS 3300/85	1

Cumulated 42 hrs

9.2. Applications

	Name of task and content	
	1. Recognizing the foundation soil, grain size analysis of soils, classification and identification,	2
	2. Determination of soils volumetric weight and water content,	2
	3. Characteristic states of cohesive and cohesionless soils,	2
	4. Determination of optimal compaction humidity, of permeability and capillary height,	2
	5. Soils compressibility by oedometer testing;	2
	6. Determination of soils shear resistance;	2
	7. Calculation of phase characteristics of the soil and creation of geotechnical study.	2

Cumulated 14 hrs

10. References

1. Nicuţă A, 2008, Geotechnics, Editura Societăţii Academice ”Matei- Teiu Botez “,
2. Nicuţă A., 2006, Geotechnics. Laboratory Works, Editura Societăţii Academice ”Matei- Teiu Botez “,
3. Nicuţă A., Grecu V., 2003, Geotehnică – Indrumar pentru lucrări de laborator, Editura Societăţii Academice ”Matei- Teiu Botez “.
4. Stanciu A., Lungu I., 2006, Fundaţii, Editura Academiei, Bucureşti

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Prof. Nicuţă Ana, Ph.D	
Instructors:	Prof. Nicuţă Ana, Ph.D	

FIŞA DISCIPLINEI

Denumirea disciplinei	**GEOTECHNICS**

Codul disciplinei	**CE306**	Semestrul	**5**	Numărul de credite	**5**

Facultatea	Construcţii şi Instalaţii	Numărul orelor pe semestru				
Domeniul	Inginerie Civilă	Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**	56	42		14	

Categoria formativă a disciplinei DF – fundamentală, DID – în domeniu, DS – de specialitate, DC – complementară	**DID**
Categoria de opţionalitate a disciplinei DI – impusă, DO –opţională, DL –liber aleasă (facultativă)	**DI**

Discipline anterioare	Obligatorii (condiţionare)	Geologie
	Recomandate	Materiale de construcţii, Teoria Elasticităţii

Obiective	Însuşirea cunoştinţelor din domeniul fizicii şi mecanicii pământurilor Însuşirea modalităţilor de determinare a proprietăţilor pământurilor Cunoaşterea stărilor de tensiuni şi deformaţii la pământuri Însuşirea modalităţilor de calcul a impingerii pământului, a stabilităţii taluzurilor şi de stabilire a capacităţii portante a acestora
Conţinut (descriptori)	Discipline objective, short history, connection with other discipline; Physical properties of soils; Soils mechanical properties; Stresses and Strains in Soils; Lateral Earth Pressure; Stability of Slopes; Bearing capacity

Sistemul de evaluare:			
Evaluarea finală*	Forma (E - examen, C - colocviu, VP - verificare pe parcurs)		**E**
	Probele evaluării prin E / C: 1. prezentare orală; sarcini răspuns la trei subiecte; condiţii de lucru T, pondere 60%; 2. testare scrisă; sarcini rezolvare probleme; condiţii de lucru T pondere 10%;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen / colocviu		40%
	Evaluarea pe parcurs*	Activitatea la seminar / colocviu / proiect / practică	20%
		Teste pe parcurs [*număr*] CC	-
		Lucrări de specialitate, teme de casă [*număr*] T	30%
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr. ing. Ana NICUŢĂ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
CIVIL CONSTRUCTIONS

1. Course leader: **Senior Lecturer, Radu - Aurel PESCARU, Ph. D.**
2. Topic characteristics: DI, DID code: CE307
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	2			2	E	28		28		56

4. Objectives of the topic:
- *The students receive the possibility of being able to develop their professional understanding about the main structural, enclosing and dividing elements of the buildings, what functional requirements have to foul-file each type of element;*
- *The course gives to the students the main principles about how to conceive the main building elements in accordance with the assumed supported stresses and the construction materials used in accordance with the European and national standards and regulation;*
- *The students have to understand how to select the adequate structural type according to performance requirements and the principles of civil building designing.*

5. Concordance between the objectives of the topic and the objectives of the training plan
Civil Construction is one of the main subjects, with a formative function, from the field of civil building engineering area. Its objectives are to harmonize and complete the basic education of the young civil engineer students along with disciplines: reinforced concrete constructions, steel structures, wood constructions, giving a general overall vision about how each element must be designed according to the material and structural type. The objectives of the course fall in the objectives of the curricula as concerns the use of advanced means of study and the principles of conceiving civil buildings and solving some problems of building elements design and construction.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- Specific information and regarding civil building constructions as the possibility: to identify the structural and functional part of the construction elements, to identify the types of structures corresponding to constructions specific to civil buildings;
- Communication skills (speak clearly using an adequate technical English language, read with comprehension, work effectively in groups, interpret / use graphic communication);

b. Technical skills and abilities
Upon successful completion of this course, the student should be able to:
- make sketches and scale drawings of floor plans, foundation plans, elevations, section and working drawings of individual or collective dwellings or other public buildings with specific standard symbols;
- to know specific performance requirements for building elements;
- to select appropriate constructive solutions for structures, non-structural elements and finishing;
- work from the ideas and plans of authorized designers to recognize the eventually design mistakes / errors for the building elements and to propose repairing solutions in accordance with the specific condition of the site or building structure.
- use local building regulations and specifications (Romanian Standards and Euronorms or Eurocodes) to develop a set of working drafts for a civil building that would meet all requirements for a building authorize;

7. Teaching procedures:

Relationship between student and professor is a collaboration type, where everybody assumes the responsibility to reach the learning results.

Learning subjects are clearly explained and discussed with students from their relevance perspective for their professional enhancement. It is described how to select the constructive solutions, for the building elements, that re adapted to specific requirements and also there are analyzed case studies.

In the teaching process, professors utilized the classical methods and also the resources of the new technologies: e-mail, personal web page for themes and references, PowerPoint slides and overhead projections, computer programs for static and seismic analysis of civil buildings etc.

8. Evaluation system:

Stages:

Continuous assessment

- Imposed project personalized for each student: checking will be for every student, every student will present the solved subject in front of their colleagues;
- Means and working conditions for reaching the goal: students will calculate using standard requirements and adequate computer programs like ISOVER, CasaNOVA and ROBOT the thermal resistance for envelope elements of the building and compression and tensile forces, shear forces and moments for main transverse shear walls for a malty storey building;

The course grade will be determined by the students' performance during project work using the following procedures:

Specialty projects (applications) - The students elaborate a project of a building (Ug+G+4Fl… Ug+G+8Fl) with semi-rigid structure (shear-walls and skeleton) made of monolith reinforced concrete. A summary of the project content: Establishing the main dimensions (height, width and length regimes) due to ergonomically, hygienically an comfortable living requirements in condition of minimal heating energy consumption, design of envelope members (external walls, roof, floor over basement), checking of (structural) shear-walls to special loads combinations, efforts design, etc. A set of drawing plans and details with particular characteristics for each student will be performing, too.

(*Students' performance is assessed according to the quality of work performed and systematic record of significant information created by the student in the project*)

Percentage of the final mark: 50 %

***Final evaluation*: Examination**

Evaluation of theoretical knowledge acquired during the semester - written and oral examination.

Percentage of the final mark: 50 %

Mark: (*The final grade will be the weighted average of the following marks*)

1. Project evaluation: 40%
2. Final examination test paper: 50%

9. Content of the subject

9.1. Course

Chapter	Nr. of hrs.
1 Building elements. 1.1. Building infrastructure / substructure - (3h) - Main factors which determine the choice of the building foundations and underground floors type. Damp proof courses (hydro-insulation) for foundations & underground floors. 1.2. Walls - (4h) - Structural masonry walls. Load bearing walls of monolithic and prefabricated reinforced concrete. Envelope or closing walls. Dividing internal walls. Fire Protection of the walls. 1.3. Floors - (4h) - Performance requirements. Conception. Wood, steel, monolithic and prefabricated reinforced concrete and ceramic elements floors. Mechanical behavior under the vertical and horizontal loads action. Fire protection of the floors. 1.4. Staircases - (4h) - Components. Functional design. Classification / types of stairs. Structural forms of stairs. General items of design. 1.5. Roofs - (4h) - Functional requirements. Classification. Pitched roofs with plane / flat surfaces. Wood pitched roof outset. Roof coverings. Technical requirements. Terrace roofs design principles. Hygro-thermal behavior of the roofs.	20

2. Structural systems for civil buildings. 2.1 Buildings with (load-bearing) structural walls of masonry. Principles of conception. 2.2 Buildings with monolithic or prefabricated reinforced concrete structural walls. Principles of conception. 2.3 Frames structures for civil buildings. Principles of conception. Building structure adaptation / conformation to functional changes.	4
3. Finishes. 3.1 Traditional plasters. Board plasters and finishes. Floor finishes. Functional suspended ceilings (sound-absorbent, fire insulating and for masking the installations). Classification. Composition. Requirements. Technologies. 3. Windows and doors. Outside coating & paintings. Performance. Requirements. Principles of conception.	4

Cumulated: 28 hrs

9.2. Applications

Civil Constructions – Project - ***Design of a civil building (UG+G +4 Fl ... UG+G +8 Fl) with semi-rigid structure (shear walls + lamellar frames) of monolith or prefab reinforced concrete.***	
1. Theme of the project and individual student data.	2
2. Structural conception of the building.	2
3. Hygro-thermal checking of the building envelope elements. Estimation of condensation risk in the envelope elements. The global thermal insulation coefficient evaluation (by available software)	2
4. Evaluation of the actions on building: permanent actions (self-weight), variable actions (live loads, snow load, dividing walls) and accidental actions (seismic loading). Combination the actions effects on the structure.	2
5. Building structure sectional characteristics. Shear walls rigidity estimation.	8
6. Distribution of the loads on the vertical structure of resistance. Load effect diagrams. Evaluation of the stresses in the elements.	8
7. Shear walls section checking. Reinforcement estimation and distribution in the shear walls.	2
8. Building foundation conformation to the site land characteristics.	2

Cumulated: 28 hrs

10. References

1. R.A. Pescaru - CIVIL CONSTRUCTIONS ∗ BUILDING ELEMENTS, Ed. Soc. Acad. "Matei-Teiu Botez"-Iasi 2005
2. Al. Vereş, M. Vasilache - Construcţii civile. Elemente de construcţii, Ed. Cermi, Iaşi, 2004
3. Al. Vereş, M. Vasilache - Construcţii civile. Forme structurale pentru construcţii civile, Ed. Cermi, Iaşi, 2003
4. D. Marusceac - Construcţii civile, ET Bucureşti 1998
5. V.Focşa - Construcţii civile, vol. I, II, III, U.T.Iaşi 1978
6. V.Focşa - Higrotermica şi acustica clădirilor, EDP Bucureşti 1976
7. A.Radu, Al. Vereş - Construcţii civile partea I Ed. Univ. Tehn. Iaşi 1985
8. Al.Vereş, M. Vasilache– Fizica construcţiilor. Elemente de acustica construcţiilor, Ed. Cermi Iaşi 2002
9. Normativ C 107/2005 – Normativ privind calculul termotehnic al elementelor de construcţie ale clădirilor
10. Al. Ciornei - Cum concepem construcţiile civile, Ed. Junimea, Iaşi, 2000
11. Al. Ciornei, M. Vasilache, Al. Secu. – Îndrumător pentru calculul construcţiilor civile, U.T. Iaşi, 1991
12. Normativ C107 / 2005.
13. P100/1 – 2006 Cod de proiectare seismică. Prevederi de proectare pentru clădiri
14. P85/ 87 şi P101 Calculul construcţiilor din diafragme.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Radu - Aurel PESCARU, Ph.D.	
Instructor:	Senior Lecturer Radu - Aurel PESCARU, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**CIVIL CONSTRUCTIONS**

Codul disciplinei	**CE307**	Semestrul	**5**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28			28

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Materiale de construcţii, Rezistenta materialelor, statica si dinamica structurilor , Teoria elasticităţii şi plasticităţii

Obiective	- *The student*s receive the possibility of being able to develop their professional understanding about the main structural, enclosing and dividing elements of the buildings, what functional requirements have to foul-file each type of element; - The course gives to the students the main principles about how to conceive the main building elements in accordance with the assumed supported stresses and the construction materials used in accordance with the European and national standards and regulation; - The students have to understand how to select the adequate structural type according to performance req*uirements and the principles of civil building designing.*
Conţinut (descriptori)	Building elements. Structural systems for civil buildings. Finishes

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. testare scrisă; sarcini rezolvare fişă cu 8 subiecte teoretice; condiţii de lucru T			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen T**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*1 proiect***]**		**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	s.l. dr.ing. Radu - Aurel PESCARU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	s.l. dr.ing. Radu - Aurel PESCARU s.l. dr.ing. Irina BARAN	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
PROGRAMING LANGUAGES (MATLAB)

1. Course leader: **eng. Gabriela COVATARIU**
2. Topic characteristics: DL, DID **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	1	-	3	-	C	14	-	42	-	56

4. Objectives of the topic:
The goal of the course is to create student's skills in order to use an programming language and to create the computer programs needed in order to solve the themes imposed by the study of the Civil Engineering's disciplines. The course is focused to develop programming skills needed to process data and engineering concepts needed on Faculty and later in engineer's carrier or researcher. This discipline completes the notions from Computer Usage discipline by completing with notion concerning Matlab developing language.

5. Concordance between the objectives of the topic and the objectives of the training plan
The discipline's objectives are according to those of the general curriculum. Being an optionally discipline, can assure a complementary support in specialty educational. These notions are necessary to the learning process, helping the student to solve problems also for alternative discipline from curricula using *developing mediums*. The knowledge could be useful in order to solve professional themes and also in learning process (in master programs, doctoral studies or researching activity).

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- *to understand the main principles and the methods in order to use an programming language (MatLAB).*

b. Technical skills and abilities
- *to identify, to organize and to correct use the informations from the specific disciplines of the Civil Engineer domains in personal programs in order to solve the engineering application by medium and high level complexity.*

7. Teaching procedures:
The discipline's presentation will be shown helping with computer program (Microsoft Powerpoint), helping with large explanations on the slides, or detailed on the blackboard (where is necessary. Also, specific computer programs will be used in order to have clearly explanations. Individual study of the bibliography will be encouraged.
This technique presents the following advantages:
- *help to send an clear and conceived message (course);*
- *the structure of content will be very easy to understand*
- *many images, graphics, tables and other visual aspects (movies) could be easy inserted in presentation;*

Permanently is indented the feedback from the students and the explanations will be adapted depending from its reactions. At the applications, are shown problems helping with the projector, working together with the students, to achieve more knowledge from the studied software

8. Evaluation system:

- *Permanent evaluation: Final note sharing: 20%*

Seminary activity and homework: Each seminary work will receive a note which will show the quality and quantity of the accumulated knowledge.

- *Final evaluation: Colloquium - Final note sharing: 70%*

Oral presentation of an essay of a theme (choused in according with the teacher), which will reflect all the knowledge achieved from the semester.

Final result will be obtained by arithmetical mean of the following:

1. Basic notation – 10%.
2. Seminary activity and homework notation – 20%
3. Final colloquium – 70%

Needed result will by ≥ 5.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Programming mediums usage in scientific and engineering problem's solving – Matlab *- Basic notions about programming mediums and its using by students and engineers* *- Basic operations with matrix in Matlab* *- Programming principles and basic instructions in Matlab* *- Programmed graphics in Matlab.*	2
2. Basic commends in Matlab *- Decisional instructions, repetitive* *- Data import / export instructions* *- Elementary data's types: constants and variables* *- Functions* *- Graphics*	6
3. Matlab - Toolbox-uri, Simulink	2
4. Civil Engineering problem's examples solved helping with Matlab	4

Cumulated 14 hrs

9.2. Applications

1	Laboratory presentation and Functionality Rules, Protection Rules, Fire Safety Rules	1
2	**Programming mediums usage in order to solve scientific and engineering problems – Matlab** - Recapitulations of the main facilities supported by the programming medium Matlab: methods to compound a matrix, elementary elements with matrix, basics instructions in Matlab language, Storing and managing the programs, programmed graphic's basic instructions in Matlab, files	2
3	**Algorithms and logical schemas** – recapitulation	3
4	**Elementary data's types. Variables and constants.** **Type conversions, Arithmetically expressions, Logic expressions** **Decisional commands:** if, switch, **Repetitive commands:** for, while **I/O operations on elementary data.** input /output, load, save, fprint, sprintf **Functions** **Graphics**	24
5	**Toolbox Libraries visualization, Simulink. Problem's solving**	3
6	**Civil Engineering problem's examples solved helping with Matlab**	3
7	Colloquium theme's preparation – problems applicable in Civil Engineering	3
8	Colloquium	3

Cumulated 42 hrs

10. References

1. M.Ghinea, V.Fireţeanu, *Matlab. Calcul numeric-grafică-aplicaţii*, Editura Teora, Bucureşti, 1998
2. Ciongradi, C., Schärf, F., Jerca, Şt., Ştefan, D., Păuleţ, F. – "Programarea la calculator", Rotaprint, I.P.Iaşi, 1990

3. Matlab - Documentatie pachet programe
4. B. Hahn, D.T. Valentine – Essential Matlab for Engineer and Scientist, Elsevier, 2007
5. Hunt R.B., Lipsman L.R, Rosenberg M. J. – A Guide to Matlab for Beginners and Experienced Users, Cambridge University Press, 2003

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	eng. Gabriela COVATARIU	
Instructor:	eng. Gabriela COVATARIU	

FIŞA DISCIPLINEI

Denumirea disciplinei	**LIMBAJE DE PROGRAMARE (MATLAB)**

Codul disciplinei		Semestrul	**5**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	14		42	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Utilizarea calculatoarelor
	Recomandate	

Obiective	Cursul urmărește crearea abilității cursanților în a folosi un limbaj de programare și de a crea programele pentru rezolvarea problemelor impuse de studiul disciplinelor de construcții. Se urmareste prin acest curs dezvoltarea elementelor de programare necesare în prelucrarea datelor și conceptelor inginerești ce apar atât în timpul studiilor de licență cât și ulterior în cariera de inginer sau cercetător.
Conţinut (descriptori)	Utilizarea mediilor de programare în rezolvarea problemelor ştiinţifice şi inginereşti – Matlab;Comenzi de bază în Matlab; Matlab - Toolbox-uri, Simulink; Exemple de probleme din ingineria civila rezolvate cu ajutorul Matlab-ului

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării Prezentare orală, referat 70%:			
Stabilirea notei finale (procentaje)	**Evaluare finală prin prezentare lucrare finala**			**70 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar/lucrări**		**20 %**
		Teste pe parcurs		**0 %**
		Lucrări de specialitate, teme de casă [1]		**0 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	drd.ing. COVATARIU Gabriela	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	drd.ing. COVATARIU Gabriela	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IlI** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ADVANCED ENGLISH

1. Course leader: **Senior Lecturer TUDOR Florin Mircea, Ph.D.**
2. Topic characteristics: DL (DC) **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5		2			VP		28			28

4. Objectives of the topic:

The course estimates the knowledge level of English acquired during the first academic year, the revision of the essential grammar structures, the developing of the translation and writing abilities in what the civil engineering texts are concerned

5. Concordance between the objectives of the topic and the objectives of the training plan
The objectives of the topic are in agreement with the training plan

6. Learning outcomes expressed in knowledge, technical skills and abilities
e. Knowledge
The student must translate from English into Romanian an easy technical text without a dictionary and a difficult one with a dictionary. He must also translate a text from Romanian into English with a dictionary
b. Technical skills and abilities
The student must have a rather good grasp of some of the technical English terms used in civil engineering.

7. Teaching procedures:
Practical applications concerning civil engineering English texts. The applications are done individually and in groups of 2 – 4 students.

8. Evaluation system:
Seminar: individual evaluation depending on the quality of the oral exercises and of the practical applications: 20%
Tests: 2 tests per semester : evaluation: 20%
Homeworks: 2 homeworks: evaluation: 20%
Final semester examination: practical application with or without a dictionary: evaluation: 60%

Stages:

Continuous assessment

a) type of imposed assignments: 2 homeworks, 2 test papers per semester : 40% (20% + 20%)
b) means and working conditions for reaching the goal: books, dictionaries
c) percentage of the evaluation in the final mark

Speciality projects(applications)

***Final evaluation*:** **Examination** **Percentage of the final mark**: 30%

9. Content of the subject:

a) **9.1. Course**

b) **9.2. Applications**

1	Technical characteristics of English language (I)	2
2	English language technical characteristics (II)	4
3	Technical translation	4
4	Civil Engineering (I)	2
5	Test Paper 1	2

Cumulated 28 hrs

10. References

Allen, J. P. B., Widdowson, H.G, English in Physical Science, London, 1974
Close R. A., The English We Use for Science, London, 1975
Ewer, J. R., Latorre G., A Course in Basic Scientific English, London, 1976
Hall, Eugene J., The Language of Civil Engineering in English, Englewood Cliffs, 1977
Koch, Paul, Engineering: Civil and Mechanical Engineering, New York, London, 1984

Date: 25.03.2009

	Name and surname	**Signatures:**
Instructor:	Senior Lecturer Tudor Florin Mircea, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ADVANCED ENGLISH**

Codul disciplinei		Semestrul	**5**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul II**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**28**		**28**		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Limba engleză din anii I şi II de facultate
	Recomandate	

Obiective	The student must translate from English into Romanian an easy technical text without a dictionary and a difficult one with a dictionary. He must also translate a text from Romanian into English with a dictionary The student must have a rather good grasp of some of the technical English terms used in civil engineering.
Conţinut (descriptori)	Technical characteristics of English language (I) English language technical characteristics (II) Technical translation Civil Engineering (I)

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		20 %
		Teste pe parcurs [*număr)* 2		20 %
		Lucrări de specialitate, teme de casă [*număr***]** 2		20 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular(i) disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	Lect.dr. Florin Mircea TUDOR	

Titular(i) aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	Lect.dr. Florin Mircea TUDOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
EARTHQUAKE ENGINEERING

1. Course leader: **Prof. PĂULEȚ-CRĂINICEANU Fideliu, Ph.D.**
2. Topic characteristics: DI, DIS **code: CE308**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2		1		E	28		14		42

4. Objectives of the topic:
- To make seismic calculus models for constructions' structures
- To select the dynamic/static method
- To determine the seismic load for systems with 1DOF and nDOF.
- To know and observe the composing conditions for structures submitted to seismic actions.

5. Concordance between the objectives of the topic and the objectives of the curriculum:
- Identification and composition of models for structures submitted to seismic actions
- Determination of loads and of the seismic calculus method
- Knowledge of seismic conformity for structural elements

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- Knowledge of data regarding the structural behavior of constructions submitted to seismic loads
- Knowledge of anti-seismic requirements in all construction phases.

b. Technical skills and abilities
- Interpretation and synthesis of data regarding the structural behavior of constructions submitted to seismic loads.
- Application of anti-seismic requirements in all construction phases.

7. Teaching procedures:
- Gradual and selective introduction of all new information
- Presentations in classical manner and using a projector, problem solving and results interpretation.
- Connections with other taught specialty topics
- Computer software use for studying of practical examples or for a medium level problem solution.

8. Evaluation system:
Stages:
Continuous assessment
a) Type of imposed assignments: 4 written assignments.
b) Means and working conditions for reaching the goal: home and class work combined. In the class, the coordinator (professor, assistant professor etc.) is noting and correcting the progress of each student.
c) Percentage of the evaluation in the final mark: 20%

Specialty projects (applications)

Assignments: 1. Report on seismology for civil engineers and structural dynamics; 2. Seismic response of 1DOF structures; 3. Seismic response of nDOF structures; 4. Solving a medium complexity structure using a computer program

Percentage of the evaluation in the final mark: 20%

***Final evaluation*: C** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
I. Behavior of different types of buildings and their degradation due to earthquakes	**2**
II. Elements of Seismology Seismic action nature. Characteristics of seismic actions. Earthquakes classification. Seismic risk and seismic hazard. Seismic action measurement. Romanian earthquakes' characteristics.	**6**
III. Seismic response of 1 DOF systems Seismic response of 1 DOF structures due to rigid base displacement. Seismic spectral response. Time-history seismic response of 1DOF systems.	**4**
IV. Seismic response of *n* DOF systems Modeling structures submitted to seismic actions. Spectral analysis of seismic response. Horizontal distribution of seismic forces.	**6**
V. Normalization of seismic forces conforming to seismic codes Seismic calculus hypotheses and seismic calculus methods. Ductility. Seismic calculations conforming to design codes.	**6**
VI. New systems of seismic protection	**4**

Cumulated 28 hrs

9.2. Applications

1	**Assignment 1** Report on seismology for civil engineers and structural dynamics	**2**
2	**Assignment 2** Seismic response of one DOF structures	**4**
3	**Assignment 3** Seismic response of n-DOF structures	**4**
4	**Assignment 4** Solving a medium complexity structure using a computer program	**4**

Cumulated 14 hrs

10. References

1. Păuleţ-Crăiniceanu, F. - "Earthquake Engineering – lecture notes", 2008, http://www.ce.tuiasi.ro/~fideliu

2. Păuleţ-Crăiniceanu, F. - "Earthquake Engineering - outline of presentations", 2008, http://www.ce.tuiasi.ro/~fideliu

3. **** P100-1/2006. Earthquake Engineering Code (in Romanian).

4. Chopra Anil K. Dynamics of Structures – Theory and Applications to Earthquake Engineering, Prentice Hall International, Inc.2003.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Prof. Păuleţ-Crăiniceanu Fideliu, Ph.D.	
Instructors:	Prof. Păuleţ-Crăiniceanu Fideliu, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**EARTHQUAKE ENGINEERING**

Codul disciplinei	**CE308**	Semestrul	**6**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, DS – de specialitate, **DC** – complementară	**DIS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Statics of Constructions 1 and 2, Structural Dynamics
	Recomandate	Numerical Methods in Engineering, Finit Element Analysis

Obiective	- Alcătuirea modelelor de calcul seismic pentru structuri de construcţii - Selectarea metodelor de calcul dinamic/seismic - Determinarea încărcării seismice pentru sistemele cu 1GLD şi cu n GLD - Cunoaşterea şi să respectarea condiţiilor de alcătuire a construcţiilor supuse acţiunilor seismice
Conţinut (descriptori)	- Comportarea diferitelor tipuri de clădiri şi avarierea lor datorită cutremurelor - Elemente de seismologie: Natura acţiunii seismice, caracteristicile acţiunii seismice. Clasificarea cutremurelor de pământ, Riscul şi hazardul seismic. Măsurarea acţiunii seismice. Caracteristicile cutremurelor româneşti. - Răspunsul seismic al sistemelor cu 1 GLD: Răspunsul structurii cu 1 GLD la deplasarea bazei rigide. Spectre seismice de de răspuns. Răspunsul sistemului cu 1 GLD în timp „time history". - Răspunsul seismic al sistemelor cu n GLD: Modelarea structurilor supuse la acţiuni seismice, Analiza spectrală a răspunsului seismic. Repartiţia forţelor seismice orizontale. - Normarea forţelor seiamice conform codurilor de proiectare: Ipotezele şi metodele de calcul seismic. Ductilitatea. Calculul seismic conform codurilor de proiectare. - Noi sisteme de protecţie seismică.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării Probă scrisă: 4 subiecte teoretice, rezolvarea unei probleme de complexitate medie; M; pondere 50%			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări M**		**20%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***] M**		**20%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	prof.dr.ing. Păuleţ-Crăiniceanu Fideliu	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	prof.dr.ing. Păuleţ-Crăiniceanu Fideliu	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

FINITE ELEMENT ANALYSIS

1. Course leader: **Professor Gabriela M. ATANASIU, Ph.D.**
2. Topic characteristics: DI, DID **code: CE309**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2		1		C	28		14		42

4. Objectives of the topic:

The course introduces fundamental aspects of modelling and analysis of structural response for some typical civil engineering constructions using Finite Elements. This course, seen as an introduction for the future design tasks, gives the students the fundamental necessary knowledge to understand, learn and solved basics in FE analysis for static cases of loading as well as for the free and forced vibrations case.

5. Concordance between the objectives of the topic and the objectives of the training plan

The training plan is conceived in accordance with the fundamental objectives of the course and also in a benchmarking study of courses of Introduction in FE Analysis offered as same level of higher education in European university and USA.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

The offered course on Finite Elements Analysis will allow students to identify the fundamental of computation and results analysis using FE, focusing on static and dynamic analysis for some simple classes of elements and structures specific for Civil Engineering domain. The students will find solutions for various for the basic computational response of structures modeled by means of FE in a modern computational environment done by SAP 2000 a.o.

b. Technical skills and abilities

This course will offers students to accummulate new modern use of computational environment given by SAP 2000 to solve engineering problems dealing with static and dynamic response of finite or discrete models from the complex classes of civil engineering structures. Simple case studies finalysed by some design input shall be also offered, which will enhance the knowledge and technical skills of modeling using FE:

7. Teaching procedures: using video presentation in power point format, examples and study cases based on movies, hard material of the lectures consulted in the faculty library, presentation of lectures summary shall be posted at Course leader Homepage

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: home works

b) means and working conditions for reaching the goal: review of knowledge at each new chapter, permanent communications, tutorial for each students during practical activity, evaluation for the final presentation of results

c) percentage of the evaluation in the final mark is of 50 %.

Speciality projects(applications) **–** continuos evaluation of works progress during the works sessions.

***Final evaluation*: Examination :** Oral Evaluation **Percentage of the final mark: 40%**

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
Chapter 1. Review of basic approaches in matrxi analysis of structures for Civil Engineeering domain.	4
Chapter 2. Finite element Analysis using unidimensional elements,plainstrain stress and bidimensional elementsStages of modeling, margin conditions and load applications. Case studies.	10
Chapter 3. Finite element Static Analysis using SAP2000. Stages of analysis and case studies for different classes of FE.	10
Chapter 4. Finite Element Modal Analysis of structures based on SAP 2000 application.	4

Cumulated . 28 hrs

9.2. Applications

No.	**Name of task** and content	
1	**Finite Element Analysis of truss structures for static loading** Modeling based by SAP 2000 of truss structure, solving and analyzing the response for static single and static loading combinations. Results analysis and interpretation	4
2.	**Finite Element Analysis of 2D structures for static loading** Modeling based by SAP 2000 of plane stress-strain, plate and 2D structures; solving and analyzing the response for single static load and combinations. Results analysis and interpretation	4
3	**Dynamic Analysis of Structures using SAP 2000.** Modeling based SAP 2000, solving and analyzing the respone for the free and forced vibrations of some clases structures (truss and 2D frames). Results analysis and interpretation	4
4	**Presentation of homeworks, final evaluation of results, final students evaluation**	2

Cumulated . 14 hrs

10. References

1. Atanasiu, G.M., et al., 2004**,** Finite Element Analysis, 1nd ed., ISBN 973-667-062-7, Ed. Germi, Iaşi**,** 10 ex.
2. Atansiu, G.M., Leon, F., 2008, Structural Dynamics Applications Using Matlab Ed. Tehnopress, ISBN 973-702-477-XD, Iaşi, 10 ex.
3. Atanasiu, G. M., 2005, Structural Dynamics, 2nd, Vasile Goldiş University Press, Arad, 2005, 10 ex.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Professor ATANASIU Gabriela M., Ph.D.	
Instructor:	Senior Lecturer Roşca Octavian, Ph.D.	
	Lecturer Toma Ionut, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**FINITE ELEMENT ANALYSIS**

Codul disciplinei	**CE309**	Semestrul	**6**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Dinamica Construcţiilor Statica construcţiilor I şi II Rezistenţa Materialelor Metode numerice
	Recomandate	Mecanica, sem I şi II, Utilizarea calculatoarelor

Obiective	Cursul de F.E.Analysis introduce studentul în aspecte fundamentale ale modelării şi analizei structurilor din ingineria civilă prin metoda elementului finit asistată de software performant, SAP 2000 cu licenţă.
Conţinut (descriptori)	Bazele modelării cu Elemente Finite, Analiza statica şi dinamică matriceală, analiza modală a vibraţiilor libere pentru clase de structuri specifice, folosing modele de Element Finit uni, bi şi tridimensionale, aplicând metoda elementului finit în cadrul programului de calcul SAP 2000, cu licenţă.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.**prezentare orală** ; sarcini: referat ; condiţii de lucru M pondere **40%;**			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**25%**
		Teste pe parcurs [*număr)*		
		Lucrări de specialitate, teme de casă [*număr***]**		**25%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof univ. dr. ing. Gabriela m. ATANASIU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	ş.l. dr. ing. Octavian V. ROŞCA	
	As.dr. ing. Ionuţ TOMA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
ELEMENTS OF STEEL STRUCTURES 2

1. Course leader: **Prof. Nicolae ŢĂRANU, Ph.D.**
2. Topic characteristics: DI, DID **code: CE310**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2			2	E	28			28	56

4. Objectives of the topic:
The students that gather the knowledge accumulated during the previous tuition period (Steel Structures 1) and using the information from Strength of Materials will further study the fundamentals of designing and manufacturing the structural steel elements and their connections. The design project that they will accomplish is aimed to enhance their knowledge on members in bending and in compression as parts of the steel structures.

5. Concordance between the objectives of the topic and the objectives of the training plan
The learning program will insure accumulation of information on the design and prefabricate in workshop of steel elements and their connections in order to obtain a steel structure for the domain of Civil Constructions.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- To know the behaviour during the service life, the particular features for the design and the constructive details of steel elements subjected to various stresses and to choose the optimum solution,
- To know the ways and means of connecting of the steel members

b. Technical skills and abilities
- To identify the steel elements inside a structure and to evaluate the global sectional efforts to which it must be verified,
- To choose the constructive solution adequate for the stress and destination of the structural element
- To identify the solutions for making the connections
- To verify by calculation the safety criteria imposed by the limit state requirements.

7. Teaching procedures:
- course elaborated in an interactive manner,
- powerpoint presentations,
- discussions on particular examples given,
- information gathered by the students by individual study in the library of the faculty and on internet

8. Evaluation system:
Stages:
Continuous assessment : in class during the stages of the project Weight in the final evaluation 40%.

The students will solve the design problems of a steel structure, based on individual characteristics given apriori. They will use computer aids for structural evaluation of the stresses and strains and will elborate the layouts and details for execution. The evaluation is on-line based on the individual activity of solving the stages of the project.

Final assessment: examination Weight in the final evaluation 50%

(Written paper, 2 examiners, 10 subjects, minimum mark 5, for solving ½ of every subject + project solved entirely)

9. Contents:

9.1. Course

	Chapter	**Nr. of hrs**
1	**ELEMENTS OF STEEL STRUCTURES. VARIA** Types of structural steel members; beams, plate girders, lattice girders, roof trusses. Concepts for the design of members in tension, in bending and in compression.	**2**
2	**GIRDERS WITH SOLID SECTIONS** Sections; sections classes; behaviour in elastic and plastic domain; verifications of strength; verification of stiffness, verification of stability: local buckling of the walls in compression and overall buckling; verification of fatigue. Castellated beams; connections between parts of the member; joints and supports; intersections of beams and girders.	**12**
3	**STEEL TRUSSES** Geometry, sections used for chords and internal members and joints layout, efforts in the internal members; design and verification of the members in tension and in compression; verification of stiffness; details of assembling the truss members with simple, compound and hollow sections; design of different types of joints connections.	**7**
4	**STEEL COLUMNS** Geometry, influence of imperfections upon sectional properties of the member in axial compression; buckling curves; verification of strength and stability of steel columns with solid sections; design of columns with battened and laced sections.	**7**

Cumulated 28 hrs

9.2. Project

1	Subject for design. Layout of the structural elements of a steel platform, scale: 1/100. Verifications of the steel thick plate and design of the steel beam with a solid hot rolled IPN (IPE) section.	2
2	Design of the beam as a version made of Castellated section.	2
3	Current plate girder: actions for design; maximum efforts ; design of the section subjected to maximum bending moment. Verifications of strength.	2
4	Variation of the cross section along the span of the girder (variation of thickness of the flanges) following the shape of the bending moment diagram. Verification of equivalent stresses. Design of the welding of flanges in the area of variation of the thickness of flanges.	2
5	Verification of stiffness of the girder. Verification of the overall buckling of the girder and web stiffeners.	2
6	Verification of the end stiffener. Verification of local buckling of the web and flange in compression.	2
7	At site connections between parts of the girder with splices and high strength friction grip bolts.	2
8	Supports of beams on girders. Layout of girder, scale 1/10.	2
9	Column: design and verification of the cross section.	2
10	Design of the battens and their connections with the column.	2
11	Capital and base of the column.	2
12	Layout of the column, scale 1/10, details 1/5.	2
13	Final stage.	2
14	Presentation.	2

Cumulated 28 hrs

10. References

1. Dalban, C., Chesaru, C., Dima, E., Şerbescu, C. (1997)– **Construcţii cu structură metalică**, E.D.P. Bucureşti
2. Şerbescu C., Pescaru V., Axinte E., Gădeanu L., ş. a. (1990) -**Platforme metalice industriale**, Ed. U.T. Iaşi
3. Mateescu, D., Caraba, I. (1980)- **Construcţii metalice. Proiectarea elementelor din oţel**, Ed. Tehnică Buc.
4. Axinte, E.(2003) – **Bazele proiectării elementelor şi structurilor din oţel după EUROCOD,** E.S.A M-T Botez,
5. Axinte, E.(2008) -**Elemente din oţel pentru construcţii**, Ed PIM Iaşi
6. Serbescu, C**. (**1882)- **Construcţii metalice**, Ed. I.P.Iaşi
7. Tăranu, N., Axinte, E. (1993)- **Construcţii metalice**, Ed. U.T. Iaşi
8. Ţăranu, N., Străteanu, P. (1999) -**Elemente de construcţii metalice,** Ed. Gh. Asachi Iaşi

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Prof.Nicolae Ţăranu, Ph.D.	
Instructors:	Senior Lecturer Carmen Teleman, Ph.D.	
	Senior Lecturer Victoria Rosca, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ELEMENTS OF STEEL STRUCTURES 2**

Codul disciplinei	**CE310**	Semestrul	**6**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	CE 301
	Recomandate	Statics 1 and 2, Theory of Elasticity and Plasticity

Obiective	Se transmit studenţilor informaţii necesare concepţiei şi execuţiei elementelor de construcţii metalice, solicitate divers precum şi realizării îmbinărilor acestora. Proiectul prevăzut pe parcursul semestrului completează cunoştinţele referitoare la proiectarea elementelor solicitate la încovoiere şi compresiune, ca părţi componente a structurilor de construcţii.
Conţinut (descriptori)	Generalităţi privind elementele de construcţii metalice; Grinzi cu inimă plină; Grinzi cu zăbrele; Stâlpi metalici

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen-T (**Examen scris, 2 examinatori interni, 10 întrebări grupate, nota 5 pentru promovare este rezolvarea a cel puţin ½ din fiecare subiect de pe bilet+predarea proiectului)			**50%**
	Evaluarea pe parcurs*)	**Activitatea la proiect-T , CC (**Studenţii vor rezolva aceeaşi structură metalică, cu caracteristici individualizate.Vor utiliza programe de calcul automat pentru calculul structural şi pentru întocmirea planşelor. Evaluarea se face pe parcurs, pe baza rezolvării sistematice şi corecte a etapelor prevăzute în rezolvarea temei proiectului.)		**40%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Prof.univ.dr.ing. Nicolae ŢĂRANU	

Titular(i) aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr.ing. Carmen TELEMEN Şef lucr. ddr.ing. Victoria ROŞCA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
TECHNOLOGY OF CONSTRUCTIONS 2

1. Course leader: **Senior Lecturer Răzvan GIUŞCĂ, Ph.D.**
2. Topic characteristics: **DI, DS** **code: CE311**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2		1		E	28		14		42

4. Objectives of the topic:

The actual request regarding the construction elements performances shows the necessity of introducing new technological processes and modern realization procedures that have to eliminate the shortcoming of the jobs made in a traditional way.

The objectives of the topic are referred to the study of technological processes and procedures; the entire didactic activity has as aims quality, productivity and economical efficiency of constructions making – up.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of new, modern technological procedures.

By adopting within technological fluxes, performance technological procedures of concrete, brickworks wood and composite structures making–up, leads to fulfil the buildings behaviour exigencies related to standardized performances levels.

The topic is introduced in the training plan so that it utilizes knowledge given by civil constructions, concrete structures and construction materials.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- To identify technological processes applied in construction;
- To draw up the main elements of a technological sheet;
- To know the properties of the construction materials and the corresponding technologies;
- To analyze and execute a technological project.

b. Technical skills and abilities

- To identify and select the optimum solutions regarding performance technological procedures of construction making up.

7. Teaching procedures:

The courses are presented in form of university lecture by using drawings, power point presentations, and video films that emphasize the technological processes and procedures of buildings making–up.

8. Evaluation system:
Stages:
Continuous assesment

a) type of imposed assignements:

The periodical examination will be individualized and checked by the course leader and materialized by a degree.

b) means and working conditions for reaching the goal:

During the test students are allowed to use the recomended references.

c) percentage of the evaluation in the final mark: 20%.

Speciality (applications)

The students will get tasks regarding technological design of medium complexity that will report to: materials transportation with tower cranes, lifting devices, the digging process with front acting excavators, the digging process with back acting excavators, concrete works, precast concrete structures technology, formwork design.

The degrees obtained during the semester represent 20% of the final mark.

***Final evaluation*: Examination** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
6. Concrete works technology. General aspects. Classification, hardening level and concrete structure. Concrete classification in terms of age. The properties of fresh concrete. Rheology of concrete. Properties of harden concrete. The components influence over the concrete properties. Admixtures. The concrete mix. Moving and mixing the concrete. Transporting and placing the concrete. Equipment and devices for transporting concrete. Preparation for placing the concrete. Concrete placing. Rules for concrete placing. The concrete treating after pouring. Removal of shuttering. Concrete protection during hardening. Conditions regarding removal of shuttering	14
7. Precast concrete structures technology. The complex process of transport, storage, handling and mounting of the precast units. The features of the precast elements. Precast elements holding systems for handling and mounting devices. Handling and mounting devices. Transportation and storage of the precast elements. Organizing the working place for the precast elements mounting. The making–up quality of concrete precast elements.	14

Cumulated 28 hrs

9.2. Applications

1	**Concrete mix design.** - The correlation of the concrete mix with the placing technology; - Concrete placing in the structural resistance elements; - The complex flux of mixing, transporting and placing the concrete.	 2 2 2
2	**The complex flux of transporting and mounting precast elements.** - Technological sheets for vertical precast elements mounting; - Technological sheets for horizontal precast elements mounting; - Technological sheets for surface and spatial precast elements mounting; - General mounting plan.	 2 2 2 2

Cumulated 14 hrs

10. References

1. Giuşcă, R., CONSTRUCTIONS TECHNOLOGY, Ed. "Gh. Asachi", Iaşi, 2003;
2. Giuşcă, R., TECHNOLOGICAL WORKS – STUDENT'S HANDBOOK, Ed. Politehnium, Iaşi, 2007;
3. Giuşcă, N., INGINERIA PROCESELOR DE CONSTRUCŢII, Ed. "Gh. Asachi", Iaşi, 1997;
4. Pamfil, E., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII, vol. I, Cofraje, Ed. Societăţii Academice „Matei-Teiu Botez", Iaşi, 2006;
5. Vasilescu, A., Corobceanu, S., TEHNOLOGIA PREFABRICATELOR, U T Iaşi, Rotaprint, 1994;
6. Vasilescu, A., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII – EXEMPLE DE PROIECTARE TEHNOLOGICĂ, Editura Politehnium, Iaşi, 2004.
7. Trelea, A., ş. a., TEHNOLOGIA CONSTRUCŢIILOR, Ed. Dacia, Cluj-Napoca, vol. 1, 1997

Date: 25.03.2009

Course leader, Senior Lecturer PhD Giuşcă Răzvan
Signature:

FIŞA DISCIPLINEI

Denumirea disciplinei	**TEHNOLOGIA CONSTRUCŢIILOR 2**

Codul disciplinei	**CE311**	Semestrul	**6**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28	-	14	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Tehnologia construcţiilor 1; Materiale de construcţii; Construcţii civile.
	Recomandate	Geotehnică; Rezistenţa materialelor

Obiective	Studiul proceselor şi procedeelor tehnologice în scopul realizării calităţii, productivităţii şi eficienţei economice la executarea construcţiilor.
Conţinut (descriptori)	Tehnologia lucrărilor de beton monolit; Tehnologia lucrărilor de montaj a elementelor prefabricate pentru construcţii.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală; sarcini: referat; condiţii de lucru M; pondere 30%; 2. testare scrisă; condiţii de lucru T; pondere 70%.			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări (M)**		**20%**
		Teste pe parcurs [*1*] **(M)**		**20%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	**Gradul didactic, titlul, prenume, nume**	Semnătura
	Şef lucr. dr. ing. Răzvan GIUŞCĂ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

FOUNDATIONS

1. Course leader: **Assoc. Prof. Irina LUNGU, Ph.D.**
2. Topic characteristics: DI, DIS **code: CE312**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	3			2	E	42			28	70

4. Objectives of the topic:

- *to identify the potential foundation system to accommodate the soil profile and structure type,*
- *to design accurate regular foundation elements both from geotechnical and structural point of view,*
- *to identify advantages and limitations of various technologies regarding foundation performance.*

5. Concordance between the objectives of the topic and the objectives of the training plan

The competences acquired by this course are regarding basic knowledge of infrastructures as materials they are made of both structural and geotechnical design, various technologies and appropriate management steps for a regular investment project.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- identification of possible of foundation systems based on structure and soil profile description;
- configuration of basic foundation elements and graphic representation;
- identification of specific technological design stages for foundation performance.

b. Technical skills and abilities

- basic design stages of foundation elements;
- interpretation of technical drawings regarding construction infrastructures;
- basic representation of technological stages during infrastructure performance.

7. Teaching procedures:

- powerpoint presentations highlighting the most relevant aspects by traditional teaching,
- applications over the course subjects and discussions of the outcomes,
- case studies of constructions relevant for the presented subject.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments:
b) means and working conditions for reaching the goal:
c) percentage of the evaluation in the final mark

Speciality projects (applications)

a) The students will design basic elements of regular infrastructure works.
b) Mixed procedure (both traditional and computer assisted design)
c) 50%

***Final evaluation*: E** **Examination:** written examination **Percentage of the final mark**: 40 %

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Classification of foundation systems *Definition, relevant types of structures, identification of foundation elements, classification of foundations*	3
2. Foundation depth and factors of influence *Definition, graphical representation of regular infrastructure cross section, factors of influence and alterations of the foundation depth for each particular case*	2
3. Excavation works *Unsupported slopes, vertical and horizontal bracings, relevant representations and plans*	3
4. Water removal works *Well points, deep well pumps, drainage works*	3
5. Retaining structures *Retaining walls, sheet piles, diaphragm walls, cofferdams*	4
6. Rigid and flexible individual footings *Tentative dimensions and cross sections, symmetrical and non-symmetrical locations, geotechnical and structural design stages, strap footings, plans and technological issues*	6
7. Wall footings *Rigid and flexible footings, tentative design for collapsible soils, basement walls, technological issues*	3
8. Grid of foundation beams *Pre-design elements, models of soil-structure interaction, statically determinate foundation beam, Bleich's method, reinforcement plans*	6
9. Mat foundations *Classification of mat foundations, pre-design elements, basic methods to compute the efforts in the plate, reinforcement plans*	3
10. Pile foundations *Definition, classifications, single pile bearing capacity, pile load tests, pile group design, pilling technologies, basic representations*	6
11. Caissons *Definition, pre-design elements, geotechnical and structural design, technological issues*	3

Cumulated 42hrs

9.2. Applications

Name of task and content	
Soil investigation and geotechnical report – identification of specific elements for a geotechnical investigation, the content of a geotechnical report, examples and discussions of relevant issues to select for a foundation design	2
Retaining wall design – identification of relevant site conditions, selecting corresponding type of wall, tentative dimensions, load evaluation, checking stability restrictions, conclusions	4
Man made slope stability – identification of the relevant site conditions, tentative slope assessment, checking stability at failure in various load groupings, conclusions	4
Design of rigid and flexible individual footings – identification of relevant site conditions, selecting of the appropriate construction materials and foundation elements for a particular case, geotechnical design, structural design, graphical representation	4
Grid design of foundation beams – identification of relevant site conditions, tentative dimensions based on construction materials and soil profile, selecting the relevant load cases, geotechnical design, structural design, graphical representations	6
Design of continuous footings – identification of relevant site conditions, tentative dimensions based on the structural configuration, construction materials and soil profile, basic evaluation of loads on the foundation elements, geotechnical design, structural design, graphical representations	2

Pile foundations design - identification of relevant site conditions, selecting a pile type, tentative dimensions based on construction materials and soil profile, basic evaluation of loads on the foundation elements, bearing capacity of a single pile, bearing capacity of a pile from a pile group, computing the number of piles, distribution of piles over the raft, distribution of loads over the piles, checking strength and stability of both piles and foundation soil	6

Cumulated 28hrs

10. References

- Lungu, I. – Course notes, 2008
- Huat, Bujang B. K. -- Foundation engineering, 2006, Taylor & Francis, London
- Punmia, B. C. - Soil mechanics and foundations, 2006, LAXMI, New Delhi
- Bowles, Joseph E. - Foundation analysis and design, 1982, McGraw Hill Book, New York

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc.Prof. Irina Lungu, Ph.D.	
Instructors:	Assoc.Prof. Irina Lungu, Ph.D.	
	Assoc.Lecturer Oana Colţ	

FIŞA DISCIPLINEI

Denumirea disciplinei	**FOUNDATIONS**

Codul disciplinei	**CE312**	Semestrul	**6**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, DS – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Geotehnics
	Recomandate	Geology Engineering, Reinforced concrete, Technology of constructions 1

Obiective	• to identify the potential foundation system to accommodate the soil profile and structure type • to design both geotechnically and structurally accurate regular foundation elements • to identify advantages and limitations of various technologies regarding foundation performance
Conţinut (descriptori)	Definition and classifications of foundation systems. Foundation depth and factors of influence. Excavation works: unsupported slopes; temporary bracings. Water removal works. Retaining structures. Rigid and flexible individual footings. Wall footings. Grid of foundation beams. Mat foundations. Pile foundations. Caissons.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.examinare scrisă ; sarcini: exerciţii şi subiecte rezumative ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**50%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Irina LUNGU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Irina LUNGU, Asist. drd. ing. Oana COLŢ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
TIMBER STRUCTURES

1. Course leader: **Prof. Dorina ISOPESCU, Ph. D.**
2. Topic characteristics: DI, DS **code: CE313**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2			1	C	28			14	42

4. Objectives of the topic:

The intent of this course is to introduce the student to the design and detailing of engineered structures constructed from timber and related forest products. The physical characteristics of wood that affect the behaviour of timber structures are briefly examined. The theoretical and practical basis of conventional timber design and construction are developed and illustrated by numerous design examples, case studies and a small design project (a design of a timber house). In general, presentations cover the design of solid sawn and glued laminated timber members to resist bending, axial load and shear; the use of structural panel-lumber composite elements as shear walls and diaphragms; and the selection and design of fasteners, and the detailing of connections.

5. Concordance between the objectives of the topic and the objectives of the training plan

Wood Constructions is a part of civil engineering area, where their objectives complete the training of young civil engineer close aboard by courses like: statics, construction in rural zones, strength of materials, elasticity, etc.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- *Critical Thinking (Identify personal assumptions, Collect, Analyse, interpret Information's, Draw conclusions)*
- *Communication skills (speak clearly, read with comprehension, work effectively in groups, interpret/use graphic communication);*

b. Technical skills and abilities

Upon successful completion of this course, the student should be able to:
- *Work from the ideas and plans of other to make sketches and scale drawings of floor plans, foundation plans, elevations, section and working drawings of timber construction with standard symbols;*
- *Apply science and engineering principles and modern engineering skills and tools in the design of simple structures constructed using a variety of common forest and related products;*
- *Understand key issues in the design of wooden structures, especially the importance of ones influencing constructability, serviceability (shrinkage, creep, stiffness, etc.) and safety (strength, stability, deflection, etc.)*
- *Recognize how components and connections are integrated as part of an overall structural system*
- *Use local building codes and specifications (Romanian Standards and Eurocode 5) to develop a set of working blueprints for a timber structure that would meet all requirements for a building permit;*
- *Implement the nomenclature of construction technology for wood constructions;*

- *Plan the layout of a floor plan showing spaces required for lobby, sales, storage, work rooms, offices as needed for timber structures*

7. Teaching procedures:

Relationship between student and professor is a partnership type, where everybody assumes the responsibility to reach the learning results. Learning results are clearly explained and debated with students from their relevance perspective for their professional enhancement. In the teaching process, professors utilized the resources of the new technologies: e-mail, personal web page for themes and references, video tapes and dvd, powerpoint slides and overhead projections, computer programs for static and seismic analysis of industrial buildings, flipchart table etc.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: checking will be for every student, every student will present the solved subjects in front of their colleagues;

b) means and working conditions for reaching the goal: students will calculate using computer programs like LUSAS or AXISVM compression and tensile forces, shear forces and moments for main transverse frames and for spatial frame

c) percentage of the evaluation in the final mark:

Exams will cover the lectures, projects and homework problems using the following procedures:

- final examination test paper: 75%
- project evaluation: 25%

Speciality projects (applications)

The students elaborate a project of a timber house. A summary of the project content: Establishing the main dimensions of building, (height, width and length) checking of wood structural elements, design of cladding and roof members, solution for floor joist, efforts design, etc. A set of drawing plans and details with particular characteristics for each student will be performing, too.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. WOOD AS A STRUCTURAL MATERIAL 1.1. INTRODUCTION 1.2. WOOD STRUCTURE 1.2.1. Anatomy of wood 1.2.2. Methods of conversion 1.3. NATURAL DEFECTS 1.4. WOOD PRESERVATION 1.5. FIRE RETARDANTS 1.6. WOOD AXES 1.7. LUMBER GRADING 1.8. TIMBER CONSTRUCTIONS DEVELOPMENT 1.8.1. Timber – frames for houses 1.8.2. Timber – frames for bridges 1.8.3. Great timber structures	**2**
2. WOOD PROPERTIES 2.1. INTRODUCTION 2.2. PHYSICAL PROPERTIES 2.2.1. Hardness and toughness 2.2.2. Thermal properties 2.2.3. Electrical properties 2.2.4. Acoustical properties	**3**

2.2.5. Density and specific gravity 2.2.6. Moisture content 2.3. MECHANICAL PROPERTIES 2.3.1. Stiffness properties 2.3.2. Strength properties 2.4. STRENGTH CLASSES 2.5. INFLUENCE OF VARIOUS FACTORS ON WOOD PROPERTIES 2.5.1. Density 2.5.2. Moisture content 2.5.3. Knots 2.5.4. Fibre and ring orientation 2.5.5. Temperature 2.5.6. Duration of load 2.5.7. Chemicals and decay	
3. DESIGN METHODS. ACTIONS 3.1. DESIGN METHODS 3.1.1. Allowable strengths method 3.1.1.1. Design philosophy 3.1.2. Limit states method 3.1.2.1. Design philosophy 3.1.2.2. Design values 3.2. ACTIONS 3.3. DESIGN STEPS OF WOOD STRUCTURES 3.3.1. Fundamental requirements 3.3.2. Design using allowable strength method 3.3.3. Design using limit states method	**3**
4. WOOD BEAM DESIGN 4.1. INTRODUCTION 4.2. DESIGN OF RECTANGULAR WOOD BEAMS 4.2.1. Beam subjected to axial tension force 4.2.2. Beam subjected to bending moment (flexural beam) 4.2.2.1. Design for bending and shear 4.2.2.2. Design for bearing 4.2.2.3. Design for deflection 4.2.3. Beam subjected to axial tension and bending moment 4.2.4. Beam subjected to bi-axial bending 4.3. DESIGN OF FLITCHED BEAM 4.3.1. Flexural beam 4.4. DESIGN OF NOTHCHED BEAMS 4.5. DESIGN EXAMPLES 4.5.1. Design of a main beam 4.5.2. Design of floor joists 4.5.3. Axial load capacity of a tensile member with lateral load	**3**
5. WOOD COLUMN DESIGN 5.1. INTRODUCTION 5.2. END RESTRAINTS AND EFFECTIVE LENGTH 5.3. SLENDERNESS RATIO AND BUCKLING COEFFICIENT 5.4. DESIGN OF RECTANGULAR WOOD COLUMNS 5.4.1. Column subjected to axial compression force 5.4.2. Column subjected to axial compression force and moment 5.5. DESIGN OF COMPOUND COLUMNS (SPACED COLUMNS) 5.5.1. Compound column subjected to axial compression force 5.5.2. Compound column subjected to axial compression force and moment 5.6. ROUND AND TAPERED COLUMNS 5.7. DESIGN EXAMPLES 5.7.1. Design of an axially loaded column 5.7.2. Design of a column subjected to axial force and moment	**3**

6. WOOD CONNECTION DESIGN 6.1. INTRODUCTION 6.2. CLASSIFICATION OF TIMBER CONNECTIONS 6.3. GENERAL DESIGN CONSIDERATIONS 6.4. MECHANICAL TIMBER JOINTS 6.4.1. Joints with dowel-type fasteners. Theory and general recommendations 6.4.1.1. Material properties 6.4.1.2. Joint slip 6.4.1.3. Effective cross-section 6.4.1.4. Spacing rules 6.4.1.5. Lateral loads 6.4.1.6. Shrinkage effects with green timber 6.4.1.7. Combination of fasteners 6.4.2. Nailed joints 6.4.2.1. Nails subjected to lateral loads 6.4.2.2. Nails subjected to axially load (withdrawal load) 6.4.2.3. Nail spacing 6.4.2.4. Nail slip 6.4.3. Bolted and doweled joints 6.4.3.1. Bolts and dowels subjected to lateral loads 6.4.3.2. Bolts subjected to axially load (withdrawal load) 6.4.3.3. Bolt and dowel spacing 6.4.3.4. Bolts and dowels slip 6.4.4. Screwed joints 6.4.4.1. Screws subjected to lateral loads 6.4.4.2. Screws subjected to axially load (withdrawal load) 6.4.4.3. Combined laterally and axially loaded screws 6.4.5. Design procedures of dowel-type fasteners joints according to Romanian standard 6.4.5.1. Dowel-type fasteners subjected to lateral loads 6.4.5.2. Dowel-type fastener subjected to axially load (withdrawal load) 6.4.6. Ring and shear-plate connector joints 6.4.6.1. Load carrying behaviour and calculation model 6.4.6.2. Connection stiffness 6.4.6.3. Design equations 6.4.7. Toothed-plate connector joints 6.4.7.1. Load carrying behaviour and calculation model 6.4.7.2. Connection stiffness 6.4.7.3. Toothed-plate connector spacing 6.4.8. Punched metal plate fastener joints 6.4.8.1. Factors influencing the strength of punched metal plate fastener joints 6.4.8.2. Punched metal plate design 6.4.8.3. Plate dimensioning rules 6.4.8.4. Joint slip 6.4.9. Joist hangers and framing anchors 6.4.9.1. Load-carrying behaviour 6.4.9.2. Joint spacing 6.4.9.3. Joist hangers design 6.4.9.4. Framing anchors design 6.4.10. Carpentry joints (framed joints) 6.4.11. Design procedures of framed joints according to Romanian standard 6.5. GLUED TIMBER JOINTS 6.6. DESIGN EXAMPLES OF THE JOINTS 6.6.1. Design of punched metal plate fastener joint	**4**
7. GLUED LAMINATED MEMBERS 7.1. FABRICATION OF GLULAM MEMBER	**4**

7.1.1. Introduction 7.1.2. Advantages of glulams over sawn timbers 7.1.3. End joints 7.1.4. Adhesives 7.1.5. Fastenings 7.2. DESIGN OF GLULAM MEMBERS 7.2.1. Strength and stiffness properties 7.2.2. Grades and combinations 7.3. GLULAM APPLICATIONS 7.3.1. Single span beams with constant depth 7.3.2. Continuous beams with constant depth 7.3.3. Single tapered beams 7.3.4. Double tapered beams 7.3.5. Curved and pitched cambered glulam beams	
8. PLYWOOD. PANELS AND BEAMS 8.1. FABRICATION OF PLYWOOD 8.1.1. Introduction 8.1.2. Plywood makes up 8.2. DESIGN CONSIDERATIONS FOR PLYWOOD PANEL 8.2.1. Bending perpendicular to the plane 8.2.2. In-plane bending 8.2.3. Tension and compression 8.2.4. Characteristic values 8.3. PLY WEB BEAMS 8.3.1. Introduction 8.3.2. Design procedures 8.3.2.1. Effective values for the cross-section 8.3.2.2. Control of the stresses	**3**
9. TIMBER STRUCTURAL SYSTEMS 9.1. INTRODUCTION 9.2. TRUSSES 9.2.1. Truss types 9.2.2. Truss joints 9.2.3. Bracing for trusses 9.2.4. Computation of the structure 9.3. PORTAL FRAMES AND ARCHES 9.3.1. Structure types 9.3.2. Computation of the structure 9.3.3. Frame and arch joints 9.4. SPATIAL FRAMES AND DOMES 9.4.1. Spatial frames 9.4.2. Grid configurations of space frames 9.4.3. Domes 9.4.4. Analysis of spatial frames and domes 9.5. TIMBER FRAME HOUSES 9.5.1. Construction principles	**3**

Cumulated 28 hrs

9.2. Applications

	Wood Constructions - Seminary	
	1. **Timber frame house design and individual student data**	**2**
	2. **Geometry of a timber house** 2.1. Establish the area of house 2.2. Height of the eaves and ridge 2.3. Envelope of timber house	**2**
	3. **Establishing the loading schemes and cross section dimensions of structural wood elements**	**6**

	3.1. Permanent loads 3.1.1. Permanent loads-roof level 3.1.2. Permanent loads-floor joist 3.2. Variable loads 3.2.1. Snow loads 3.2.2. Wind load 3.2.3. Loads from temperature variations 3.2.4. Live loads 3.3. Seismic action 3.4. Loads combinations 3.5. Efforts determination using a FEM computer program 3.6. Design of beams 3.7. Design of columns and beam-columns 3.8. Design of roof and floor diaphragms 3.9. Design of shearwalls 3.10. Design of connections	
	4. **Drawing plans** 4.1. Transverse section and transverse facades 4.2. Longitudinal section and longitudinal facades 4.3. Details: foundations, connections between cladding walls, columns and beams, purlins and rafters cross-sections, connections between beams and walls, etc. 4.4. Horizontal section at three levels: ground floor level, first level, roof level	**4**

Cumulated 14 hrs

10. References

1. Isopescu D. (2002). Timber Structures, Ed. Gh. Asachi, Iasi.
2. Furdui C. (2005). Construcţii din lemn, Materiale si elemente de calcul, Editura Politehnica Timisoara.
3. Boghian V., Jerghiuta V., Ciornei Al., Gavrilas I. & Taranu N. – Indrumator pentru proiectarea constructiilor din lemn. Ed. I.P. Iasi, 1970.
4. Isopescu D. – Structural design with timber. Ed. U.T Iasi, 1994.
5. Marusciac D. – Constructii moderne din lemn. Ed. Tehnica, Bucuresti, 1997.
6. Eurocode no.5 - Design of Timber Structures.1995.
7. SR-EN 338 – Lemn de constructie. Clase de rezistenta. 1997.
8. NP 005-2003 – Normativ privind proiectarea constructiilor din lemn, NP005-2003, Ordin de aprobare M.T.C.T. 303/16.09.2003.
9. SR-EN 338 – Lemn de constructie. Clase de rezistenta. 1997.
10. SR-EN 380 – Structuri din lemn. Metode de incercare. Principii generale de incercare prin incarcare statica. 1996.
11. SR-EN 386 – Lemn lamelat incleiat. Caracteristici de performanta si conditii minime de fabricatie. 1997.
12. SR-EN 390 – Lemn lamelat incleiat. Dimensiuni. Abateri admisibile. 1996.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Professor Dorina Isopescu, Ph.D.

Instructor: Senior Lecturer Ioana Enţuc, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**TIMBER STRUCTURES**

Codul disciplinei	**CE313**	Semestrul	**6**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**42**	28			14

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** – opţională, **DL** – liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Materiale de construcţii, Rezistenţa Materialelor, Statica Construcţiilor
	Recomandate	Desen tehnic, Proiectarea asistată de calculator

Obiective	The intent of this course is to introduce the student to the design and detailing of engineered structures constructed from timber and related forest products. The physical characteristics of wood that affect the behaviour of timber structures are briefly examined. The theoretical and practical basis of conventional timber design and construction are developed and illustrated by numerous design examples, case studies and a small design project (a design of a timber house). In general, presentations cover the design of solid sawn and glued laminated timber members to resist bending, axial load and shear; the use of structural panel-lumber composite elements as shear walls and diaphragms; and the selection and design of fasteners, and the detailing of connections.
Conţinut (descriptori)	Wood as a structural material; wood properties; design methods. Actions; wood beam design; wood column design; wood connection design; glued laminated members; plywood. Panels and beams; timber structural systems

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**70%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**20%**
		Teste pe parcurs [*număr)*		**0%**
		Lucrări de specialitate, teme de casă [*număr***]**		**0%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	Prof.dr.ing. Dorina Nicolina ISOPESCU	

Titulari aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	Conf.dr.ing. Gabriel OPRIŞAN Ş.l.dr.ing. Ioana ENŢUC	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

ECONOMY AND LEGISLATION

1. Course leader: **Senior Lecturer Radu LUPĂŞTEANU, Ph.D.**
2. Topic characteristics: DI **code: CE314**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2		1		C	28		14		42

4. Objectives of the topic:

The actual request regarding the construction activity requers solid and efficient knowledge and skills to face large and complex construction projects in terms of effiency.

The objectives of the topic are referred to the study of construction economics basis and their application in the field; the entire didactic activity focuses to quality, productivity and economical efficiency of construction projects.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of management practices for evaluation of construction projects.

The topic is introduced in the training plan so that it utilizes knowledge given by the previous topics so that the engineer to be able to implement and monitor real construction projects.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- To identify the components of a construction project;
- To establish the bill of quantities;
- To establish the bill of resources;
- To establish the bill of prices;
- To be able to draw a construction contract;
- To be able to manage legal and contractual issues related to a construction contract.

b. Technical skills and abilities

- To identify and select the optimum solutions regarding performance of construction projects.

7. Teaching procedures:

The courses are presented in form of university lecture by using drawings, power point presentations, and video films that emphasize the stages of development of a construction bidding process.

8. Evaluation system:
Stages:
Continuous assesment

d) type of imposed assignements:

-

e) means and working conditions for reaching the goal:

-

f) percentage of the evaluation in the final mark: 0%.

Speciality projects(applications)

The students will get tasks regarding a construction project of medium complexity that will report to: define the stages of project, application of management functions to that project, making decisions,

estimate the project efficience among it's life span, assembling a construction contract. formwork design. The degrees obtained for applications the semester represent 40% of the final mark.

***Final evaluation*: Vp** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. The field of construction economics. *General aspects .Basic knowledge about capital.*	4
2. Tendering procedures. *Stages of a construction contract; Types of construction contracts and contractual arrangements*	8
3. Contract documents. *Bill of quantities, bill of resources, bill of prices*	8
4. Legal aspects in construction activity. *Construction licence;* *Construction tendering and contracting;* *Construction quality;*	8

Cumulated 28 hrs

9.2. Applications

Economy and Legislation (CE313) 6th semester		
1	**Stages of a construction contract.** Examine a part of real project and define the main issues related to a construction contract.	4
2	**Bill of quantities, bill of resources, bill of prices.** development of documents	6
3	**Simulation of the main legal aspects related to a construction contract**. Construction licence; Construction tendering and contracting; Construction quality;	4

Cumulated 14 hrs

10. References

1. Hagiu, V., MANAGEMENTUL EXECUTIEI PROIECTELOR DE CONSTRUCTIE, Ed. Dosoftei, Iaşi, 2003;
2. Lupăşteanu, R., CONSTRUCTION MANAGEMENT, Ed. GAMMA, Iasi, 1997;
3. Lupăşteanu, R., CALITATEA INVESTITIILOR", Ed. Expertilor Tehnici, Iaşi, 2006;
4. Sălceanu C., Lupăşteanu R., Crăciun I., INDRUMAR ECONOMIC IN CONSTRUCTII, Rotaprint Iaşi, 1992.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Lupăşteanu Radu, Ph.D.

Instructor: Senior Lecturer Lupasteanu Radu, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ECONOMY AND LEGISLATION**

Codul disciplinei	**CE314**	Semestrul	**6**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	Technology of constructions, Civil Constructions

Obiective	Students will be taught to answer the questions "how much will cost a construction?" and "what do I need to know so that the construction will be legally designed and constructed?"
Conţinut (descriptori)	• Bill of Quantities • Bill of Resources • Bill of Prices • Conditions of Contract • Basic legislation for construction design and erection

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr*]	**M**	**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	s.l. dr. Ing. Lupăşteanu Radu	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	s.l. dr. Ing. Lupăşteanu Radu	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

TECHNOLOGY AND MANAGEMENT PRACTICAL TRAINING

1. Course leader: Senior Lecturer Răzvan GIUŞCĂ, Ph.D.
Senior Lecturer Adrian ŞERBĂNOIU, Ph.D.
2. Topic characteristics: DID **code: CE315**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6			120		C			120		120

4. Objectives of the topic:

The actual demands regarding the building elements and the overall constructions performances require the implementation of new technological procedures and modern management processes in order to overcome the shortcomings given by traditional works.

The objective of technology and management practice program is to train students in obtaining abilities to organise and supervise the working fronts for given construction objectives.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of new, modern technological and management procedures.

By adopting within technological fluxes, performance technological procedures of concrete, brickworks wood and composite structures making–up, lead the civil engineers to fulfil the buildings behaviour exigencies related to standardized performances levels.

The topic is introduced in the training plan so that it uses knowledge given by civil constructions, concrete structures and construction materials.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

- To know the main regulations of Romanian and international standards regarding soil works, concrete, brick, wood and composite materials works;
- To identify technological processes applied in construction;
- To draw up the main elements of a technological sheet;
- To know the properties of the construction materials and the corresponding technologies;
- To analyze, manage and execute a technological project.

b. Technical skills and abilities

- To know technical documentations regarding site management;
- To identify and select the optimum solutions regarding performance technological procedures of construction making up.

7. Teaching procedures:

Before site official trips there are presented the technological files and organising plans for the specified objectives. At the site are daily analysed the working stages and the organising procedures.

8. Evaluation system:
Stages:

Continuous assesment

g) type of imposed assignements:

The periodical examination will be individualized and checked by the course leader and materialized by a degree.

h) means and working conditions for reaching the goal:

During the test students are allowed to use the recomended references.

i) percentage of the evaluation in the final mark: %.

Speciality projects(applications)

The students will make a practice project that will contain the description of minimum three technological files.

The degrees obtained during the semester represent 40% of the final mark.

***Final evaluation*: Examination** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

9.2. Applications

1	Presentation of the content and the objectives of the technological and management practice	3
2	The study of the technological files content (didactic activity)	7
3	**The construction objectives description:** Main construction elements identification The particularities of the construction site Construction materials description	10
4	Site reference materials analyse activity. Processing the information obtained on site.	30
5	**The general layout of the site** The site organization (objects identification and other specific activities) Temporal site constructions(objects for site organization, facilities)	10
6	The students participation to the site organization and to the works processes management	12
7	**The technical –economical data from the technical project** The bill of quantities Technical memoirs Work notebooks Site regulations(regarding the technical project) Price estimation	10
8	**The factors which are involves to the work construction** Identification and description of the factors which participate to the work (site manager, CQ in charge person, RTE inspector, site inspector) Describe the site manager responsibility	10
9	**The quality of the construction works** The quality regulation book (operational procedures, work or technical procedures, quality control procedures, site inspection procedures etc). The qualities check up program. The quality conditions due to C56-85 norm. The quality documents and other papers which certify the quality (such as: supplier papers, work papers, attestation and checking papers). The quality files.	10
10	**Safe working procedure** Analysing the set of written instructions that identifies the safety issues that may arise from the jobs and tasks that make up a system of work Specific equipment	6
11	Practice project making-up	12

Cumulated 120 hrs

10. References

5. 1 Giuşcă, R., CONSTRUCTIONS TECHNOLOGY, Ed. "Gh. Asachi", Iaşi, 2003;
6. Giuşcă, R., TECHNOLOGICAL WORKS – STUDENT'S HANDBOOK, Ed. Politehnium, Iaşi, 2007;
7. Giuşcă, N., INGINERIA PROCESELOR DE CONSTRUCŢII, Ed. "Gh. Asachi", Iaşi, 1997;
8. Pamfil, E., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII, vol. I, Cofraje, Ed. Societăţii Academice „Matei-Teiu Botez", Iaşi, 2006;
9. Vasilescu, A., Corobceanu, S., TEHNOLOGIA PREFABRICATELOR, U T Iaşi, Rotaprint, 1994;
10. Vasilescu, A., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII – EXEMPLE DE PROIECTARE TEHNOLOGICĂ, Editura Politehnium, Iaşi, 2004.
11. Trelea, A., ş. a., TEHNOLOGIA CONSTRUCŢIILOR, Ed. Dacia, Cluj-Napoca, vol. 1, 1997.

Date: 25.03.2009

Name and surname **Signatures:**

Course leaders: Senior Lecturer Giuşcă Răzvan, Ph.D.
Senior Lecturer Şerbănoiu Adrian, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**TECHNOLOGY AND MANAGEMENT PRACTICAL TRAINING**

Codul disciplinei	**CE 315**	Semestrul	**6**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	120	-	-	120	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Tehnologia construcţiilor 1, 2
	Recomandate	

Obiective	*The actual demands regarding the building elements and the overall constructions performances require the implementation of new technological procedures and modern management processes in order to overcome the shortcomings given by traditional works.* *The objective of technology and management practice program is to train students in obtaining abilities to organise and supervise the working fronts for given construction objectives*
Conţinut (descriptori)	Presentation of the content and the objectives of the technological and management practice The study of the technological files content (didactic activity) The construction objectives description: The general layout of the site The technical –economical data from the technical project The factors which are involves to the work construction The quality of the construction works Safe working procedure

Sistemul de evaluare:			
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**C**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen (T)**		**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari (T)**	**50 %**
		Teste pe parcurs [1] **(T)**	**%**
		Lucrări de specialitate, teme de casă [*număr*]	**40 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	**Gradul didactic, titlul, prenume, nume**	Semnătura
	Şef lucr. dr. ing. Adrian Şerbănoiu	
	Şef lucr. dr. ing. Răzvan GIUŞCĂ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
HYGROTHERMICS AND ACOUSTICS OF BUILDINGS

1. Course leader: **Professor Broşteanu Magda, Ph.D.**
2. Topic characteristics: DO **code: CE316**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2		1		VP	28		14		42

4. Objectives of the topic:

The lectures are intended to provide text, problems, and solutions that relates the subject of "Building Physics to the Building Services Engineering", Section of Heat and Mass Transfer, and Section of Acoustics in Buildings and Transportation.

The laboratory works are intended to perform a computer simulation and a home-work of "Case-Study and Conclusions from the Summary of Case-Study for a Poor Insulated / High Insulated Dwelling", concerning of Assessing of Thermal and the Architectural Acoustic Performancs in the Winter / Summer Time.

5. Concordance between the objectives of the topic and the objectives of the training plan: a suitable one**.**

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge: engineering knowledge
b. Technical skills and abilities: from the theory to the engineering professional competence.

7. Teaching procedures: e-presentation, computer-aided methods, and a conversational method of teaching by step by step Q/A.

8. Evaluation system:

Stages:

Continuous assessment

a) type of the imposed assignements:
a1) to perform Q/A

b) means and working conditions for reaching the goal:
b1) The students' elective interventions will be counted into % of qualification.
b2) Entrance Requirement in the Examination is to discuss on the subject during the semester and to perform a home-work of a Case-Study.

c) percentages in the final mark: 50%
c1) laboratory activity 25%
c2) specialty contribution 25%
Laboratory activity is evaluated by applied sequences of computing programs.
Specialty contribution has evaluated the students' specific competence by frequency and quality of personal interventions and suplementary documentation / work on the subject.

***Final evaluation*:** VP **Examination:** e-presentation **Percentages in the final mark:** 50%

To mention: Theory
a) 3Q of the applied software about (the computer driving on the subject)
b) 3A, Software as work means
c) 50%.

To mention: Design home-work on the subject "Assessing in the Winter / Summer Time of the Architectural Thermal and Acoustic Performances of a Poor Insulated / High Insulated Dwelling",
a) audit problem
b) Given input data
c) 50%.

9. Content of the subject:

9.1. Courses

Chapter	No of hours
1 ***Introduction*** 1.1 Brief Review of Fundamental Terms: Heat Transfer by Conduction, Convection, and Radiation Standard R-value and Standard U-value Mass Transfer by Water Vapour Diffusion Condensation Risk by Glaser's Method	1
2 ***Thermal Insulation*** 2.1 Thermal Comfort Indoors: Aim; Climates; Thermal Comfort Criteria and Levels 2.2 1D Steady State Thermal Behaviour of Building Components 2.3 Thermal Design in Buildings 2.4 Software	2
3 ***Insulating Materials*** 3.1 Features of the Insulating Materials 3.2 Thermal Conductivity of Building Materials 3.3 Declared and Design Values	1
4 ***Data Aquisition of Temperature*** 4.1 Equipment for Testing 4.2 Measurements	2
5 ***Mass Transfer*** 5.1 1-D Water Vapor Pressure Field Computation 5.2 Risk of Condensation 5.3 Software 5.4 Methods of Prevention	2
6 ***Glazing System*** 6.1 Classification 6.2 Assessing of Thermal Performance 6.3 Software (optional)	2
7 ***Thermal Bridging*** 7.1 2D Thermal Field Computation 7.2 Software 7.3 Adjustment to R-value	4
8 ***Heat Balance*** 8.1 Heat Losses 8.2 Heat Gains 8.3 Room / House Heat Balance 8.4 Software 8.5 Overall Coefficient of Heat Transmission per Volume and Other Influence Factors 8.6 Making Decision for Thermal Upgrading 8.7 Measures for Thermal Protection and Energy Conservation	4
9 ***Thermal Insulation*** 9.1 Non Steady State Thermal Behavior of Building Components	4

9.2 Thermal Damping Coefficient; Thermal Inertia Coefficient; Temperature Swing; Thermal Lagging; Thermal Assimilation Coefficient 9.3 1D Non Steady State Coupled Thermal and Mass Behavior of Building Components (optional) 9.4 Software (optional)	
10 ***Acoustics in Buildings and Transportation*** 10.1 Sounds and Noises Fundamental Terms 10.2 Acoustic Features 10.3 Environmental Noise Control	2
11 ***Architectural Acoustics*** 11.1 Airborne Sound Insulation 11.2 Rooms Acoustics 11.3 Software	4

Cumulated 28 hours

9.2. Applications: ***Laboratory Works: Case-Study Preparing of „How to Change a Contemporary House into a Passive House***

Stages	**Name of task** and content	No of hours
1	Input Data; Contemporary Dwelling; Wall Layouts and Façade	2
2	Assessing of Thermal Features of the Envelope Components	2
3	Building Heat Balance of Poor (Non) Insulated House; % Influence of each Envelope Component	2
4	Making Decision for Thermal Upgrading; Thermal System for an Existing House; Prokoncept System for a New House; Assessing of Thermal Features of each Envelope Components	3
5	Building Heat Balance of High Insulated House	1
6	Assessing of Acoustic Features: Acoustic Reduction Factor and Reverberation Time	2
7	Conclusions from the Summary of Case-study and Deadline of Performing	2

Cumulated 14 hours

10. References

1. Broşteanu, M., Rotberg, R., Building Physics in Visual IT Approach, from the Theory to the Professional Competence, „Matei-Teiu Botez" Academic Society Publishing House, Iaşi, România, 2008, ISBN (xx) 973 xxxx-xxx, ISBN (xx) 978-973-xxxx-xx-x
2. Moss, Keith J., Heat and Mass Transfer in Building Services Design, E&FN Spon Publishing House, London, 1998, ISBN 0 419 22650 8
3. Velicu, Cr., and Co., Ştefănescu, D., Broşteanu, M., Protecţia termică a clădirilor, Elemente pentru specializare, Editura Experţilor Tehnici, Thermal Protection of Buildings. Professional Training, SET Publishing House, Iaşi,1998, ISBN 973 9821 54 5 (in Romanian)
4. Radu, A., Secu, Al., Bliuc, I. and Co., Satisfacerea exigenţelor de izolare termică şi conservare a energiei în construcţii. Thermal Insulation Performance Requirement and Energy Conservation in Constructions, "Matei-Teiu Botez" Academic Society Publishing House, Iaşi, 2003, ISBN 973 8588 27 8 (in Romanian)
5. Radu, A., Bliuc, I., Vasilache, M., Higrotermică aplicată, Applied Hygrothermics, Matei-Teiu Botez" Academic Society Publishing House, Iaşi, 2003, ISBN 973 7962 45 1 (in Romanian)
6. xxx SR EN ISO 7345:200?: Thermal Insulation. Physical Quantities and Definitions
7. xxx SR EN ISO 12524:1999:2002:Building Materials and Products. Hygrothermal Properties. Tabular Design Values
8. xxx SR EN ISO 6946:1996:1998:2004: Building Components and Building Elements. Thermal Resistance and Thermal Transmittance. Calculation Method
9. xxx SR EN ISO 10077-1:2000:2002 -2:2002:2004: Thermal Performance of Windows, Doors, and Shutters. Calculation of Thermal Transmittance. Part 1: Simplified Method. Part 2: Numerical Method for Frames

10. xxx SR EN ISO 14683:1999:2004: Thermal Bridges in Building Constructions. Linear Thermal Transmittance. Simplified Methods and Default Values
11. xxx SR EN ISO 13370:1998:2003: Thermal Performance of Buildings. Heat Transfer via the Ground Floor. Calculation Method
12. xxx SR EN ISO 13789:1999:2004: Thermal Performance of Buildings. Transmission Heat Loss Coefficient. Calculation Method
13. xxx SR EN ISO 13790:1999:2004: Performance of Buildings. Calculation of Energy Use for Space Heating
14. xxx SR EN 832:1998:200?: Thermal Performance of Buildings. Calculation of Energy Use for Heating. Residential Buildings
15. xxx SR EN 12831:2002:200?: Heating System in Buildings. Method for the Calculation of the Design Heat Load
16. xxx The Romanian Law 372:2005: Energetic Performance of Buildings
17. xxx NP 048:2000: The Romanian Norm for Thermal Expert's Determination of Existing Buildings; NP049:2000: The Romanian Norm for Thermal Audit of Existing Buildings, Newsletter in Constructions (Buletinul Construcţiilor), vol.4-5:2001 (in Romanian) (Buletinul Construcţiilor), vol.4-5:2001 (in Romanian)
18. xxx C107-1-2-3-4-5:1997: 1-Normativ privind calculul coeficienţilor globali de izolare termică la clădiri de locuit; 2-idem la clădiri; 3-Normativ privind calculul termotehnic al elementelor de construcţie ale clădirilor; 4-Ghid pentru calculul performanţelor termotehnice ale clădirilor de locuit; 5-Calculul termotehnic al elementelor de construcţie în contact cu solul; The Romanian Norms for Thermal Design of Building Elements, Newsletter in Constructions (Buletinul Construcţiilor), vol.13-14:1998, 1:1999
19. xxx C107-6:2002: Normativ general privind calculul transferului de masă prin elementele de construcţii ; The Romanian Norm for Mass Transfer Design, Newsletter in Constructions (Buletinul Construcţiilor), vol.14:2002
20. xxx C107-7:2002: Normativ pentru proiectarea la stabilitate termică a elementelor de închidere, The Romanian Norm for Thermal Admittance of Building Elements, Newsletter in Constructions, (Buletinul Construcţiilor), vol. 8:2003 (in Romanian).

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Professor Magda BROŞTEANU, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**HYGROTHERMICS AND ACOUSTICS OF BUILDINGS**

Codul disciplinei	**CE316**	Semestrul	**6**	Numărul de credite	**3**

Facultatea	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domeniul	Inginerie Civilă		Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**		42	28		14	

Categoria formativă a disciplinei DF – fundamentală, DID – în domeniu, DS – de specialitate, DC – complementară	**DS**
Categoria de opţionalitate a disciplinei DI – impusă, DO –opţională, DL –liber aleasă (facultativă)	**DO**

Discipline anterioare	Obligatorii (condiţionare)	BUILDINGS; CIVIL CONSTRUCTIONS.
	Recomandate	PROGRAMMING LANGUAGE

Obiective	To provide text, problems, and solutions of heat and mass transfer and acoustics about; To relate of theory to the professional competence.
Conţinut (descriptori)	Notions of Heat Transfer; Mass Transfer; Acoustics in Buildings; Acoustics in Transportation; Case-Study.

Final Assessment:			
Evaluarea finală*	Form (E , C , VP)		**VP**
	Examination: 1. Theoretic part; loads 3Q/3A; work means Software; weight 50 % 2. Design part; loads Audit problem; work means input data; weight 50 %		
Stabilirea notei finale (procentaje)	Final Assessment		40%
	Evaluarea pe parcurs*	Continuing Assessment:	
		Laboratory activity (CC)	25%
		Specialty Contribution: home work, suplementary doc.	25%
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Profesor dr. ing. Magda BROŞTEANU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
STRUCTURAL SHAPES FOR BUILDING

1. Course leader(s): **Senior Lecturer Radu - Aurel PESCARU, Ph.D.**
2. Topic characteristics: DI **code: CE316**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	2		1		VP	28			14	42

4. Objectives of the topic:
- *The students can develop their professional knowledge about the structural forms of the buildings;*
- *The course gives to the students the principles of set-up and the main constructive solutions for building structures in accordance with the assumed supported stresses and the construction materials used in accordance with the European and national standards and regulation;*
- *The students have to understand how to select the adequate structural type according to performance requirements and the principles of civil building designing.*

5. Concordance between the objectives of the topic and the objectives of the training plan
A structural form for buildings is a subject, with an important formative function for the field of civil building engineering. Its objectives are to harmonize and complete the basic education of the young civil engineer students, giving a general overall vision about how building structure must be designed according to the functional and technical requirements. The objectives of the course fall in the objectives of the curricula as concerns the use of advanced means of study and the principles of conceiving civil buildings.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- Specific information and regarding civil building constructions as the possibility: to identify the types of resistance structures specific to civil buildings;

b. Technical skills and abilities
Upon successful completion of this course, the student should be able to:
- to know specific performance requirements for building structures;
- to select appropriate constructive solutions for the structural elements;
- to certify by computation the quality of the proposed constructive solutions in accordance with the specific condition of the site or building structure.
- use local building regulations and specifications (Romanian Standards and Euronorms or Eurocodes).

7. Teaching procedures:
- In the teaching process, professors utilized the classical methods and also the resources of the new technologies: e-mail, PowerPoint slides and overhead projections, computer programs for static and seismic analysis of civil buildings structures etc.
- Learning subjects are clearly explained and discussed with students from their relevance perspective for their professional enhancement. There are presented constructive solutions for and specific processes for different types of buildings and their adaptability to specific requirements.
- Case of studies

8. Evaluation system:

Students are advised to first course regarding the requirements of discipline, and the evaluation agenda.

Stages:

Continuous assessment

- Imposed class works personalized for each student: checking will be for every student, every student will present the solved subject in front of their colleagues;

(*Students' performance is assessed according to the quality of work performed and systematic record of significant information created by the student in the project*)

Percentage of the final mark: 40 %

***Final evaluation*:** **Examination during the semester**

Evaluation of theoretical knowledge acquired during the semester - written and oral examination.

Percentage of the final mark: 50 %

Mark: (*The final grade will be the weighted average of the following marks*)

1. project evaluation: 40%
2. during the semester examination tests: 50%

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
Nr and title *Description*	
I. Types of characteristic structures. Technical and economical benchmarking / comparison.	4
II. Buildings of plain or reinforced or confined masonry structural walls. *2.1 Principles of constructive configuration.* *2.2 Basis of computation.*	6
III. Building of monolithic steel-reinforced walls. Building of large prefabricated wall structures. *3.1 Principles of constructive configuration.* *3.2 Basis of computation. Sectional checking, reinforcement estimation.*	6
IV. Buildings of frames structures. 4.1 *Principles of constructive configuration.* 4.2 *Basis of computation.*	6
V. Buildings with mixed and special structures *5.1 Frames and shear walls. Principles of calculation. Reinforced sections checking.* *5.2 Structure of the stiffening cores and tubes. Principles of computation.*	6

Cumulated hrs.: 28

9.2. Applications

	Class / Home works	**Nr. of hrs.**
1	**Setting up the structure of resistance for a building with multileveled building with the one of the flowing functions: collective dwellings, offices, hotels.** 1.1 The structure of load-bearing masonry walls. 1.2 The structure of honeycomb diaphragm walls. 1.3. The structure of the cell diaphragms walls. 1.4. The structure of the frames. 1.5 The structure of the central core.	9
2	**Modelling the structure of resistance. Structural elements compound effect.**	3
3	***Non load bearing elements.***	2

Cumulated hrs.: 14

10. References

1. Al. Vereş, M. Vasilache - Construcţii civile. Elemente de construcţii, Ed. Cermi, Iaşi, 2004
2. Al. Vereş, M. Vasilache - Construcţii civile. Forme structurale pentru construcţii civile, Ed. Cermi, Iaşi, 2003
3. D. Marusceac - Construcţii civile, Ed.T Bucureşti 1998
4. V. Focşa - Construcţii civile, vol. I, II, III, U.T.Iaşi 1978
5. A. Radu, Al. Vereş - Construcţii civile partea I Ed. Univ. Tehn. Iaşi 1985
6. Normativ C 107/2005 – Normativ privind calculul termotehnic al elementelor de construcţie ale clădirilor
7. Al. Ciornei - Cum concepem construcţiile civile, Ed. Junimea, Iaşi, 2000
8. P100/1 – 2006 Cod de proiectare seismică. Prevederi de proectare pentru clădiri
9. P85/ 87 şi P101 Calculul construcţiilor din diafragme.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Radu - Aurel PESCARU, Ph.D.	
Instructors:	Senior Lecturer Radu - Aurel PESCARU, Ph.D.	
	Senior Lecturer Irina BARAN, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STRUCTURAL SHAPES FOR BUILDING**

Codul disciplinei	**CE316**	Semestrul	**6**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	The students can develop their professional knowledge about the structural forms of the buildings; The course gives to the students the principles of set-up and the main constructive solutions for building structures in accordance with the assumed supported stresses and the construction materials used in accordance with the European and national standards and regulation; The students have to understand how to select the adequate structural type according to performance requirements and the principles of civil building designing.
Conţinut (descriptori)	Types of characteristic structures. Technical and economical benchmarking / comparison; Buildings of plain or reinforced or confined masonry structural walls;Building of monolithic steel-reinforced walls. Building of large prefabricated wall structures; Buildings of frames structures; Buildings with mixed and special

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1. examen oral ; sarcini: 2 subiecte			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**40 %**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, [*1*] M		**50 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină		Semnătura
	s.l.dr.ing. RADU - AUREL PESCARU	

Titulari aplicaţii	s.l.dr.ing. RADU - AUREL PESCARU	Semnătura
	s.l.dr.ing. IRINA BARAN	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
PROGRAMING LANGUAGES (MATLAB)

1. Course leader: **eng. Gabriela COVATARIU**
2. Topic characteristics: DL, DID **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
5	1	-	3	-	C	14	-	42	-	56

4. Objectives of the topic:
The goal of the course is to create student's skills in order to use an programming language and to create the computer programs needed in order to solve the themes imposed by the study of the Civil Engineering's disciplines. The course is focused to develop programming skills needed to process data and engineering concepts needed on Faculty and later in engineer's carrier or researcher. This discipline completes the notions from Computer Usage discipline by completing with notion concerning Matlab developing language.

5. Concordance between the objectives of the topic and the objectives of the training plan
The discipline's objectives are according to those of the general curriculum. Being an optionally discipline, can assure a complementary support in specialty educational. These notions are necessary to the learning process, helping the student to solve problems also for alternative discipline from curricula using *developing mediums*. The knowledge could be useful in order to solve professional themes and also in learning process (in master programs, doctoral studies or researching activity).

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- *to understand the main principles and the methods in order to use an programming language (MatLAB).*

b. Technical skills and abilities
- *to identify, to organize and to correct use the informations from the specific disciplines of the Civil Engineer domains in personal programs in order to solve the engineering application by medium and high level complexity.*

7. Teaching procedures:
The discipline's presentation will be shown helping with computer program (Microsoft Powerpoint), helping with large explanations on the slides, or detailed on the blackboard (where is necessary. Also, specific computer programs will be used in order to have clearly explanations. Individual study of the bibliography will be encouraged.
This technique presents the following advantages:
- *help to send an clear and conceived message (course);*
- *the structure of content will be very easy to understand*
- *many images, graphics, tables and other visual aspects (movies) could be easy inserted in presentation;*

Permanently is indented the feedback from the students and the explanations will be adapted depending from its reactions. At the applications, are shown problems helping with the projector, working together with the students, to achieve more knowledge from the studied software

8. Evaluation system:

- *Permanent evaluation: Final note sharing: 20%*

Seminary activity and homework: Each seminary work will receive a note which will show the quality and quantity of the accumulated knowledge.

- *Final evaluation: Colloquium - Final note sharing: 70%*

Oral presentation of an essay of a theme (choused in according with the teacher), which will reflect all the knowledge achieved from the semester.

Final result will be obtained by arithmetical mean of the following:

1. Basic notation – 10%.
2. Seminary activity and homework notation – 20%
3. Final colloquium – 70%

Needed result will by ≥ 5.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Programming mediums usage in scientific and engineering problem's solving – Matlab *- Basic notions about programming mediums and its using by students and engineers* *- Basic operations with matrix in Matlab* *- Programming principles and basic instructions in Matlab* *- Programmed graphics in Matlab.*	2
2. Basic commends in Matlab *- Decisional instructions, repetitive* *- Data import / export instructions* *- Elementary data's types: constants and variables* *- Functions* *- Graphics*	6
3. Matlab - Toolbox-uri, Simulink	2
4. Civil Engineering problem's examples solved helping with Matlab	4

Cumulated 14 Hrs

c) **9.2. Applications**

1	Laboratory presentation and Functionality Rules, Protection Rules, Fire Safety Rules	1
2	**Programming mediums usage in order to solve scientific and engineering problems – Matlab** - Recapitulations of the main facilities supported by the programming medium Matlab: methods to compound a matrix, elementary elements with matrix, basics instructions in Matlab language, Storing and managing the programs, programmed graphic's basic instructions in Matlab, files	2
3	**Algorithms and logical schemas** – recapitulation	3
4	**Elementary data's types. Variables and constants.** **Type conversions, Arithmetically expressions, Logic expressions** **Decisional commands:** if, switch, **Repetitive commands:** for, while **I/O operations on elementary data.** input /output, load, save, fprint, sprintf **Functions** **Graphics**	24
5	**Toolbox Libraries visualization, Simulink. Problem's solving**	3
6	**Civil Engineering problem's examples solved helping with Matlab**	3
7	Colloquium theme's preparation – problems applicable in Civil Engineering	3
8	Colloquium	3

Cumulated 42 hrs

10. References

1. M.Ghinea, V.Fireţeanu, *Matlab. Calcul numeric-grafică-aplicaţii*, Editura Teora, Bucureşti, 1998
2. Ciongradi, C., Schärf, F., Jerca, Şt., Ştefan, D., Păuleţ, F. – "Programarea la calculator", Rotaprint, I.P.Iaşi, 1990

3. Matlab - Documentatie pachet programe
4. B. Hahn, D.T. Valentine – Essential Matlab for Engineer and Scientist, Elsevier, 2007
5. Hunt R.B., Lipsman L.R, Rosenberg M. J. – A Guide to Matlab for Beginners and Experienced Users, Cambridge University Press, 2003

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	eng. Gabriela COVATARIU	
Instructors:	eng. Gabriela COVATARIU	

FIŞA DISCIPLINEI

Denumirea disciplinei	**PROGRAMING LANGUAGES (MATLAB)**

Codul disciplinei		Semestrul	**5**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	14		42	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	DID
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Utilizarea calculatoarelor
	Recomandate	

Obiective	*The goal of the course is to create student's skills in order to use an programming language and to create the computer programs needed in order to solve the themes imposed by the study of the Civil Engineering's disciplines. The course is focused to develop programming skills needed to process data and engineering concepts needed on Faculty and later in engineer's carrier or researcher. This discipline completes the notions from Computer Usage discipline by completing with notion concerning Matlab developing language.*
Conţinut (descriptori)	1. Programming mediums usage in scientific and engineering problem's solving – Matlab 2. Basic commends in Matlab 3. Matlab - Toolbox-uri, Simulink 4. Civil Engineering problem's examples solved helping with Matlab

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării Prezentare orală, referat 70%:			
Stabilirea notei finale (procentaje)	**Evaluare finală prin prezentare lucrare finala**			**70 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar/lucrări**		**20 %**
		Teste pe parcurs		**0 %**
		Lucrări de specialitate, teme de casă [1]		**0 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	drd.ing. COVATARIU Gabriela	

Titular aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	drd.ing. COVATARIU Gabriela	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: III** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

DATABASES

1. Course leader: **eng. Gabriela COVATARIU**
2. Topic characteristics: DL, DID **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6	1	-	2	-	C	14	-	28	-	42

4. Objectives of the topic:
The goal of the course is to create student's skills in order to manipulate DataBasis Management Systems and to create the computer programs needed in order to solve the themes imposed by the study of the Civil Engineering's disciplines. Are necessary to introduce DataBasis basic notions needed to process great volume of data which are needed on Faculty and later in engineer's carrier or researcher. This discipline completes the notions from Computer Usage discipline.

5. Concordance between the objectives of the topic and the objectives of the training plan
The discipline's objectives are according to those of the general curriculum. Being an optionally discipline, can assure an complementary support in specialty educational. These notions are necessary to the learning process, helping the student to solve problems also for alternative discipline from curricula. The knowledge could be useful in order to solve professional themes and also in learning process (in master programs, doctoral studies or researching activity).

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- *to understand the main principles and the methods in order to manipulate an DataBasis Management System.*

b. Technical skills and abilities
- *to identify and to organise the informations from the specific disciplines of the Civil Enginner domains*

7. Teaching procedures:
The discipline's presentation will be shown helping with computer program (Microsoft Powerpoint), helping with large explanations on the slides, or detailed on the blackboard (where is necessary. Also, specific computer programs will be used in order to have clearly explanations. Individual study of the bibliography will be encouraged.
This technique presents the following advantages:
- *help to send an clear and conceived message (course);*
- *the structure of content will be very easy to understand*
- *many images, graphics, tables and other visual aspects (movies) could be easy inserted in presentation;*

Permanently is indented the feedback from the students and the explanations will be adapted depending from its reactions. At the applications, are shown problems helping with the projector, working together with the students, to achieve more knowledge from the studied software

8. Evaluation system:
- *Permanent evaluation: Final note sharing: 20%*

Seminary activity and homework: Each seminary work will receive a note which will show the quality and and quantity of the accumulated knowledge.

- *Final evaluation: Colloquium - Final note sharing: 70%*

Oral presentation of an essay of a theme (choused in according with the teacher), which will reflect all the knowledge achieved from the semester.

Final result will be obtained by arithmetical mean of the following:

1. Basic notation – 10%.
2. Seminary activity and homework notation – 20%
3. Final colloquium – 70%

Needed result will by ≥ 5.

9. Content of the subject:

9.1. Course

	Chapter	**Nr. of hrs.**
1	Fundamental concepts concerning the Databases, representation models of the data and managing systems of the Databases. Designing the relational databases.	2
2	SGBD MICROSOFT ACCESS (general characteristics, type objects collections, facilities to application's development)	2
3	SQL language - Interrogation and actualizations of the databases	2
4	Elements specifics to use the databases objects in VBA procedures	2
5	New functionalities concerning databases: Client – Server architecture, multidimensional databases, distributed databases, object oriented databases, relation Internet - databases	2
6	Database's Security and integrity	2
7	SGDB applications in Civil Engineering	2

Cumulated 14 hrs

9.2. Applications

1	Laboratory presentation and Functionality Rules, Protection Rules, Fire Safety Rules	1
2	SGBD introduction. Access introduction. Tables, formulas, interrogations and reports establishment. New databases initialisation. Video databases initialisation.	3
3	Table creation using Table Wizard. Table creation in visualisation mode "Table Design". Main key establishing. Data types and those formats. Structure's editing of an table. Making an table in "Datasheet" visualisation mode. Data input in a table in "Datasheet" visualisation mode.	4
4	Relationships between tables. Referential integrity imposing. Relations editing.	2
5	Simple form initialisation. Creation of an form using AutoForm. Creation of an form using Form Wizard. Creation of an form in "Form Design" visualisation mode. Controls and labels appending in a form. Moving and redimensioning of the controls and labels. Special controls appending in forms. Creation a cassette with list and a combination cassette. Options group creation.	4
6	Information searching in Databases. FIND and REPLACE characteristics usage. Data's sorting, filtration and indexing.	2
7	Creation of a selection interrogation with Simple Query Wizard application. Creation of a interrogation in Query Design visualisation mode. Fields and criterions appending at interrogation.	4
8	Simple report creation. Report creation using AutoReport. Report creation using Report Wizard. Report manipulation in Report Design visualisation mode. Image appending in a report. Computation placement in a report.	4
9	Colloquium theme preparation– problems applicable in Civil Engineering	2
10	Colloquium	2

Cumulated 28 hrs

10. References

4. **** MS Access Documentation*
5. Roger Jennings - Totul despre Microsoft Access 2000, Ed. Teora 2000
6. Joe Habracken - Access 2002 pentru începători, Editura Teora 2002

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	eng. Gabriela COVATARIU	
Instructor:	eng. Gabriela COVATARIU	

FIŞA DISCIPLINEI

Denumirea disciplinei	**DATABASES**

Codul disciplinei		Semestrul	**6**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	14		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Computer Usage
	Recomandate	

Obiective	*The* goal of the course is to create student's skills in order to manipulate DataBasis Management Systems and to create the computer programs needed in order to solve the themes imposed by the study of the Civil Engineering's disciplines. Are necessary to introduce DataBasis basic notions needed to process great volume of data which are needed on Faculty and later in engineer's carrier or researcher. This discipline completes the notions from Computer Usage discipline.
Conţinut (descriptori)	Fundamental concepts concerning the Databases, representation models of the data and managing systems of the Databases. Designing the relational databases. SGBD MICROSOFT ACCESS (general characteristics, type objects collections, facilities to application's development) SQL language - Interrogation and actualizations of the databases Elements specifics to use the databases objects in VBA procedures New functionalities concerning databases: Client – Server architecture, multidimensional databases, distributed databases, object oriented databases, relation Internet - databases Database's Security and integrity SGDB applications in Civil Engineering

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării Prezentare orală, referat 70%:			
Stabilirea notei finale (procentaje)	**Evaluare finală prin prezentare lucrare finala [M]**			**70 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar/lucrări**		**20 %**
		Teste pe parcurs		**0 %**
		Lucrări de specialitate, teme de casă [1]		**0 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	drd.ing. COVATARIU Gabriela	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	drd.ing. COVATARIU Gabriela	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Faculty of Civil Engineering and Building Services
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IlI** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ADVANCED ENGLISH

1. Course leader: **Senior Lecturer TUDOR Florin Mircea, Ph.D.**
2. Topic characteristics: DL (DC) **code:**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
6		2			VP		28			28

4. Objectives of the topic:

The course estimates the knowledge level of English acquired during the first academic year, the revision of the essential grammar structures, the developing of the translation and writing abilities in what the civil engineering texts are concerned

5. Concordance between the objectives of the topic and the objectives of the training plan
The objectives of the topic are in agreement with the training plan

6. Learning outcomes expressed in knowledge, technical skills and abilities
f. Knowledge
The student must translate from English into Romanian an easy technical text without a dictionary and a difficult one with a dictionary. He must also translate a text from Romanian into English with a dictionary
b. Technical skills and abilities
The student must have a rather good grasp of some of the technical English terms used in civil engineering.

7. Teaching procedures:
Practical applications concerning civil engineering English texts. The applications are done individually and in groups of 2 – 4 students.

8. Evaluation system:
Seminar: individual evaluation depending on the quality of the oral exercises and of the practical applications: 20%
Tests: 2 tests per semester : evaluation: 20%
Homeworks: 2 homeworks: evaluation: 20%
Final semester examination: practical application with or without a dictionary: evaluation: 30%

Stages:

Continuous assessment

a) type of imposed assignments: 2 homeworks, 2 test papers per semester : 40% (20% + 20%)
b) means and working conditions for reaching the goal: books, dictionaries
c) percentage of the evaluation in the final mark

Speciality projects(applications)

***Final evaluation*:** **Examination** **Percentage of the final mark**: %

9. Content of the subject:

d) **9.1. Course**

e) **9.2. Applications**

1	Civil Engineering (II)	6
2	London. Buildings	8
3	New York Buildings	8
4	Washington Main Buildings. The Capitoliu	4
5	Test Paper 2	2

Cumulated 28 hrs

10. References

Allen, J. P. B., Widdowson, H.G, English in Physical Science, London, 1974
Close R. A., The English We Use for Science, London, 1975
Ewer, J. R., Latorre G., A Course in Basic Scientific English, London, 1976
Hall, Eugene J., The Language of Civil Engineering in English, Englewood Cliffs, 1977
Koch, Paul, Engineering: Civil and Mechanical Engineering, New York, London, 1984

Date: 25.03.2009

Name and surname **Signatures:**

Instructor: Senior Lecturer Tudor Florin Mircea, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ADVANCED ENGLISH**

Codul disciplinei		Semestrul	**6**	Număr de credite	**2**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul II**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**28**		**28**		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DC**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DL**

Discipline anterioare	**Obligatorii (condiţionale)**	Limba engleză din anii I şi II de facultate
	Recomandate	

Obiective	The student must translate from English into Romanian an easy technical text without a dictionary and a difficult one with a dictionary. He must also translate a text from Romanian into English with a dictionary The student must have a rather good grasp of some of the technical English terms used in civil engineering.
Conţinut (descriptori)	Civil Engineering (II) London. Buildings New York Buildings Washington Main Buildings. The Capitoliu

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		20 %
		Teste pe parcurs [*număr)* 2		20 %
		Lucrări de specialitate, teme de casă [*număr***]** 2		20 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular(i) disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	Lect.dr. Florin Mircea TUDOR	

Titular(i) aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	Lect.dr. Florin Mircea TUDOR	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
REINFORCED CONCRETE STRUCTURES

1. Course leader: **Senior Lecturer MIHAI Petru, Ph. D.**
2. Topic characteristics: DI, DS **code: CE401**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	3			2	E	42			28	70

4. Objectives of the topic:

The objective of course is to introduce the theory and application of analysis and design of reinforced concrete structures. The course focuses on understanding the behavior of reinforced and prestressed concrete components and systems subjected to gravity as well as lateral loads and the basic criteria for design of reinforced and prestressed concrete elements.

5. Concordance between the objectives of the topic and the objectives of the training plan

The class providing a comprehensive education in fundamentals, and in developing professionalism by encouraging the use of critical judgment with engineering fundamentals to solve incompletely defined design problems, according with the training plan.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

1. Recognize the design philosophy of reinforced concrete structures.
2. Understand the difference between the structural behavior of different reinforced concrete structural elements through demonstration experiments and data analysis.
3. Understand why must to put the reinforcement into concrete and can establish where.
4. Design different reinforced and prestressed concrete elements subjected to gravity and lateral loads.

b. Technical skills and abilities

After completing of this course the students must identify the different types of the reinforced concrete structures, must can conceive a rational reinforced or prestressed element, must to use the computation methods to design reinforced and prestressed elements and must to performing the making-up of computed elements.

7. Teaching procedures:

The course is presented in mixed mode: general aspects are presented in a PowerPoint presentation and details and discussions are made on blackboard. On the project, students must to design a precast prestress structure and all the discussions are made on blackboard.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: on the project the students must offer the rational solutions to design rational elements
b) means and working conditions for reaching the goal: each student must propose 3 rational solutions in designing process
c) percentage of the evaluation in the final mark: 10%

Specialty projects (applications)

The students will design a precast prestressed structure and the points are accorded from a rational conceiving, good structural model and analysis and the rational making-up of elements.

***Final evaluation*: Examination Percentage of the final mark**: 60 %

On the final examination students must solve 3 subjects. The first step is a written test (30% from the exam note) and the second one consists on a discussion around these 3 subjects when are checked the capacity to solve incompletely defined design problems (60% from the exam note).

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Introduction in conceiving and designing process *Are presented the main rules and steps in conceiving and designing process*	5
2. Reinforced and prestressed concrete girders *Conceiving, designing rules, examples of monolith and precast elements*	3
3. Arches *Conceiving, designing rules, making-up details*	3
4. Trusses *Conceiving, designing rules, making-up details*	3
5. Deep beams *Conceiving, designing rules, making-up details*	3
6. Frame girders *Conceiving, designing rules, making-up details*	3
7. Columns *Conceiving, designing rules, making-up details*	3
8. Slabs *Conceiving, designing rules, making-up details*	3
9. Floors *Beam-girder floor, coffered floor, one way joist floor, mushroom floor, flat plate floor*	4
10. Thin shell *Conceiving, designing rules, making-up details*	3
11. Frames structure *Conceiving, designing rules, making-up details*	3
12. Walls structure *Conceiving, designing rules, making-up details*	3
13. Lamelar frames structure *Conceiving, designing rules, making-up details*	3

Cumulated 42 hrs

9.2. Applications

	Name of task and content	**Nr. of hrs.**
1.	Project requirement	1
2.	Preliminary design of the structural members	3
3.	Loads evaluation	2
4.	Static and seismic analysis	2
5.	Design of precast prestressed transversal girder	12
6.	Design of column	3
7.	Making-up of elements. Drawings	5

Cumulated 28 hrs

10. References

1. Gosav Ionel, Concrete Structures, Introduction in Design Philosofy, editura Gheorge Asachi, Iaşi, 2003
2. Mihul Anatolie, Construcţii din beton armat, Editura didactică şi pedagogică, Bucureşti, 1968
3. Mârşu O, Friederich R., Construcţii din beton armat, Editura Didactică şi Pedagogică, Buicureşti, 1980
4. Colecţia de standarde şi normative în domeniu.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Petru MIHAI, Ph. D.	
Instructor:	Senior Lecturer Petru MIHAI, Ph. D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**REINFORCED CONCRETE STRUCTURES**

Codul disciplinei	**CE401**	Semestrul	**7**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42			28

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, DS – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Beton armat, Beton armat şi precomprimat
	Recomandate	Rezisstenţa materialelor 2, Teoria elasticităţii şi plasticităţii; Statica construcţiilor; Inginerie seismică 1

Obiective	The objective of course is to introduce the theory and application of analysis and design of reinforced concrete structures. The course focuses on understanding the behavior of reinforced and prestressed concrete components and systems subjected to gravity as well as lateral loads and the basic criteria for design of reinforced and prestressed concrete elements.
Conţinut (descriptori)	Introduction in conceiving and designing process;Reinforced and prestressed concrete girders; Arches; Trusses; Deep beams; Frame girders;Columns;Slabs; Floors; Thin shell;Frames structure; Walls structure;Lamelar frames structure

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1. test scris; sarcini: prezentarea a 3 elemente şi/sau structuri din domeniu; condiţii de lucru T ; pondere 40 %; 2. prezentare orală; sarcini: explicarea concepţiei structurale, a principiilor de proiectare şi a soluţiilor de alcătuire pentru cele 3 tipuri structurale din testul scris ; condiţii de lucru T pondere 60 %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**T 60 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări / proiect**		**T 30 %**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	şef lucr. dr. ing. Petru MIHAI	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	şef lucr. dr. ing. Petru MIHAI	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

STEEL STRUCTURES

1. Course leader: **Senior Lecturer TELEMAN Elena-Carmen, Ph.D.**
2. Topic characteristics: DI , DS **code: CE402**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2		1		E	28		14		42

4. Objectives of the topic:

It gives to the students the possibility:

- *to understand the behaviour of the structural steel used for different types of constructions;*
- *to design steel members as parts of civil, industrial and agricultural structures;*
- *to learn about the possibilities of producing in workshop and at building site of various steel elements as parts of a whole structural system.*

5. Concordance between the objectives of the topic and the objectives of the training plan

The competences gained by the students regard learning about the constructions specific to the field of study and perform design calculation for the elements of these constructions. They must be able to identify the actions, evaluate the loads, also the physical and mechanical properties of the structural steel, identifying the optimum use of various constrction elements and to apply the design methods designed for these structures.They are stimulated to adopt various technics of manufacturing in detail and they learn to draw the layouts and the detailed sketches in accordance with the general concept, finally being able to implement the design results into the required format of technical files corresponding to the project.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge: After the tuition period the students will be able to master the major advantages and also, the problems involved by adopting specific steel elements as parts of steel structures.

b. Technical skills and abilities: The student will be able to:

- find the best solutions for the whole structure and for the design details;
- know how a steel structure is made, identifying major errors in the design and also in the execution;
- understand the technical drawings and elaborate them.

7. Teaching procedures:

- visual presentation of slides with the help of computer graphics and projections, suplimentary explanations on the board; the students will individually be handed the material on paper before the course;
- the stages of the project is presented on the board; sketches on paper or on CD rom are provided;
- tabel and catalogues of products will be given on infographic support;
- individual information will be reccomended regarding the books and magazines existent in the library of the facult, also via internet.

8. Evaluation system:

Students are informed beginning with first lecture to discipline requirements and evaluation

procedure
Stages:
***Continuous assesment*:** verifications of the stages of project during application hours.

Specialty projects (applications)
d) The students will design basic elements of common steel structures;
e) The presentation of the stages of the project is made traditionally and the students will be encouraged and assisted to run design programs on computer.
f) 50%.

***Final evaluation*: E** **Examination:** written examination **Percentage of the final mark**: 40 %

9. Content of the subject:

9.1. Course

Chapter	Nr.hrs
1. Industrial buildings in steel (14 hrs)	
1.1. Structural shapes for light industrial buildings, steel structural members used for these structures	2
1.2. Actions, groups of actions, loading schemes	1
1.3.Structure of the roof: sheeting, purlins, collaboration between the steel roof sheeting and the structural elements	3
1.4. External walls and their structural elements	1
1.5.Design and verification of the structural elements of the transversal frame and the structural connections	4
1.6. Industrial buildings with cranes. Crane girders	2
1.7. Structural stability to horizontal actions (vertical and horizontal bracing system)	1
2. ***Multi storey steel structures (10 hrs)***	
2.1. Plane shapes, elevations, structural classification	1
2.2. Actions, groups of actions, loading schemes. Maximum deflections tolerated	1
2.3. Global analysis, modelling the structural connections and the bracing system efficiency; Classification of the joints between the girder and the column	4
2.4. Constructive solutions for the structural elements design (columns, girders, floors, walls); elements of design and verifications	4
3. *Steel space framed structures (4hrs)*	
3.1. Arches in steel: design of arches made of plate girders and of lattice girders; instability of the arches and effects of temperature variations; bracing systems of arches; systems of purlins and ribs for coupled arches; supports and keystone details	2
3.2. Reticulated structures (plane and spatial): Types of structures and modelling; elements of the plane and curved reticulated structures; principles of design and deflections	2

Cumulated 28 hrs

9.2. Applications-works

Stages	Name of task and content	Nr. hrs
1	Transversal section	1
2	Roof structure	1
3	Purlins-design and verifications. Fixing and connections details	1
4	Bracing system in the roof plane and between the current columns of the building	1
5	Actions and combination of actions on the transversal frame.	1
6	Design of the structural elements of the external walls made of steel sheeting	1
7	Static computation using computer aids. The effect of the redundancy degree	1
8	Calculus of the efforts in the column	1
9	Design of the roof truss	1
10	Design of the connections between the internal members of the roof truss	1
11	Design of the column with constant cross section.	1

12	Design and calculation of the capital and the base plate of the column	1
13	Sketch of the roof truss (scale 1:20, details 1:10)	1
14	Final verification	1

Cumulated 14 hrs

10. References

1. Teleman, E.C, *Steel structures*, ED. Matei-Teiu Botez, 2008
2. Buick Davison, Graham W. Owens, *Steel designers' manual, eds*. : Ed. Blackwell Science, Oxford, 2005, ISBN 9781405134125
3. Hassan K. Al Nageim, MacGinley, T. J., *Steel structures practical design studies*, Ed. Taylor & Francis, London New York, 2005, ISBN 9780415301572
4. Nethercot, D. A., *Limit states design of structural steelwork*, Ed. Spon, London NewYork, NY, 2001, ISBN 9780419260905
5. Ioan, P., Betea, St., *Structuri metalice multietajate amplasate in zonele seismice*, Ed. MatrixRom, Bucureşti, 2001, ISBN 9736852563
6. Mercea, Gh., *Constructii metalice din profile ajurate*, Ed. Academiei Romane, 2000, ISBN 9732707739
7. Strateanu, P., Taranu, N., *Coroziunea si protectia anticoroziva a constructiilor din otel*, Ed. Cermi, Iaşi, 1999,ISBN 973-8000-10-6
8. Tirea, L., *Structuri reticulare planare – Forme şi alcătuiri*. Vol. 1, 1998, IP Timişoara
9. Dalban, C., Dima, S., Chesaru, E., Serbescu, C., *Constructii cu structura metalica*, Ed. D. P., Bucureşti, 1997, ISBN 9733029505
10. Mateescu, D., *Cladiri inalte cu schelet din otel*, Ed. Academiei Române, Bucureşti, 1997, ISBN 973-27-0574-4
11. Chan, S.L., *Advances in steel structures*, 1996, Ed. Elsevier, Oxford , ISBN 0080428304
12. Şerbescu, C. s.a., *Alcătuirea şi calculul structurilor metalice pentru hale industriale*, Ed. Tehnică, Bucureşti, 1987
13. Mateescu, D., Caraba, I., *Construcţii metalice. Calculul şi proiectarea elementelor din oţel*, Ed. Tehnică, Bucureşti, 1980

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Elena Carmen TELEMAN, Ph.D.	
Instructors:	Senior Lecturer Elena Carmen TELEMAN, Ph.D. Senior Lecturer Victoria-Elena ROŞCA, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**STEEL STRUCTURES**

Codul disciplinei	**CE402**	Semestrul	**7**	Număr de credite	**4**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, DS – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Elements of Steel Structures I and II
	Recomandate	Strength of Materials, Statics, Structural Dynamics, Numerical Methods in Engineering, Finite Element Analysis

Obiective	-To understand the behaviour of the structural steel used for different types of constructions; -To design steel members as parts of civil, industrial and agricultural structures; -To learn about the possibilities of producing in workshop and at building site of various steel elements as parts of a whole structural system.
Conţinut (descriptori)	Industrial buildings in steel, Multi storey steel structures, Steel space framed structures-arches in steel and reticulated structures (planar and spatial).

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**E**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen		**T 40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**-%**
		Teste pe parcurs	**-%**
		Lucrări de specialitate (M)	**M 50%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Sef lucrari dr. ing. Elena-Carmen TELEMAN	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Sef lucrări dr. ing. Elena-Carmen TELEMAN Sef lucrări dr. ing. Victoria-Elena ROŞCA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
INDUSTRIAL CONSTRUCTIONS

1. Course leader: **Associate Professor Gabriel Oprişan, Ph.D.**
2. Topic characteristics: DI, DS **code: CE403**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2			2	E	28			28	56

4. Objectives of the topic:

The course objective is to give an extensive coverage of the most important aspects concerning industrial buildings. This course examines the layout of industrial buildings and functional design of buildings used in good production, including system analysis and materials handling. Functional requirements of construction, space and environment are emphasized. The anatomy of typical industrial construction is reviewed with descriptions of structural systems, cladding, purlins and sheeting rails, main frames in portal frame construction, bracing. The different categories of industrial buildings and their parts are described: main dimensions, process operation, plant layout, foundation needs, handling systems, natural lighting, environmental control, service routes, staffing level and access all.

5. Concordance between the objectives of the topic and the objectives of the training plan

Industrial Constructions is a part of civil engineering area, where their objectives complete the training of young civil engineer close aboard by couses like: statics, reinforced concrete constructions, steel structures, wood constructions and construction in rural zones.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *Critical Thinking (Identify personal assumptions, Collect, Analyse, interpret Information's, Draw conclusions)*
- *Communication skills (speak clearly, read with comprehension, work effectively in groups, interpret/use graphic communication);*

b. Technical skills and abilities

Upon successful completion of this course, the student should be able to:

- *Work from the ideas and plans of other to make sketches and scale drawings of floor plans, foundation plans, elevations, section and working drawings of industrial buildings with standard symbols;*
- *Use local building codes and specifications (Romanian Standards and Euronorms or Eurocodes) to develop a set of working blueprints for an industrial building that would meet all requirements for a building permit;*
- *Implement the nomenclature of construction technology for industrial buildings;*
- *Plan the layout of a floor plan showing spaces required for lobby, sales, storage, work rooms, offices as needed for industrial buildings*

7. Teaching procedures:

Relationship between student and professor is a partnership type, where everybody assumes the responsibility to reach the learning results. Learning results are clearly explained and debated with students from their relevance perspective for their professional enhancement. In the teaching process, professors utilized the resources of the new technologies: e-mail, personal web page for themes and

references, video tapes and DVD, power point slides and overhead projections, computer programs for static and seismic analysis of industrial buildings, flipchart table etc.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: checking will be for every student, every student will present the solved subject in front of their colleagues

b) means and working conditions for reaching the goal: students will calculate using computer programs like LUSAS or AXISVM compression and tensile forces, shear forces and moments for main transverse frames and for spatial frame

c) percentage of the evaluation in the final mark:

The course grade will be determined by the students' performance during project work using the following procedures:

- final examination test paper: 50%
- project evaluation: 40%

Speciality projects (applications)

The students elaborate a project of an industrial hall with 2 spans and 15 bays according to 9.2 topics. A summary of the project content: Establishing the main dimensions (height, width and length regimes) due to technological flow, checking of structural precast and prestress reinforced concrete elements, design of cladding and roof members, solution for industrial floor due to technological flow (solving of the envelope of an industrial hall), efforts design, etc. A set of drawing plans and details with particular characteristics for each student will be performing, too.

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. INTRODUCTION	**2**
1.1. An overview on industrial buildings	
1.2. Industrial buildings in Romania, past and present	
1.3. Why studying industrial buildings in a civil engineering program	
2. BASICS OF INDUSTRIAL BUILDINGS	**4**
2.1. Factors influencing the design of industrial buildings	
2.2. Modular coordinates	
2.3. Industrialization and prefabrication in case of industrial buildings	
2.4. Requirements for industrial buildings	
3. LAYOUT AND DESIGN OF INDUSTRIAL BUILDINGS	**10**
3.1. Ground floor industrial buildings	
3.1.1. Structures types, materials types and specific elements	
3.1.2. Specific features for ground floor industrial buildings	
3.1.3. Actions, loads and specific groups for ground floor industrial buildings	
3.1.4. Coo-working phenomenon for ground floor industrial structures	
3.2. Multi-storey industrial halls	
3.2.1. Structures types, materials types and specific elements	
3.2.2. Specific features of multi-storey industrial buildings	
3.2.3. Actions, loads and specific groups for multi-storey industrial buildings	
4. ENVELOPE OF INDUSTRIAL BUILDINGS	**4**
4.1. Wall claddings	
4.1.1. Reinforced concrete walls	
4.1.2. Autoclaved concrete walls	
4.1.3. Ceramic wall panels and brick masonry walls	
4.1.4. Sandwich cladding panels	
4.1.5. Profiled steel sheeting and other walls made of folded plates	
4.2. Roof claddings	
4.3. Industrial flooring	

5. LIGHTENING AND VENTILATION OF INDUSTRIAL BUILDINGS 5.1. Introduction to skylights 5.2. Type of ventilation systems 5.3. Industrial windows 5.4. Industrial doors	**2**
6. FIRE PROTECTION OF INDUSTRIAL BUILDINGS AND SECURITY MEASUREMENTS 6.1. Introduction 6.2. Fire precaution measures for reinforced concrete elements	**2**
7. SPECIAL INDUSTRIAL CONSTRUCTION 7.1. General aspect of storage structures 7.1.1. Warehouse 7.1.2. Deposits 7.1.2.1. Deposits for solid materials 7.1.2.2. Deposits for liquid and gases 7.2. Bunkers 7.3. Silos 7.4. Industrial chimneys 7.5. Cooling tower structures	**4**

Cumulated 28 hrs

9.2. Applications

	Industrial hall for production of precast reinforced concrete elements	
	1. **Theme of the project and individual student data**	**2**
	2. **Industrial Hall Geometry** 2.1. Establish the height of the industrial hall 2.2. Height of the RC column 2.3. Industrial hall envelope 2.3.1. Selection and checking of the precast elements 2.3.2. Loads estimation for checking the roof elements 2.3.3. Evaluation of p_{design} for EPL 2.3.4. Evaluation of p_{design} for EP 2.3.5. Evaluation of p_{design} for the transverse girder 2.3.6. Choosing of elements from catalogue products 2.4. Selection of the cross sections for the precast RC columns 2.5. Evaluation of the maximum reaction, R_{max} from the vertical loads of travelling cranes 2.6. Evaluation of the axial forces produced by sustained walls 2.7. Selection of the cross section height 2.8. Selection of the travelling crane length 2.9. Corbel design of the precast RC column for central and marginal RC column 2.10. Computation of the eccentricities	**9**
	3. Establishing the loading schemes 3.1. Permanent loads 3.1.1. Permanent loads at the roof level 3.1.2. Permanent loads at the corbel level 3.1.3. Permanent loads from sustained walls 3.2. Variable loads 3.2.1. Snow loads 3.2.2. Wind load 3.2.3. Loads from temperature variations 3.2.4. Travelling cranes loads 3.3. Seismic action 3.4. Loads combinations 3.5. Determination the coefficient of spatial coo-working 3.6. Efforts determination using a FEM computer program	**11**

	4. Drawing plans 4.1. Transverse section and transverse facades 4.2. Longitudinal section and longitudinal facades 4.3. Details: foundations, connections between cladding walls, windows and columns 4.4. Attic details 4.5. Horizontal section at three levels: basement beam level, top level of railway system, skylight level	**6**

Cumulated 28 hrs

10. References

1. Oprişan G., Entuc I., Ţăranu N.- "Industrial Buildings", Ed. STEF, 2006, 216 p., ISBN 973-8961-71-8
2. Oprişan G. "Design Guide for Industrial and Agricultural Buildings", Ed. Societatii Academice "Matei-Teiu Botez", Iasi, 2007, 314 pp, ISBN 978-973-8955-14-1
3. Boghian Vl. - Constructii industriale, Vol.I , II, Ed. I.P.Iasi, 1988, 1989.
4. Serbescu C., Taranu N., Pescaru V. - Alcatuirea si calculul structurilor metalice pentru hale industriale. Ed. Tehnica, Bucuresti, 1987.
5. Secu, Al. "Structures en Materiaux Composites", Ed. Document, 1997, Iaşi.
6. Ţăranu, N., Secu, Al., Decher, E., Isopescu, D. "Structuri din materiale compozite şi asociate, Ed. U. T. Iaşi, 1992
7. Grămescu M. Construcţii Industriale, Editura AGIR 2006, Bucureşti.
8. Fisher B. - Industrial buildings, AISC, Chicago, 1994
9. ESDEP. European Steel Design Education Program. Lecture slides and video tapes sets. Institute of Steel Construction. UK. 2000.
10. *** STAS 800-82 - "Poduri rulante electrice cu cârlige, caracteristici şi dimensiuni principale", Institutul Român de Standardizare.
11. Pop M. – "Construcţii industriale", I.P. Cluj-Napoca, 1985.
12. Popescu V. – "Construcţii Industriale", Ed. Didactică şi Pedagogică Bucureşti, 1974.
13. Giocel D., Lungu D. – "Acţiunea vântului, zăpezii şi variaţiilor de temperatură în construcţii", Ed. Tehnică Bucureşti, 1972.
14. Perjescu M. – "Hale industriale cu un nivel. Elemente de calcul static", Ed. Tehnică Bucureşti, 1971.
15. CR0-2005 "Cod de proiectare. Bazele proiectării structurilor in construcţii" Monitorul Oficial al Romaniei, nr.148 bis, 16 februarie 2006.
16. CR 1-1-3-2005 "Cod de Proiectare. Evaluarea acţiunii zăpezii asupra construcţiilor" Monitorul Oficial al Romaniei, nr.148 bis, 16 februarie 2006.
17. NP-082-04 "Cod de proiectare. Bazele proiectarii si acţiuni asupra construcţiilor. Acţiunea vântului", Monitorul Oficial al Romaniei, nr.349 bis, 25 aprilie 2005.
18. C107-2005 "Normativ privind calculul termotehnic al elementelor de construcţie ale clădirilor", Monitorul Oficial al Romaniei, Partea I, Nr.1.124 bis-13.XII.2005.
19. SR ENV 1991-5:2004 Eurocod 1 Bazele proiectarii si actiuni asupra structurilor. Partea 5: Actiuni induse de poduri rulante si alte masini.
20. SR EN 13225:2005 "Produse Prefabricate de beton. Elemente liniare de structura", ASRO, Sept. 2005.
21. SR EN 13693:2005 "Produse prefabricate de beton. Elemente special de acoperiş" ASRO, Sept. 2005.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Associate Professor Gabriel Oprişan, Ph.D.
Instructors: Senior Lecturer Ioana Enţuc, Ph.D.
Lecturer Vlad Munteanu, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**INDUSTRIAL CONSTRUCTIONS**

Codul disciplinei	**CE403**	Semestrul	**7**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28			28

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Materiale de constructii, Statica Constructiilor, Beton armat si precomprimat
	Recomandate	Desen tehnic, Infografica AutoCAD, Proiectarea asistata de calculator

Obiective	The course objective is to give an extensive coverage of the most important aspects concerning industrial buildings. This course examines the layout of industrial buildings and functional design of buildings used in good production, including system analysis and materials handling. Functional requirements of construction, space and environment are emphasized. The anatomy of typical industrial construction is reviewed with descriptions of structural systems, cladding, purlins and sheeting rails, main frames in portal frame construction, bracing. The different categories of industrial buildings and their parts are described: main dimensions, process operation, plant layout, foundation needs, handling systems, natural lighting, environmental control, service routes, staffing level and access all.
Conţinut (descriptori)	Introduction; basics of industrial buildings; layout and design of industrial buildings;envelope of industrial buildings; lightening and ventilation of industrial buildings; fire protection of industrial buildings and security measurements; special industrial construction

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**60%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**40%**
		Teste pe parcurs [*număr)*		**0%**
		Lucrări de specialitate, teme de casă [*număr***]**		**0%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Conferenţiar dr.ing. Gabriel OPRIŞAN	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucrări dr.ing. Ioana ENŢUC Asist. dr.ing. Vlad Munteanu	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
CONSTRUCTIONS IN RURAL ZONES

1. Course leader: **Associate Professor Gabriel Oprişan, Ph.D.**
2. Topic characteristics: DI **code: CE404**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2		1		C	28		14		42

4. Objectives of the topic:

The course objective is to give an extensive coverage of the most important aspects concerning agricultural buildings. This course examines the layout of constructions in rural zones and functional design of buildings used in good production. Functional requirements of construction, space and environment are emphasized. The anatomy of typical agricultural buildings is reviewed with descriptions of structural systems, cladding, establish of loading hypothesis. The different categories of agricultural buildings and their parts are described: main dimensions, process operation, plant layout, daylighting, environmental control, waste management, anticorrosive protection systems.

5. Concordance between the objectives of the topic and the objectives of the training plan

Constructions in Rural Zones is a part of civil engineering area, where their objectives complete the training of civil engineer close aboard by couses like: construction materials, statics, reinforced concrete constructions, steel structures, wood constructions and civil constructions.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- *Critical Thinking (Identify personal assumptions, Collect, Analyse, interpret Information's, Draw conclusions)*
- *Communication skills (work in groups, interpret/use graphic communication);*

b. Technical skills and abilities
Upon successful completion of this course, the student should be able to:
- *Work from the ideas and plans of other to make sketches and scale drawings of floor plans, foundation plans, elevations, section and working drawings of buildings with standard symbols;*
- *Use local building codes and specifications (Romanian Standards and Eurocodes) and British Standards Series (BS5502);*
- *Implement the nomenclature of construction technology for buildings in rural zones;*
- *Plan the layout of a floor plan showing spaces required for services, current production, storage, work rooms, spaces for animal and vegetable production*

7. Teaching procedures:
Relationship between student and professor is a partnership type, where everybody assumes the responsibility to reach the learning results. Learning results are clearly explained and debated with students from their relevance perspective for their professional enhancement. In the teaching process, professors utilized the resources of the new technologies: e-mail, personal web page for themes and references, video tapes and DVD, power point slides and overhead projections, flipchart table etc.

8. Evaluation system:

Stages:

Continuous assessment - T

Students are informed beginning with first lecture to discipline requirements and evaluation procedure

Seminary activity

Percentage from final evaluation: 10%

All students must participate to all forms of practical instructions

Homework solved in frame of seminary: 30%

Final evaluation: 60%

Every student will solve three theory subjects and one application problem

Applications

In the first application the students will design a farm for dairy cattle based on following steps: farm plan, technological dimensions, specific equipment and building services, choosing of structural system and loading hypothesis.

For second application every student will analyze a greenhouse structure for vegetable production. In this stage following points will fulfill: greenhouse plan, technological dimensions, specific equipment and building services, choosing of structural system and loading hypothesis.

9. Course content:

9.1. Course

Chapters	No. hours
8. ECOLOGICAL AREA OF RURAL ZONES 8.1. Introduction 8.2. Agricultural buildings. Past and present 8.3. Classification of agricultural buildings	**4**
9. DEVELOPMENT OF ECOLOGICAL FARMS 9.1. Animal farms 9.1.1. Internal and external factors for animal production 9.1.2. Waste systems	**6**
10. DEVELOPMENT OF FARMS FOR VEGETABLES PRODUCTION 10.1. Farms for vegetables and flowers production 10.2. Internal and external factors for cultivation spaces	**4**
11. CONSTRUCTIONS, BUILDING SERVICES AND EQUIPMENTS FOR ECOLOGICAL OPERATIONS OF AGRO-INDUSTRIAL PRODUCTS 11.1. Deposit system for agriculture products 11.2. Buildings for agro-industrial product operation 11.2.1. Shambles 11.2.2. Flour mill 11.2.3. Operation units for oleaginous products 11.2.4. Operation units for milk production	**6**
12. STRUCTURAL SYSTEMS SPECIFIC FOR BUILDINGS IN RURAL ZONES 12.1. Structures and materials types 12.2. Anticorrosive protection system	**4**
13. SPECIFIC LOADS FOR CONSTRUCTIONS IN RURAL ZONES 13.1. Load hypothesis and structural systems design	**2**
14. ESTABLISHING THE LOCATION OF THE AGRICULTURAL BUILDINGS 14.1. Factors which influence the location of agricultural buildings 14.2. Arrangement plan of an agricultural building	**2**

Cumulated 28 ore

9.2. Applications

	Construction in rural zones	
	1. **Dairy cattle farm design**	
	1.1. Technological dimensioning	2
	1.2. Transverse and horizontal plan combined with facades	2
	1.3. Structural system for a dairy cattle farm	1
	1.4. Specific equipment and building services	1
	1.5. Establishing of loading scheme and efforts evaluation	1
	2. **Greenhouses design for vegetable production**	
	2.1. Technological dimensioning	2
	2.2. Transverse and horizontal plan combined with facades	2
	2.3. Structural system for a greenhouse	1
	2.4. Specific equipment and building services	1
	2.5. Establishing of loading scheme and efforts evaluation	1

Cumulated 14 ore

10. References:

1. Oprişan G., (2007). - Design Guide for Industrial and Agricultural Buildings, Ed. Societatii Academice "Matei-Teiu Botez", Iasi, 2007, 314 pp, ISBN 978-973-8955-14-1
2. E. Decher, C. Antohi, E. Sofronie – Construcţii în zone rurale, Vol. 1 - Sisteme constructive pentru culturi ecologice protejate, Ed. Soc. Acad. "Matei-Teiu Botez", Iaşi, 2003
3. E. Decher, M.C. Antohi – Sisteme constructive pentru culturi ecologice protejate, Ed. Performantica, Iaşi, 2003
4. V. A. Jerghiuţă ş.a. – Elemente de proiectare pentru construcţii agricole, ROTAPRINT Iaşi, 1989
5. D. Marusceac ş.a. – Construcţii agricole, E.D.P. Bucureşti, 1982
6. A. Şerban ş.a. – Construcţii zootehnice, E.D.P. Bucureşti, 1981
7. C. Drăghici – Microclimatul adăposturilor pentru animale, Editura CERES, Bucureşti, 1980
8. C. Lulu ş.a. – Complexe agrozootehnice de tip industrial, Editura Tehnică, Bucureşti, 1970
9. I. Maier – Cultura legumelor, Editura Agrosilvică, Bucureşti, 1970
10. CR 1-1-3-2005 "Cod de Proiectare. Evaluarea acţiunii zăpezii asupra construcţiilor" Monitorul Oficial al Romaniei, nr.148 bis, 16 februarie 2006.
11. NP-082-04 "Cod de proiectare. Bazele proiectarii si acţiuni asupra construcţiilor. Acţiunea vântului", Monitorul Oficial al Romaniei, nr.349 bis, 25 aprilie 2005.
12. C107-2005 "Normativ privind calculul termotehnic al elementelor de construcţie ale clădirilor", Monitorul Oficial al Romanici, Partea I, Nr.1.124 bis-13.XII.2005.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Associate Professor Gabriel Oprisan, Ph.D.
Instructor: Senior Lecturer Ioana Entuc, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**CONSTRUCTIONS IN RURAL ZONES**

Codul disciplinei	**CE404**	Semestrul	**7**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** – opţională, **DL** – liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Materiale de Construcţii, Statica Construcţiilor, Beton armat si precomprimat, Construcţii Civile, Construcţii din lemn, Construcţii metalice
	Recomandate	Desen tehnic, Infografică AutoCAD, Proiectarea asistată de calculator

Obiective	The course objective is to give an extensive coverage of the most important aspects concerning agricultural buildings. This course examines the layout of constructions in rural zones and functional design of buildings used in good production. Functional requirements of construction, space and environment are emphasized. The anatomy of typical agricultural buildings is reviewed with descriptions of structural systems, cladding, establish of loading hypothesis. The different categories of agricultural buildings and their parts are described: main dimensions, process operation, plant layout, daylighting, environmental control, waste management, anticorrosive protection systems.
Conţinut (descriptori)	Ecological area of rural zones; development of ecological farms; development of farms for vegetables production; constructions, building services and equipments for ecological operations of agro-industrial products; structural systems specific for buildings in rural zones; specific loads for constructions in rural zones; establishing the location of the agricultural buildings

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**C**
	Probele evaluării prezentare orală; sarcini: răspuns la trei subiecte de teorie si o problema; condiţii de lucru T;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**10%**
		Teste pe parcurs [*număr)*		**0%**
		Lucrări de specialitate, teme de casă [*număr***]**		**30%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr.ing. Gabriel OPRIŞAN	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr.ing. Gabriel OPRIŞAN Şef lucr. dr.ing. Ioana ENŢUC	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
MANAGEMENT OF CONSTRUCTIONS WORKS

1. Course leader: **Senior Lecturer ŞERBĂNOIU Adrian-Alexandru, Ph.D.**
2. Topic characteristics: DI, DID **code: CE405**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	3		2		E	42		28		70

4. Objectives of the topic:

The awareness of the future specialists in constructions about the importance of the scientific management in constructions, the grounds of a profitable, efficient activity;

The comprehension of the general principles of the management in general, and especially for constructions taking into account the particularities of the construction activity;

The building-up of the base of fundamental knowledge needed to the comprehension of the concepts, the techniques and the methods of organization, programming and management of the construction activity;

The development of the capacity of investigation and analysis of the managerial phenomena which allow the correct choice of the best way for the execution of the construction works aiming to maximize the profit;

The forming of the competence of integration of the scientific knowledge and of its approaching in the temporal and social context, as well as the forming of the communication skills by the involvement in scientific debates specific to the management field;

The elaboration of the organization projects of the execution of the construction works using scientific methods of organization and programming, their implementation and application on the construction fields;

The determination of the quantities of resources imposed by the accomplishment of a construction, the elaboration of their insurance programs, their administration on the construction field.

5. Concordance between the objectives of the topic and the objectives of the training plan

The engineering training in the domain of constructions shaped by the curriculum implies more components, through which an essential one that refers to methods, techniques and instruments of elaboration of the organization projects as a precedence phase to the beginning of execution of any construction, its putting into practice and the management of the works, always having in view the result optimization;

The technical knowledge assimilated within the calculation fields of study, which allows the construction engineer to conceive and to project constructions in different constructive solutions, is completed by the knowledge regarding the execution of constructions in conditions of economic efficiency, this being present within the following disciplines: The Technology of the Construction Works, The Economy of Constructions, The Management in Constructions

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge

To know the characteristics of the production process in constructions, with the particularities corresponding to different categories of works – constructions, plants, etc;

To know the parameters of organization of the execution of the construction processes, their signification, their way of assessment and the way of employment in projecting the organization of the execution of the construction works;
To know the technique of elaborating the patterns specific to the different methods of organization and programming, graphic and analytic instruments used as a reliance for the elaboration of the organization projects of execution of the construction works, as well as for the management of the activity on the field;
To analyse and to explain the results of different variants of organization or programming of the construction activity, based on technical and economical indicators

b. Technical skills and abilities

To identify and to select the best method of organization or programming which must be used for the elaboration of the organization program;
To be aware of the technological and organizational structure of a project, regardless the type of the construction, to set duration and resources consumptions for the activities within the structure of a project, to shape the execution of any type of construction using the graphic patterns specific to the different methods of organization and programming;
To use efficiently the information within the project of organization, to transpose this precise information on the field and to follow unfailingly the carrying on of the project, according to the project of organization;
To manage work points of smaller or bigger complexity, to manage organizational entities from constructions with a small degree of complexity, to be able to start and to manage his own business based on the construction activity.

7. Teaching procedures:

Power-point presentations
Videos, used as documentation for the case studies
Visits on the field in order to identify the used technologies, but especially to identify the used methods of organization and management

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignments:
The activity at the PW
Test – has in view the acquirement of theoretic knowledge at different stages during the semester.
Share in the final grade: 10%
b) means and working conditions for reaching the goal:
Work containing the elaboration stages of a project of organization for a certain type of construction, starting from an existent technical project and from a certain settlement;
Share in the final grade: 20%
c) percentage of the evaluation in the final mark
Share in the final grade: 70%
The test(s): Final exam, with theoretic subjects and applications from the class's contents.

Speciality projects(applications)
The students will receive a practical works which will be done during the semester

***Final evaluation*: Examination** **Percentage of the final mark**: 70 %

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. The definition and the contents of the organization and of the management in general, and of the construction activity in particular. The evolution of the management as science and art	3

2. The organization of the execution of the construction processes 2.1. The production process and the simple process of construction; definition, structure, classifications; 2.2. The basic principles of the organization of the execution of the construction processes, the contents of the organization of the processes' execution; 2.3. The parameters of the organization of the execution of the construction processes – organizational, of development in space, of development in time; 2.4. Methods of organization of the processes' execution – successive, in parallel, in chain.	14
3 The programming of the construction activity 3.1 The definition and the contents of the programming activity; 3.2 The definition, the contents and the C.P.M hypotheses as a method of programming of the construction activity; 3.3 Elements of mathematical basis of the critical way method; 3.4 The classification of the C.P.M procedures – The nature and the representation of activities in C.P.M; 3.5 Basic rules for the elaboration of the graphic patterns in MDC – Relationships between the activities of a network graphic; 3.6 The programming with the analysis of the necessary time using CPM networks; 3.7 The programming with the analysis of the necessary time using MPM networks.	10
4.The programming with the analysis of time and resources 4.1. The definition and the contents of the analysis of resources – the classification of resources; 4.2 The parameters of the resources – The classification of the resources' procedures of analysis; 4.3 The heuristic assignment of resources –The Kelley Algorithm; 4.4 The programming with the heuristic levels of resources – The Burgess-Killebrew Algorithm.	6
5. The programming with the cost's analysis and optimization 5.1.The definition and the contents of the cost's analysis for the accomplishment of a project; 5.2 The cost and the duration of the activities; 5.3 The cost and the duration of the projects; Heuristic methods of cost optimization Kellez -Fulcherson Algorithm	5
6.The organization of the technical-material base of the construction field 6.1. The definition and the contents of the technical-material base of the construction field; 6.2. The planning of the provisioning with materials of the field; 6.3. The definition and the contents of the field organization	4

Cumulated 42 hrs

9.2. Applications

	Name of task and content	
1.	The parameters of the organization of process execution	4
2.	The shaping of the execution of the construction works by the following methods: successive, in parallel, balance	8
3	The programming of works by the Method of the critical way – manual elaboration and using specialized calculation programs	16

Cumulated 28 hrs

10. References

1. *Şerbănoiu I. - Management operaţional în construcţii, The Publishing House of the Academic Society "Matei –Teiu Botez", Iaşi, 2003*
2. *Şerbănoiu I.,Ciocan I. - Organizarea proceselor de construcţii "Gh. Asachi" Technical University, Iaşi, 2003*

3. *Şerbănoiu I., Antohie E. - Studiul şi proiectarea procesului de construcţie. "Gh. Asachi" Technical University, Iaşi, 1993*
4. *Şerbănoiu A., Şerbănoiu I. - The organizational methods of the construction Processes,The Publishing House of the Academic Society "Matei –Teiu Botez", Iaşi, 2007*
5. *Hagiu V.,Şerbănoiu I. - Organizarea şi Conducerea Producţiei de construcţii "Gh. Asachi" Technical University, Iaşi, 1987*
6. *Hagiu V., Şerbănoiu I.- Îndrumător pentru proiectarea lucrărilor de org. de şantier. "Gh. Asachi" Technical University, Iaşi, 1980*
7. *Hagiu V.,Şerbănoiu I. - Îndrumător pentru proiectarea organizării execuţiei proceselor de construcţii, "Gh. Asachi" Technical University, Iaşi, 1982*
8. *Antohie E., Şerbănoiu I. - Indrumar pentru management în construcţii. "Gh. Asachi" Technical University Iaşi, 1995*
9. *Hagiu V, Şerbănoiu I., Lozonschi Gh.- Organizarea alimentării cu apă, energie electrică, energie termică, aer comprimat a şantierelor de construcţii The Technical Publishing House, Bucureşti, 1986*
10. *Şerbănoiu I. , Şerbănoiu A.- Managementul resurselor umane in constructii The Publishing House of the Academic Society "Matei –Teiu Botez", Iaşi, 2003*

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer ŞERBĂNOIU Adrian-Alexandru, Ph.D.	
Instructor:	Senior Lecturer ŞERBĂNOIU Adrian-Alexandru, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**MANAGEMENT OF CONSTRUCTION WORKS**

Codul disciplinei	**CE405**	Semestrul	**7**	Număr de credite	**5**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	70	42		28	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	
	Recomandate	

Obiective	The awareness of the future specialists in constructions about the importance of the scientific management in constructions, the grounds of a profitable, efficient activity; The comprehension of the general principles of the management in general, and especially for constructions taking into account the particularities of the construction activity; The building-up of the base of fundamental knowledge needed to the comprehension of the concepts, the techniques and the methods of organization, programming and management of the construction activity; The development of the capacity of investigation and analysis of the managerial; The forming of the competence of integration of the scientific knowledge and of its approaching in the temporal and social context, as well as the forming of the communication skills by the involvement in scientific debates specific to the management field; The elaboration of the organization projects of the execution of the construction work; The determination of the quantities of resources imposed by the accomplishment of a construction, the elaboration of their insurance programs, their administration on the construction field.
Conţinut (descriptori)	The organization of the execution of the construction processes; The programming of the construction activity;The programming with the analysis of time and resources; The programming with the cost's analysis and optimization;The organization of the technical-material base of the construction field

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**E**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen		**60%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**20%**
		Teste pe parcurs [*3)*]	**10%**
		Lucrări de specialitate, teme de casă [*0*]	**0%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Adrian- Alexandru ŞERBĂNOIU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic

BUILDING SERVICES IN CONSTRUCTIONS

1. Course leader: **Assoc. Prof. POPOVICI Cătălin George, Ph.D.**
2. Topic characteristics: **DI, DID** **codul: CE406**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		E	28		14		42

4. Objectives of the topic:

- Aiming and accumulation of knowledge by civil engeneering in the civil and industrila installation field;
- Identification of the functional role of installations;
- Aknolegement of basic concepts and theories for civil and industrial builings installations ;
- Coordination between installation drawings and other builings drawings

5. Concordance between the objectives of the topic and the objectives of the training plan

- Conceiving , designing , executing of installations ;
- Adopting technical solutions according with essential quality acquirements.

.

6. Learning outcomes expressed in knowledge, technical skills and abilities

- **Knowledge**
  - Learning of basic principles of installations .;
  - Learning analytical methods for dimensioning.
- **Technical skills and abilities**
  - Identification and selection of equipments and materials for heating, ventilation, air conditioning , drainage , electrical and refrigerating installations

7. Teaching procedures:

- Powerpoint presentation
- Video presentation

8. Evaluation system: : Traditional

Continue evaluation:
Practical work activities
: 20%
Final evaluation Exam
: 70%

9. Content of the subject:

9.1. Course

Chapter I. Heating Installations 12 hours
I.1 Heating installation classification
I.2 Heating requirement determination
I.3 Local heating systems

I.4 Centralised systems
I.5 Steam heating systems
I.6 Low radiation heating systems

Chapter II	Ventilation and air conditioning installations II.1 Mechanical ventilation II.2 Air conditioning systems	6 hours
Chapter III	Planning Installations III.1 Cold water interior installation III.2 Hot water interior installation III.3 Fire prevention water interior install III.4 Sewerage network	4 hours
Chapter IV	Electrical Installations IV.1. Lighting electrical installations IV.2 Lighting systems selection	2 hours
Chapter V	Natural gas interior installations V.1 Branching V.2 Dimensioning natural gas interior installations	2 hours
Chapter VI	Refrigerating Installations VI.1. Refrigerating procedure methods VI.2. Refrigerating installations with mechanical steam compression VI.3. Absorption refrigerating installations	2 hours

Cumulated 28 hours

b) Applications

- *B.1 Practical works*

1. Presentation of the laboratory	2 hours
2. Heating installation	2 hours
3 Heating centralized installation	2 hours
4. Mechanical ventilation system	2 hours
5. Air conditioning system	2 hours
6. Hot water installation system	2 hours
7. Electrical panels	2 hours

Cumulated 14 hours

10. References

1. V. Pavel, I Olaru: Building Installations. Rotaprint U.T. "Gh. Asachi", Iaşi, 1998
2. M. Verdes, V. Ciocan: Functional Building Instalations, Ed. Venus, 1998
3. Ignat Jan: Low Voltage electrical networks, Ed. Matrix Rom, Bucuresti, 2003
4.Ignat Jan s.a.: Installations and low voltage electrical networks for civil use. Rotaprint, UT Iasi, 2003

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc. Prof. Popovici Cătălin George, Ph.D.	
Instructor:	Assoc. Prof. Popovici Cătălin George, Ph.D	

FIŞA DISCIPLINEI

Denumirea disciplinei	**BUILDING SERVICES IN CONSTRUCTIONS**

Codul disciplinei	**CE406**	Semestrul	**8**	Numărul de credite	**3**

Faculty	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domain	Inginerie Civilă		Total	C	S	L	P
Specialisation	**CIVIL ENGINEERING**		42	28	-	14	-

Categoria formativă a disciplinei DF – fundamentală, DID – în domeniu, DS – de specialitate, DC – complementară	**DID**
Categoria de opţionalitate a disciplinei DI – impusă, DO –opţională, DL –liber aleasă (facultativă)	**DI**

Discipline anterioare	Obligatorii (condiţionare)	Hydraulics
	Recomandate	
Obiective	Aiming and accumulation of knowledge by civil engeneering in the civil and industrila installation field; Identification of the functional role of installations; Aknolegement of basic concepts and theories for civil and industrial builings installations ; Coordination between installation drawings and other builings drawings	
Conţinut (descriptori)	- Heating installation ; - Ventilation and air conditioning installation; - Planning Installations; - Electrical Installations ; - Refrigerating Installations.	

Sistemul de evaluare:			
Evaluarea finală*	Forma (E - examen, C - colocviu, VP – verificare pe parcurs)		**E**
	Probele evaluării prin E : test de cunoştinţe cu întrebări închise 1-ul subiect ; condiţii de lucru : sustinere orala; pondere 50 %; al 2-lea subiect; condiţii de lucru: sustinere orala; pondere 50 %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen / colocviu		60%
	Evaluarea pe parcurs T	Activitatea la laborator*[6 lucrari]*	30%
		Teste pe parcurs *[numar]*	-
		Lucrări de specialitate, teme de casă [*numar*]	-
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Cătălin Popovici	

Titularul aplicatii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf. dr. ing. Cătălin Popovici	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
ELEMENTS OF COMPOSITE STRUCTURES

1. Course leader: **Prof. Nicolae ŢĂRANU, Ph.D.**
2. Topic characteristics: DI, DS **code: CE407**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		E	28		14		42

4. Objectives of the topic:
The course gives a basic knowledge of fibre reinforced composite materials and elements made of these materials as well as their use in engineering structures. It is anticipated that at the conclusion of the course each student will have a basic understanding of the potential engineering advantages of composites, a reasonable understanding of micromechanics, lamina, stiffness and strength characteristics, fabrication and test methods of composite materials. Special types of layered elements such as sandwich beams and columns are presented as alternatives to solid elements made of traditional materials.

5. Concordance between the objectives of the topic and the objectives of the curriculum.
The topic provides the graduate with basic knowledge of composite materials versus traditional building materials, particularities of conceiving and design of composite lamina, simple composite elements and layered elements.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge
- To know and understand the fibre reinforced composite materials with their specific properties versus traditional building materials
- To understand the concept of composites and its application in civil engineering
- To learn the components and the main manufacturing procedures of composite materials and elements

b. Technical skills and abilities
- To identify the specific elastic properties of composite lamina and develop their analytical evaluation
- To understand and calculate the design strength properties of composites based on the individual phases properties
- To elaborate the constitutive equations of composite lamina

To understand and apply the concept of sandwich element relating to layered beams and columns

7. Teaching procedures:
- The subject is taught using lectures and tutorials.
- Video tapes, slides and overhead projections are used in the teaching process.
- The manuscripts of lectures have been published and the manuscripts of laboratory works have been drafted for publication.
- Home work assignment is provided for each chapter.

8. Evaluation system:

Stages:

Continuous assesment

a) *type of imposed assignements: Homework assignments (30 %)*
Two home works will be assigned:
- determination of the fibre reinforced polymer composites properties in the principal directions of the material;
- design of sandwich beam;
Each work will be allocated 15% of the final grade.

b) *means and working conditions for reaching the goal Two periodical tests will be given to each student. The evaluation will be constantly performed during the semester time. The students will be able to use the laboratories of the faculty and of the department of civil engineering, the data acquisition and processing systems, the computing facilities and the library.*
The weight of these examination steps – 20%

c) *percentage of the evaluation in the final mark: Final examination: 40%*

The students will be informed about the requirements and examination policy during the first lecture.

9. Content of the subject:

9.1. Course

Course:

Chapter	Content	Hours
1	**INTRODUCTION** 1.1 Definition 1.2 Characteristics (advantages and disadvantages of composite versus traditional building materials) 1.3 Classification 1.4 Applications of composites in civil engineering	6
2	**CONSTITUENTS AND FABRICATION OF COMPOSITES** 2.1 Reinforcements 2.2 Matrix materials 2.3 Interface 2.4 Fabrication of composites	6
3	**MICROMECHANICS OF COMPOSITE MATERIALS** 3.1 Unidirectionally reinforced 3.2 Stiffness properties (longitudinal elastic modulus, transverse elastic modulus, shear modulus, Poisson's coefficients) 3.3 Strength properties of unidirectionally reinforced composites 3.3.1 Longitudinal tensile strength 3.3.2 Transverse tensile strength 3.3.3 Longitudinal compressive strength 3.3.4 Transverse compressive strength 3.3.5 Shear strength	6
4	**MACROMECHANICS OF COMPOSITE LAMINA** 4.1 Stress - strain relations (Constitutive equations) 4.2 Engineering constants 4.3 Specially orthotropic lamina 4.4 Generally orthotropic lamina 4.5 Off-axis engineering properties	4
5	**SANDWICH STRUCTURES** 5.1 Sandwich structures. Advantages and applications. 5.2 Role of individual layers within a sandwich structure 5.3 Sandwich beams: 5.3.1 Flexural rigidity 5.3.2 Direct stress state 5.3.3 Shear stress state 5.4 Deflections of sandwich beams	6

	5.4.1 Deflection due to bending 5.4.2 Deflection due to shear	
	Total number of hours	28

9.2. Applications

Laboratory works:

1	Study of the individual constituents of fibre reinforced polymer composites	2
2	Fabrication procedures (Specialized movies)	2
3	Analytical evaluation of stiffness properties	2
4	Analytical and experimental evaluation of strength properties	2
5	Off-axis properties of fibre reinforced composites	2
6	Flexural rigidity of sandwich beams. Stress states	2
7	Deflections of sandwich beams	2

Cumulated 14 hrs

10. References

1. Taranu N., Oprişan G., Isopescu D., Entuc I., Munteanu Vl. , (2006). Soluţii compozite de reabilitare a structurilor inginereşti, Ed. STEF, 278pp, ISBN 973-8961-71-4.
2. Taranu N, Isopescu, D. (1996). ,,Structures made of composite materials, Ed. VESPER, Iasi, ISBN 973 96589-3-8
3. Taranu, N., Bejan, L. (2005). Mecanica mediilor compozite armate cu fibre, Ed Cermi, ISBN 973-667-147-X, Iasi, 240pp.
4. Taranu N., Oprisan G., Entuc I., Munteanu V., Oltean R., (2009). „Structuri din materiale compozite pentru constructii", Ed. Politehnium, Iasi.
5. Bejan L., Ţăranu N., Bârsănescu P., Cioară L., Mocanu F. (2006). Probleme moderne ale structurilor compozite, Ed. Cermi, Iaşi, ISBN 978-973-667-238-5.
6. Bank, L. C.(2006). Composites for Construction. Structural Design with FRP Materials. John Wiley & Sons, Inc., Hoboken, New Jersey.
7. Gay, D., Suong H. (2007). Composite Materials. Design and Applications., CRC Press, Boca Raton, London
8. Gerden, J. C., Lord, H. V., Rorrer, R. A. L (2006). Engineering Design with Polymers and Composites. CRC. Taylor & Francis, Boca Raton, London.
9. Hollaway, L., (1993), Polymer Composites for Civil and Structural Engineering. Blackie Academic&Professional, London
10. Federation Internationale du Beton (fib) (2007). Fibre Reinforced Polymer Reinforcement for Reinforced Concrete Structures , Sprint-Digital-Druck, Stuttgart., Chapter 2 by Nicolae Taranu.
11. Stoian, V., Tamas, N. G., Dan, D., Gergely, J., Daescu, C. (2004), Materiale compozite pentru constructii, Editura Politehnica, Timisoara.
12. Taranu, N., Pilakoutas, K., Ciupala, M. A. (2003). Polymeric Composites in Civil Engineering Applications. International Conference INDIS 2003: Planning, design, construction and renewal in the construction industry Novisad, 26-28 November , 8pp, published on CDROM.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Prof. Nicolae Ţăranu, Ph.D.
Instructors: Assoc. Prof. Gabriel Oprisan, Ph.D.
Senior Lecturer Dr. Ioana Entuc, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ELEMENTS OF COMPOSITE STRUCTURES**

Codul disciplinei	**CE407**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	56	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** – opţională, **DL** – liber aleasă (facultativă)	**DI**

Discipline anterioare	**Obligatorii (condiţionale)**	Rezistenţa Materialelor, Elasticitate
	Recomandate	Proiectarea asistată de calculator, Metode numerice

Obiective	The course gives a basic knowledge of fibre reinforced composite materials and elements made of these materials as well as their use in engineering structures. It is anticipated that at the conclusion of the course each student will have a basic understanding of the potential engineering advantages of composites, a reasonable understanding of micromechanics, lamina, stiffness and strength characteristics, fabrication and test methods of composite materials. Special types of layered elements such as sandwich beams and columns are presented as alternatives to solid elements made of traditional materials.
Conţinut (descriptori)	Introduction; constituents and fabrication of composites; micromechanics of composite materials; macromechanics of composite lamina; sandwich structures

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**30%**
		Teste pe parcurs [*număr)*		**20%**
		Lucrări de specialitate, teme de casă [*număr***]**		**0%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Profesor dr.ing. Dorina Isopescu, Profesor dr.ing. Nicolae Taranu	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr.ing. Gabriel OPRIŞAN Ş.l.dr.ing. Ioana ENŢUC	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic
BUILDING REHABILITATION

1. Course leader: **Senior Lecturer Mihaela Anca CIUPALĂ, Ph.D.**
2. Topic characteristics: DO, DS **code: CE408**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2		1		VP	28		14		42

4. Objectives of the topic:
- to identify the causes and types of damages developed in building elements;
- to re-evaluate the site conditions of the existing building in need of rehabilitation;
- to identify and select the intervention measures for cost-efficient rehabilitation;

5. Concordance between the objectives of the topic and the objectives of the training plan
This course aims to introduce the concept, principles, materials used and solutions regarding rehabilitation of buildings. The knowledge of causes and types of degradations is important when deciding even on design and performance of new buildings to properly avoid further damage. Historic buildings require extensive rehabilitation activities for a civil engineer and consequently competences in this field are acquired by this course.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- identification of causes and types of damages for structures of various materials;
- identification of the existing condition of buildings;
- identification of basic principles of structural and hygro-thermal rehabilitation.

b. Technical skills and abilities
- identification and characterization of materials involved in building rehabilitation;
- identification of the advantages and limitations of various technologies to implement the rehabilitation principles.

7. Teaching procedures:
- power-point presentations highlighting the most relevant aspects by traditional teaching,
- applications over the course subjects and discussions of the outcomes,
- case studies and site visits of constructions relevant for the presented subject.

8. Evaluation system:
Stages:
Continuous assessment
a) the type of imposed assignments: 2 reports regarding present site conditions of an existing building and a case study over solutions to implement for a building rehabilitation project – case study.
b) the means and working conditions for reaching the goal: written material and powerpoint presentations
c) percentage of the evaluation in the final mark: 20% each report

Specialty projects (applications)

g) The students will follow the application content in working groups followed by discussions of the results – 5 themes.
h) Mixed procedure (both traditional and computer assisted design)
i) 30%

Tests during the term

a) Written test on causes and types of degradation for buildings.
b) Grid test – traditional procedure
c) 20%

***Final evaluation*: Examination: Percentage of the final mark**: -

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Structural assessment of buildings. *Definition of terms, case studies, new devices used in structural rehabilitation, the need for assessment, methods of assessing the condition of existing buildings, qualitative evaluation, analytical evaluation, assessment report*	4
2. Systems and equipment for structure diagnosis. *Ultrasonic diagnosis, determining the concrete strength by mechanical methods, by destructive tests on core samples, vibration measuring methods*	3
3. Advanced polymeric composites for rehabilitation of buildings. *Fiber reinforced polymeric composites, micromechanical models to predict their behavior, manufacturing procedures of polymeric composites, strengthening systems*	2
4. Infrastructure consolidation. *Types of foundation degradations, consolidation of natural rock foundations, of reinforced concrete foundations, types of piles for infrastructure consolidation, foundation soil consolidation*	3
5. Brick and stone masonry structure consolidation. *General consolidation principles, intervention measures for brick structures*	3
6. Rehabilitation of reinforced concrete structures. *General rehabilitation principles, intervention measures for reinforced concrete structures*	3
7. New systems of structural rehabilitation to earthquakes. *Base isolation, increase of energy dissipation capacity*	3
8. Reinforced concrete structure rehabilitation with polymeric composites. *Adhesive materials for structural rehabilitation of reinforced concrete elements, flexural strengthening of beams, shear strengthening of beams, strengthening of slabs and columns*	2
9. Rehabilitation of timber structures. *Inspection and evaluation, principles for preservation of historic timber structures, examples of deterioration, repair and strengthening methods*	2
10. Hygro-thermal rehabilitation of buildings. *The need for thermo-physical rehabilitation, principles of rehabilitation for increasing the insulation capacity, insulation materials, intervention measures*	3

Cumulated 28hrs

9.2. Applications

	Name of task and content	
	Structural survey of one floor from an existing building as one of the faculty facility – measurements of the geometrical elements, graphical representation and comparison with the initial blueprints, concluding remarks	2
	Bearing capacity reserve of the foundation soil in the case of one more additional floor to the existing building – acceptable pressures given the initial and the new soil	2

	data, loads evaluation, checking the bearing capacity restrictions, concluding remarks	
	Structural diagnosis – strength evaluation of brick and reinforced concrete elements with in situ equipments, concluding remarks	2
	Rehabilitation solution of a reinforced concrete beam – capable bending moment and shear force based on the initial blueprints and then according to a 20% loss of concrete strength, concluding remarks and intervention solutions	4
	Case studies of industrial reinforced concrete structures – assessment reports and intervention measures	2
	Structural rehabilitation of historic brick masonry structures – case studies and site visits	2

Cumulated 14hrs

10. References

- Budescu M., Ţăranu N., Ciongradi I., Isopescu D., Gavrilas I., Ciupală A.M., Lungu I., Oprişan G., [2003], Building rehabilitation, Ed. Academică Matei-Teiu Botez, Iaşi
- Ciupală, A.M.. – Course notes, 2008
- Tăranu, N., Isopescu, D. [1996] Structures Made of Composite Materials, Editura Vesper, Iaşi
- Hassapis S., [1999], The Rehabilitation and Conservation of Old Masonry Historic Structures With the Use of FRPs, Degree of Master of Philosophy, University of Sheffield

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Mihaela Anca Ciupală, Ph.D.	
Instructor:	Senior Lecturer Mihaela Anca Ciupală, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**BUILDING REHABILITATION**

Codul disciplinei	**CE408**	Semestrul	**7**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Civil constructions, Reinforced concrete, Technology of constructions 1,2
	Recomandate	Statics of constructions 1,2, Foundations

Obiective	• to identify the causes and types of damages developed in building elements • to re-evaluate the site conditions of the existing building in need of rehabilitation • to identify and select the intervention measures for cost-efficient rehabilitation
Conţinut (descriptori)	Structural assessment of buildings. Systems and equipment for structure diagnosis. Advanced polymeric composites for rehabilitation of buildings. Infrastructure consolidation. Brick and stone masonry structure consolidation. Rehabilitation of reinforced concrete structures. New systems of structural rehabilitation to earthquakes. Reinforced concrete structure rehabilitation with polymeric composites. Rehabilitation of timber structures. Hygrothermal rehabilitation of buildings.

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1. - ; sarcini: ; condiţii de lucru pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări T**		**30%**
		Teste pe parcurs	**1T**	**20%**
		Lucrări de specialitate, teme de casă	**2M**	**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Ş.l.dr.ing. Mihaela Anca Ciupală Costin	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Ş.l.dr.ing. Mihaela Anca Ciupală Costin	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ELEMENTS OF NON-LINEAR COMPUTATION IN CIVIL ENGINEERING

1. Course leader: **Senior Lecturer COSTIN(CIUPALĂ) Anca Mihaela, Ph.D.**
2. Topic characteristics: DO, DS **code: CE408**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2		1		VP	28		14		42

4. Objectives of the topic:
Today's demands referring to structural elements and structures design imply their analysis in the inelastic range. This means a non-linear calculus for studying if the order of elements plasticization is in a good accordance with the adopted hypotheses. Such a non-linear analysis is also imposed when the sensitivity coefficient lies between the limits provided by the design codes.
The objectives of the subject refer to the principles of plane structures and structural elements non-linear analysis and to their design by using an adequate soft, compared to a by hand calculus.

5. Concordance between the objectives of the topic and the objectives of the training plan
The subject provides advanced knowledge in using the structural elements and structures design codes which presume the non-linear analysis of structures and the expression of equilibrium equations in the inelastic range

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
-the design codes recommendations referring to strength, stiffness and stability calculus of structural elements that presumes a non-linear analysis;
- the methodology of a non-linear analysis for a plane structure;
- the assessment of the ultimate load for a given plane structure in the inelastic range.
b. Technical skills and abilities
-the non-linear analysis of structural elements or plane structures in order to assure their rational design

7. Teaching procedures:
-course presentation by using different electronic means (DVD, movies, power point), eventually with additional explanations.

8. Evaluation system:
Stages:
Continuous assesment
a) type of imposed assignements: tthree tests with simple theorethical problems and aplications
b) means and working conditions for reaching the goal: computers and adequate soft
c) percentage of the evaluation in the final mark: 15%

Speciality projects(applications)
The students have to solve three synthesis assignments of medium complexity referring to :
- the second order non-linear geometrical analysis of a plane structure;
- the non-linear elastic analysis of a plane structure;
- the assessment of the ultimate load for a plane structure.

The percentage of the evaluation for each assignment in the final mark:15%

***Final evaluation*:** **Examination** **Percentage of the final mark**: 30%

9. Content of the subject:

9.1. Course

Chapters	Nr of hrs
1. Introductive notions The structure model and the main principles; Classification of structure kind of analysis: -first order analysis (linear elastic, non-linear-elastic, inelastic); -second order analysis (linear elastic and geometrical non-linear, elastic and geometrical non-linear, inelastic and geometrical non-linear);	**3**
2. Second order geometrical non-linear analysis - Hypotheses; - Characteristic elements of the second order analysis; - Effects superposition in the second order analysis; - The displacement method in the second order analysis.	**6**
3. Non-linear elastic analysis - Basic notions; - First order, non-linear elastic analysis; - Second order, non-linear elastic analysis.	**6**
4. Non-linear inelastic analysis - Basic notions; - First order inelastic analysis. The simple plastic method; - The direct assessment of the ultimate load; - The method of mechanisms combination; - Considerations about the structure behavior in the inelastic range.	**7**
5. Second order inelastic analysis - Basic notions; - Hypotheses; - Second order practical design; - Stability loss by continuous deformation; - Stability loss by continuous bifurcation; - The compared analysis of the obtained results by using different studied methods for the non-linear design	**6**

Cumulated: 28 hours

9.2. Applications:

1	**Second order geometrical non-linear analysis** - Second order geometrical non-linear analysis of a frame by using: a) the displacements method; b) a specialized computer program; c) the comparison between the results obtained by using these two methods	**4**
2	**Non-linear elastic analysis of a two-dimensional frame** - computer aided first order non-linear elastic analysis; - computer aided second order non-linear elastic analysis; - comparison between the results.	**4**
3	**Ultimate load assessment for a two-dimensional structure** - by using the theory of maximum; - by using the theory of minimum - by using the method of mechanisms combination; - comparison between the results.	**6**

Cumulated:14 hours

10. References

1. Bănuţ, V., Calculul neliniar al structurilor, Editura Tehnică Bucureşti, 1981;
2. Bănuţ, V., Calculul de ordinul II şi de stabilitate al elementelor şi structurilor de rezistenţă, Editura Conspres, 2005;
3. Bănuţ, V., Mircea Teodorescu, Calculul de ordinul II şi de stabilitate, Aplicaţii rezolvate, Editura Matrix Rom, Bucureşti, 2007;
4. Bălan, Şt., Petcu V., Calculul structurilor în domeniul plastic. Optimizări, Editura Didactică şi Pedagogică, Bucureşti, 1979;
5. Bălan, Şt., Petcu V., Calculul structurilor în domeniul plastic. Momente independente, Bucureşti, Editura Academiei R.S.R., 1976;
6. Bazant, P. Z., CEDOLIN, L., Stability of Structures, Oxford University Press, 1991;
7. Gheorghiu, Al., Concepţii moderne în calculul structurilor, Editura Tehnică Bucureşti, 1975;
8. Scarlat,A., Stabilitatea şi calculul de ordinul II al structurilor, Editura Tehnică, 1969;
9. Timoshenko, P.S., GERE, M.J., Teoria stabilităţii elastice, Editura Tehnică, 1967;

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer COSTIN(CIUPALA) Anca Mihaela, Ph.D.	
Instructor:	Senior Lecturer COSTIN(CIUPALA) Anca Mihaela, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ELEMENTS OF NON-LINEAR COMPUTATION IN CIVIL ENGINEERING**

Codul disciplinei	**CC408**	Semestrul	**7**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Strength of Materials, Statics, Dynamics and Stability
	Recomandate	

Obiective	Today's demands referring to structural elements and structures design imply their analysis in the inelastic range. This means a non-linear calculus for studying if the order of elements plasticization is in a good accordance with the adopted hypotheses. Such a non-linear analysis is also imposed when the sensitivity coefficient lies between the limits provided by the design codes. The objectives of the subject refer to the principles of plane structures and structural elements non-linear analysis and to their design by using an adequate soft, compared to a by hand calculus.
Conţinut (descriptori)	Introductive notions; Second order geometrical non-linear analysis; Non-linear elestic analysis; Non-linear inelastic analysis; Second order inelastic analysis

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**VP**
	Probele evaluării prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen		**30%**
	Evaluarea pe parcurs*)	**Activitatea la lucrari**	
		Teste pe parcurs [*3)*]	**15%**
		Lucrări de specialitate, teme de casă [*3***]**	**45%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, NUME	Semnătura
	Sef lucrari dr. ing. Anca Mihaela COSTIN (CIUPALA)	

Titularul aplicaţiilor	Gradul didactic, titlul, prenume, NUME	Semnătura
	Sef lucrari dr. ing. Anca Mihaela COSTIN (CIUPALA)	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
ADVANCED BUILDING MATERIALS

1. Course leader: **Senior Lecturer Livia Ingrid GROLL, Ph.D.**
2. Topic characteristics: DO, DS **code: CE409**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2		0		VP	28		0		28

4. Objectives of the topic:

The course "Advanced materials" suppose's to obtain theoretical and practical knowledge on these advanced materials, in comparison with the classical materials, aiming to realize resistant and long life time buldings.

The advancerd materials utilization is based on quality criterions for each material, technological efficiency and price / quality ratio.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topics ensure the engineers superior qualification in different types of advanced materials used in construction industry and their selection as well.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- *Technical characteristics of the main advanced materials and their interpretation to establish their utilization domain according to the European requirements.*
- *Technological condition for advanced materials using to ensure the buildings quality.*

b. Technical skills and abilities

- *Identification of the optimal using domain of the different advanced materials for construction elements and structures realization.*
- *The design of the constructions elements manufacturing technological processes according to the used advanced materials.*

7. Teaching procedures:

Course:

- *Power point presentations. The lecturing material will be presented typed or on magnetic suport.*

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignements: the students activity will be folowed
b) means and working conditions for reaching the goal: grid test
c) percentage of the evaluation in the final mark 70%

***Final evaluation*:** **Examination** **Percentage of the final mark**: 100%

9. Content of the subject:

9.1. Course

Chapter	Nr. of hrs.
1. Advanced materials for buildings structures *The aditivated concrete as advanced material is presented: composition, specific characteristics and applications.* *Geogridls as steel reinforcements replacement are presented for buildings rehabilitation: characteristics, advantages and disadvantages*	10
2. Advanced materials for walls *Different types of plasters and interior / exterior finishings mede of composites materials, plastics, and plating materials are presented*	6
3. Mineral and organic advanced materials for floors *Wood lamelates, organic polymers and plating materials are presented*	3
4. Advanced materials for thermal and fonic isolation *Materials with superior characteristics, their preovenience are presented*	3
5. Advanced materials for roofs *New sandwich panels solutions and other systems except ceramics*	3
6. Advanced materials for windows *Wood stratificates and TERMOPAN glass solutions, organic polymer materials*	3

Cumulated 28 hrs

10. References

1. Hîrhui I., Groll L., Babor D., Materiale pentru construcţii, Editura VESPER 1997- ISBN 973-96589-5-4
2. Hîrhui I., Conglomerate artificiale cu lianţi minerali, Ed. „Gh. Asachi" Iaşi, 1999.
3. Bob C., Velica P., Materiale pentru construcţii, EDP,Bucureşti, 1978.
4. Mircea Rujanu, Livia Ingrid GROLL, Materiale de construcţii (capitolele 1, 2, 3, 4, 5), Ed. Gh. Asachi, ISBN–973–9178–76-7, 200pagini, Iaşi,1999
5. Mircea Rujanu – Materiale de construcţii. Lianţi minerali şi organici, lemnul şi masele plastice, materiale de protecţie şi finisaj, 220 pag. Editura Societăţii Academice "MATEI –TEIU BOTEZ", 2006
6. Mircea Rujanu - Obtinerea, proprietatile si utilizarile unor materiale de constructii, 250p, Editura"TERRA NOSTRA", ISBN 978-973-8432-64-2, 2007
7. Mircea Rujanu – Teoria materialelor de constructii şi unele din aplicatiile ei, 180p, Editura"SPIRU HARET" 2007, ISBN 978-973-8432-64-2
8. Mircea, Rujanu, Materiale de constructii, Aplicatii ale teoriei materialelor la lianti si produse cu lianti, lemn, mase plastice, la materiale de protectie si finisaj, 227 pg., Editura "SPIRU HARET", ISBN 978-973-8432-64-2, 2008
9. Teoreanu I., Nicolescu I., Ciocea N., Moldovan V., Introducere în ştiinţa materialelor anorganice, Ed. Tehnică Bucureşti, 1987.
10. Ionescu, I., Ispas, Tr., Popaescu, Augustin, Betoane de înaltă performanţă, Editura Tehnică Bucureşti, 1999.
11. Manuale de proiectare, pliante

Date: 235.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Livia Ingrid Groll, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ADVANCED BUILDING MATERIALS**

Codul disciplinei	**CE409**	Semestrul	**7**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	28			

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	-
	Recomandate	Chimie, Materiale de construcţii

Obiective	The course "Advanced materials" suppose's to obtain theoretical and practical knowledge on these advanced materials, in comparison with the classical materials, aiming to realize resistant and long life time buldings. The advancerd materials utilization is based on quality criterions for each material, technological efficiency and price / quality ratio.
Conţinut (descriptori)	Advanced materials for buildings structures; Advanced materials for walls; Mineral and organic advanced materials for floors; Advanced materials for thermal and fonic isolation; Advanced materials for roofs; Advanced materials for windows

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1. Test gridă T 60%; sarcini: activitate la lucrări, 20%, T; teste pe parcurs, 10%, T; teme T;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**70%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**20%**
		Teste pe parcurs		
		Lucrări de specialitate, teme de casă		
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	Şef. lucr.dr.ing.Livia Groll	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: CIVIL ENGINEERING**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
ADVANCED BUILDING TECHNOLOGIES

1. Course leader: **Senior Lecturer Eng Răzvan GIUŞCĂ, Ph.D.**
2. Topic characteristics: **DO, DS** **code: CE409**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
7	2		1		VP	28				28

4. Objectives of the topic:

The actual request regarding the construction elements performances shows the necessity of introducing new technological processes and modern realization procedures that have to eliminate the shortcoming of the jobs made in a traditional way.

The objectives of the topic are referred to study the state of the art technological processes and procedures; the entire didactic activity has as aims high quality, high productivity and high economical efficiency of constructions making – up.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of new, state of the art technological procedures.

By adopting within technological fluxes, performance technological procedures of concrete, brickworks wood and composite structures making–up, leads to fulfil the buildings behaviour exigencies related to standardized performances levels.

The topic is introduced in the training plan so that it utilizes knowledge given by civil constructions, concrete structures and construction materials.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- To be acquainted with the main European standards regarding soil works, reinforced concrete technology, brickworks technology, steel, wood and composite technologies;
- To draw up the main elements of a technological sheet;
- To analyze and execute a technological project.

b. Technical skills and abilities
- To identify and select the optimum solutions regarding performance technological procedures of construction making up;
- To perform technological and economical design calculations corresponding to construction activities;
- To select the appropriate technologies and equipments for the site conditions and construction description.

7. Teaching procedures:

The courses are presented in form of university lecture by using drawings, power point presentations, and video films that emphasize the technological processes and procedures of buildings making–up.

8. Evaluation system:
Stages:
Continuous assesment
a) type of imposed assignements:

The periodical examination [2] will be individualized and checked by the course leader and materialized by a degree.

b) means and working conditions for reaching the goal:

During the test students are allowed to use the recomended references.

c) percentage of the evaluation in the final mark: 70%.

Speciality projects(applications)

The students will get tasks regarding technological design of high complexity that will report to: special formworks, high performance concretes and special placing procedures.

The degrees obtained during the semester represent 20% of the final mark.

***Final evaluation*:** **Percentage of the final mark**:

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
1. High performance special concretes for special exploitation conditions. *High resistance concretes. Special concretes with different admixtures content.*	6
2. Special concrete placing procedures. *Special processes and procedures of placing concrete with reduced W/C ratio or reducing the W/C ratio after pouring.*	6
3. The climatic factors influence on the construction works. *Realization of constructions in extreme temperature conditions. Processes and procedures. Technical quality conditions.*	6
4. State of the art technologies for special constructions. *Specialised performant formworks. Performant concrete placing technologies.*	10

Cumulated 28 hrs

10. References

1. Giuşcă, R., CONSTRUCTIONS TECHNOLOGY, Ed. "Gh. Asachi", Iaşi, 2003;
2. Giuşcă, R., TECHNOLOGICAL WORKS – STUDENT'S HANDBOOK, Ed. Politehnium, Iaşi, 2007;
3. Giuşcă, N., INGINERIA PROCESELOR DE CONSTRUCŢII, Ed. "Gh. Asachi", Iaşi, 1997;
4. Ionescu, I., Ispas, T., PROPRIETĂŢILE ŞI TEHNOLOGIA BETOANELOR, Ed. Tehnică, Bucureşti 1997;
5. Pamfil, E., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII, vol. I, Cofraje, Ed. Societăţii Academice „Matei-Teiu Botez", Iaşi, 2006;
6. Vasilescu, A., Corobceanu, S., TEHNOLOGIA PREFABRICATELOR, U T Iaşi, Rotaprint, 1994;
7. Vasilescu, A., TEHNOLOGIA LUCRĂRILOR DE CONSTRUCŢII – EXEMPLE DE PROIECTARE TEHNOLOGICĂ, Editura Politehnium, Iaşi, 2004.
8. Trelea, A., ş. a., TEHNOLOGIA CONSTRUCŢIILOR, Ed. Dacia, Cluj-Napoca, vol. 1, 1997;

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Giuşcă Răzvan, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**ADVANCED BUILDING TECHNOLOGIES**

Codul disciplinei	**CE409**	Semestrul	**7**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	28	28	-	-	-

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Construcţii civile; Tehnologia construcţiilor 1, 2
	Recomandate	Geotehnică; Rezistenţa materialelor

Obiective	Studiul proceselor şi procedeelor tehnologice speciale, performante, în scopul realizării calităţii, productivităţii şi eficienţei economice la executarea construcţiilor.
Conţinut (descriptori)	Betoane speciale de înaltă performanţă şi pentru condiţii speciale de exploatare. Betoane de înaltă rezistenţă, betoane rezistente la uzură, betoane speciale cu aditivi Procedee speciale de betonare. Procese şi procedee speciale de punere în operă a betonului cu raport A/C redus sau prin reducerea raportului A/C după turnare. Influenţa factorilor climatici asupra lucrărilor de construcţii. Executarea lucrărilor de construcţii în condiţii extreme de temperatură (pe timp friguros sau canicular); procese şi procedee tehnologice; condiţii tehnice de calitate. Tehnologii performante de execuţie a unor construcţii speciale. Cofraje performante specializate şi procedee performante de betonare.

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen,* **C** - *colocviu,* **VP** - *verificare pe parcurs*)		**VP**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**		**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări (T)**	**%**
		Teste pe parcurs [2] **(T)**	**70 %**
		Lucrări de specialitate, teme de casă [*2*] **(M)**	**20 %**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr. dr. ing. Răzvan GIUŞCĂ	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: daily courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

DURABILITY OF REINFORCED CONCRETE STRUCTURES

1. Course leader: **Assoc.prof. Ionel GOSAV, Ph.D.**
2. Topic characteristics: DO, DS **code: CE410**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		E	28		14		42

4. Objectives of the topic:

The students must recognize the aggressive types from natural and industrial environment, the typical actions of the corrosive substances against the prestressed and reinforced concrete, to know methods, technique and specialized equipment for assessment of the damaged construction members, to use in designing and practice the concepts of service life and designing grounded on durability criteria.

5. Concordance between the objectives of the topic and the objectives of the training plan

The course offers the ground knowledge for understanding the concepts of durability and service life of the structures, introduces these concepts in the process of conceiving, designing, performing and surveying of the in time behaviour of structures. The students learn about a new approach regarding the durable development in constructions, in according to the modern training plans.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

1. Characteristics of the aggressive actions
2. Recognizing and explaining of the aggressive actions
3. Assessment technique of the damage stage and service life
4. Conceiving, designing and performing of the durable structures

b. Technical skills and abilities

After teaching the course, the students could correctly recognize the damages in reinforced and prestressed concrete structures, according to the different types of aggressive actions, know the assessment techniques and are prepared for applying in designing and performing of the concepts of durability of structures.

7. Teaching procedures:

The course is presented using slides because it suppose the visualization of the phenomenon.

8. Evaluation system:

Continuous assessment

The students are informed about the requirements of the teaching matter and about the assessment manner. The assessment is done continuously, during the courses, through discussions and questions and through a final written assessment at the end of the semester.

***Final evaluation*:** **Examination** **Percentage of the final mark**: 90 %

Speciality projects (applications)

To the works, the students are continuously assessed through discussion with each student.

***Final evaluation*:** **Continuous examination** **Percentage of the final mark**: 10 %

9. Content of the subject:

9.1. Course

Chapter	No of hours
1. Characteristics of the damages	**6**
1.1. Rating of damages in constructions	2
1.2. Action of the environment against the constructions	1
1.3. The characteristics of the actions from the natural environment	1
1.4. The characteristics of the actions from industrial environment	1
1.5. The characteristics of the actions proper for constructions	1
2. Damaging manner of the constructions	**6**
2.1. Carbon dioxide action	1
2.2. Chlorine compound action	1
2.3. Sulphide compound action	0,5
2.4. Nitrates compound action	0,5
2.5. Characteristics of the corrosion of the prestressing reinforcement	0,5
2.6. Soft water action	0,5
2.7. Other corrosive action	1
2.8. Action characteristic for concrete	1
3. Methods for investigation of damaged structures	**10**
3.1. Usual tests	2
3.2. In situ investigations	4
3.3. Laboratory investigations	4
4. Service life of structures	**6**
4.1. Assessment methods and technique	4
4.2. Taking into account in designing of the concept	2

Cumulated 28 h.

9.2. Works

1	**Subject of the works** Assessment technique for the corroded structures	2
2	**Current laboratory and in situ testing** (alkalinity tests)	2
3	**Complex in situ tests** (corrosion of reinforcement in concrete)	2
4	**Complex laboratory tests** (concrete corrosion)	2
5	**Complex laboratory tests** (diffusion)	2
6	**Works for assessment of the service life**	2
7	**Works for including of the durability concept in designing**	2

Cumulated 14 h.

10. References

1. Gosav Ionel, Durabilitatea structurilor din beton armat şi precomprimat, editura Gheorge Asachi, Iaşi, 2008 (în curs de apariţie)

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc.Prof. Ionel Gosav, Ph.D.	
Instructor:	Lecturer Constantin Gavriloaia	

FIŞA DISCIPLINEI

Denumirea disciplinei	**DURABILITY OF REINFORCED CONCRETE STRUCTURES**

Codul disciplinei	**CC409**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Concrete structures
	Recomandate	Construction materials; Reinforced and prestressed concrete;

Obiective	Să identifice tipuri de agresivităţi din mediul natural şi industrial, tipurile de acţiune a agenţilor corosivi asupra elementelor din beton armat şi precomprimat să cunoască metode, metodologii, tehnici şi aparatură specializată pentru evaluarea elementelor cu degradări, să utilizeze în proiectare şi evaluare conceptele de durată de serviciu şi proiectare pe criterii de durabilitate
Conţinut (descriptori)	Acţiuni agresive, efecte, tehnici şi aparatură de evaluare, durată de serviciu, conceptul de durabilitate în proiectarea structurilor, asigurarea durabilităţii pe durata de serviciu

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării prezentare orală; sarcini: identiuficarea şi descrierea fenomenelor; condiţii de lucru T ; pondere 100 %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin colocviu**			**T 80 %**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări / proiect**		**T 10 %**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**		**%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	conf. dr. ing. Ionel Gosav	

Titulari aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	conf. dr. ing. Ionel Gosav	
	asist ing, Constantin Gavriloaia	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

ADVANCED SOLUTIONS IN REINFORCED CONCRETE STRUCTURES

1. Course leader: **Assoc.prof. Marinela Bărbuţă, Ph.D.**
2. Topic characteristics: DO, DIS **code: CE410**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		C	28		14		42

4. Objectives of the topic:
The course gives the necessary data about new performance concrete, component materials, compositions, determination of mechanical characteristics, utilization domain

5. Concordance between the objectives of the topic and the objectives of the training plan (curriculum)
The course completes the other courses (Building Materials, Reinforced concrete) being in concordance with the training plan.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge
- to know the properties of materials used for preparing concrete;
- to understand the particular behavior of materials that can combine with them
- to know the physical models and computation for associated materials base on the performance concrete
b. Technical skills and abilities
- to identify the efficient using domain of different types of performance concrete
- to do and coordinate laboratory works that are specific to performance concretes
7. Teaching procedures:
-Powerpoint presentation
-video movies for case studies
-visits to construction sites or precast-factories
-goups of working in the class for specific themes.
8. Evaluation system:
Stages:
Continuous assesment
a) type of imposed assignements: *laboratory works*
b) means and working conditions for reaching the goal:
- preparing the theoretical data;
- processing the experimental tests results
c) percentage of the evaluation in the final mark 30%

Speciality projects(applications)
-tests during the semester that represent 0% of the final mark
-the students will present raports with laboratory works that represent 30% of the final mark

***Final evaluation*:** **Oral examination** **Percentage of the final mark**: 60%

9. Content of the subject:

9.1. Course

Nr and title Chapter	**Nr. of hrs.**
I. Introduction.Materials used for performance concrete	6
II.Composition design	6
III. High strength and high performance concretes	4
IV. Polymer concrete	4
V. Fiber reinforced concrete	4
VI.Non distructive methods	2
VII Utilization domain	2

Cumulated 28 hrs

f) **9.2. Applications**

	Name of task and content	
1.	*Compositon of high performance concretes*	3
2.	*Compositon of polymer concretes*	2
3.	*Compositon of fiber reinforced concretes*	3
4.	*Mechanical properties of performance concretes*	4
5.	*Optimization of mixes*	2

Cumulated 14 hrs

10. References

1. I. Ionescu Tr. Ispas, A Popaescu- *Betoane de înaltă performanţă*, Editura Tehnică Bucuresti 1999
2. C. Măgureanu- *Betonul de înaltă rezistenţă şi performanţă*, Editura UT Press Cluj Napoca 2003
3. C. Avram, C Bob-*Noi tipuri de betoane speciale,* Editura Tehnică Bucuresti 1980
4. M. Bărbuţă *„Concrete”* Editura CERMI 2004 , 150 pagini, Limba engleză
5 .M. Bărbuţă *„Reinforced Concrete - Laboratory guide”*- Editura „Matei-Teiu Botez” Iasi 2006, 105 pagini, Limba engleza
6. M. Bărbuţă *„Betoane performante”*- Editura „Matei-Teiu Botez” Iasi 2008, 195 pagini,
7. M. Bărbuţă *„Polymer concrete”*- Editura „Politehnium” Iasi 2008, 185 pagini, Limba engleza

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader :	Assoc.prof. Bărbuţă Marinela, Ph. D.	
Instructor:	Lecturer Roşca Bogdan	

FIŞA DISCIPLINEI

Denumirea disciplinei	**ADVANCED SOLUTIONS IN REINFORCED CONCRETE STRUCTURES**

Codul disciplinei	**CE410**	Semestrul	**8**	Numărul de credite	**3**

Facultatea	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domeniul	Inginerie Civilă		Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**		42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DIS** – de specialitate, **DC** – complementară	DIS
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	Obligatorii (condiţionare)	Beton armat
	Recomandate	Materiale de Construcţii

Obiective	− să cunoască noile tipuri de betoane (materiale componente, compoziţii, proprietăţi, , metode de incercare, domenii de utilizare;
Conţinut (descriptori)	Betonul de înaltă rezistenţă şi performanţă, betonul polimeric, betonul cu fibre:compoziţii, proprietăţi, metode de incercare, utilizări

Sistemul de evaluare:			
Evaluarea finală*	Forma (E - examen, C - colocviu, VP - verificare pe parcurs)		C
	Probele evaluării prin C: Sustinere finală orala cu 2 subiecte 60%T		
Stabilirea notei finale (procentaje)	Evaluare finală prin colocviu		T 60%
	Evaluarea pe parcurs*	Activitatea la seminar / colocviu / proiect / practică	T 30%
		Teste pe parcurs [*număr*]	
		Lucrări de specialitate, teme de casă [*număr*]	
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	conf. dr. ing. Marinela BARBUTA	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

QUALITY MANAGEMENT

1. Course leader: **Senior Lecturer Radu LUPĂŞTEANU, Ph.D.**
2. Topic characteristics: DO **code: CE411**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		Vp	28		14		42

4. Objectives of the topic:

The actual request regarding the construction activity requers solid and efficient managerial knowledge and skills to face large and complex construction projects. One of theese aspects refer to quality aspects releted to construction projects and construction companies.

The objectives of the topic are referred to the study of quality of construction processes and the quality management; the entire didactic activity focuses to quality, productivity and economical efficiency of construction projects.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of new and modern management practices for quality management .

The topic is introduced in the training plan so that it utilizes knowledge given by the previous topics so that the engineer to be able to implement and monitor real construction projects.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- To identify the basic concepts of quality;
- To identify the specific aspects of quality of management;
- To be able to deal with the actual legal requirements related to quality;
- To be able to use programming and monitoring techniques for a real construction project;
- To be able to manage contractual arrangements for construction projects in terms of quality aspects.

b. Technical skills and abilities

- To identify and select the optimum solutions regarding quality in construction.

7. Teaching procedures:

The courses are presented in form of university lecture by using drawings, power point presentations, and video films that emphasize the management processes of a construction project.

8. Evaluation system:

Stages:

Continuous assesment

j) type of imposed assignements:

-

k) means and working conditions for reaching the goal:

-

l) percentage of the evaluation in the final mark: 0%.

Speciality projects(applications)

The students will get tasks regarding a construction project of medium complexity that will report to:

define the stages of project, application of management functions to that project, making decisions, estimate the project efficience among it's life span, assembling a construction contract. formwork design. The degrees obtained for applications the semester represent 40% of the final mark.

***Final evaluation*: Vp** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Project Management 1 (CE411) 8th semester	
Chapter	**Nr. of hrs.**
1. Definition of quality management *Life cycle stages of a construction (and related to quality for the parties involved); History of quality concepts; Definition of quality management*	4
2. Legal requirements related to quality. *Law 10/1995 of quality in construction and other related legal requirements; The basic standards related to quality (ISO 9000/2000)*	10
3. Stages of implementation of a quality system in a construction firm. *Quality documents, quality procedures, quality plan, quality manual.*	4
4. Programming and monitoring quality for a construction project. *The stages of a construction project;* *Advanced programming techniques for construction projects;* *General notions regarding monitoring the the quality of a construction project;*	6
5. Conditions of contract for construction projects – quality topics. *General aspects; Legal aspects; Bidding procedures; Resolution of conflicts.*	4

Cumulated 28 hrs

9.2. Applications

Project Management 1 (CE411) 8th semester		
1	**Stages of a construction project.** Examine a real project and define the contain of its stages related to quality.	4
2	**Quality documents.** Quality registrations, procedures, quality manual.	4
3	**Project programming and monitoring.** Simulation of the programming and monitoring of a construction project in terms of quality.	2
4	**Construction contracts – quality clauses.** Simulation of making-up a construction contract – quality issues.	4

Cumulated 14 hrs

10. References

15. Hagiu, V., MANAGEMENTUL EXECUTIEI PROIECTELOR DE CONSTRUCTIE, Ed. Dosoftei, Iaşi, 2003;
16. Lupăşteanu, R., CONSTRUCTION MANAGEMENT, Ed. GAMMA, Iasi, 1997;
17. Lupăşteanu, R., CALITATEA INVESTITIILOR", Ed. Expertilor Tehnici, Iaşi, 2006;
18. Mubarak, S., – CONSTRUCTION PROJECT SCHEDULING AND CONTROL, Ed. Prentince Hall, 2005.
19. ********* _ Legea 10/1995 a calitatii in constructii;
20. ********* _ Standardele SR EN ISO 9000/2001; SR EN ISO 9001/2001.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Lupasteanu Radu, Ph.D.

Instructor: Senior Lecturer Lupasteanu Radu, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**QUALITY MANAGEMENT**

Codul disciplinei	**CE411**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	Construcţii Civile, Industriale şi Agricole	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	DIS
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Management of Construction Works, Economy and Legislation
	Recomandate	Construction Technology

Obiective	Acquering the basic knowledge about the quality of construction processes and quality management as a function of general management activities of a construction company
Conţinut (descriptori)	• Dedinition of Quality Management as a sub-system of General Management of a company • Quality concepts, history, actual knowledge, ISO 9000/2000 quality standards • Basic legal requirments about quality • Programming and control of quality for a given construction project • Actual procedures to implement a quality system for a construction company

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin Verificare pe parcurs**			**50%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**	**M**	**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	s.l. dr. Ing. Lupăşteanu Radu	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	s.l. dr. Ing. Lupăşteanu Radu	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

PROJECT MANAGEMENT

1. Course leader: **Senior Lecturer Radu LUPĂŞTEANU, Ph.D.**
2. Topic characteristics: DO, DIS **code: CE411**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		Vp	28		14		42

4. Objectives of the topic:

The actual request regarding the construction activityy requires solid and efficient managerial knowledge and skills to face large and complex construction projects.

The objectives of the topic are referred to the study of management functions and their application in the field; the entire didactic activity focuses to quality, productivity and economical efficiency of construction projects.

5. Concordance between the objectives of the topic and the objectives of the training plan

The topic ensures the civil engineer specialist with licence degree advanced knowledge in utilization of new and modern management practices for construction projects.

The topic is introduced in the training plan so that it utilizes knowledge given by the previous topics so that the engineer to be able to implement and monitor real construction projects.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- To identify the stages of a construction project;
- To identify the functions of management;
- To be able to make a decision in a multi-criteria environment;
- To be able to use programming and monitoring techniques for a real construction project;
- To be able to manage contractual arrangements for construction projects.

b. Technical skills and abilities

- To identify and select the optimum solutions regarding performance of construction projects.

7. Teaching procedures:

The courses are presented in form of university lecture by using drawings, power point presentations, and video films that emphasize the management processes of a construction project.

8. Evaluation system:

Stages:

Continuous assesment

m) type of imposed assignements:

-

n) means and working conditions for reaching the goal:

-

o) percentage of the evaluation in the final mark: 0%.

Speciality projects(applications)

The students will get tasks regarding a construction project of medium complexity that will report to: define the stages of project, application of management functions to that project, making decisions,

estimate the project efficience among it's life span, assembling a construction contract. formwork design. The degrees obtained for applications the semester represent 40% of the final mark.

***Final evaluation*: Vp** **Percentage of the final mark**: 50%

9. Content of the subject:

9.1. Course

Project Management 1 (CE411) 8th semester	
Chapter	**Nr. of hrs.**
1. The function of management. *General aspects. Planning, Organizing, Staff, Directing and Control*	4
2. Decision making process. *Stages of a decision making process, classification, certainty, risk and uncertainty environments for decision making.*	6
3. Life cycle analysis, stages of a construction project and feasibility analisys. *General notions; Discounting, Performance measures for construction projects, Feasibility study.*	4
4. Programming and monitoring techniques. *The stages of a construction project;* *Advanced programming techniques for construction projects;* *General notions regarding monitoring the construction projects;*	6
5. Conditions of contract for construction projects. *General aspects; Legal aspects; Bidding procedures; Resolution of conflicts.*	8

Cumulated 28 hrs

9.2. Applications

Project Management 1 (CE411) 8th semester		
1	**Stages of a construction project.** Examine a real project and define the contain of its stages.	4
2	**Feasibility Study for a construction project.** Evaluation of the main performance measures to define a construction project. Decision making process – case study.	4
3	**Project programming and monitoring.** Simulation of the programming and monitoring of a construction project.	2
4	**Construction contracts.** Simulation of making-up a construction contract.	4

Cumulated 14 hrs

10. References

21. Hagiu, V., MANAGEMENTUL EXECUTIEI PROIECTELOR DE CONSTRUCTIE, Ed. Dosoftei, Iaşi, 2003;
22. Lupăşteanu, R., CONSTRUCTION MANAGEMENT, Ed. GAMMA, Iasi, 1997;
23. Lupăşteanu, R., CALITATEA INVESTITIILOR", Ed. Expertilor Tehnici, Iaşi, 2006;
24. Mubarak, S., – CONSTRUCTION PROJECT SCHEDULING AND CONTROL, Ed. Prentice Hall, 2005.

Date: 25.03.2009

Name and surname **Signatures:**

Course leader: Senior Lecturer Lupăşteanu Radu, Ph.D.

Instructor: Senior Lecturer Lupăşteanu Radu, Ph.D.

FIŞA DISCIPLINEI

Denumirea disciplinei	**PROJECT MANAGEMENT**

Codul disciplinei	**CE411**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Management of Construction Works, Economy and Legislation
	Recomandate	

Obiective	Acquering the basic knowledge about the function ok management and their implementation for Construction projects
Conţinut (descriptori)	• Management functions • Decision Making Process • Life cycle costing for construction projects • Programming and control techniques for construction projects • Contractual arrangements for construction projects

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin Verificare pe parcurs**			**50%**
	Evaluare a pe parcurs*)	**Activitatea la seminar / lucrări**		**%**
		Teste pe parcurs [*număr)*		**%**
		Lucrări de specialitate, teme de casă [*număr***]**	**M**	**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	s.l. dr. Ing. Lupăşteanu Radu	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	s.l. dr. Ing. Lupăşteanu Radu	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

LIGHT STEEL STRUCTURES

1. Course leader: **Senior Lecturer Teleman Elena-Carmen, Ph.D.**
2. Topic characteristics: DO **code: CE412**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		C	28		14		42

4. Objectives of the topic:

The course gives the opportunity to widen and diversify the skills for design of the students that are interested in special structures specific for telecommunications, certain industries or economic fields Based on course and applications during the training period, the students will be able to master the complex aspects that define the design of a steel structure.

5. Concordance between the objectives of the topic and the objectives of the training plan

The performance of the student will lead him to be capable to identify the types of structures corresponding to the constructions specific to the field of study and perform design calculation for the elements of these constructions. He must be able to identify the actions, evaluate the loads, also the physical and mechanical properties of the structural steel, identifying the optimum use of various constrction elements and to apply the design methods designed for these structures. Finally, the student will be able to implement the design results into the required format of technical files corresponding to the project

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge : the students enhance their knowledge regarding the fundamental and particular laws that govern the physic phenomena afecting the steel structures subjected to the environmetal necesities and conditions and learn how to apply the main design relationships that govern the proces of concept of various steel structural elements as parts of structures

b. Technical skills and abilities

- find the best solutions for the whole structure and for the design details;
- know how a steel structure is made, identifying major errors in the design and also in the execution;
- understand the technical drawings and elaborate them.

7. Teaching procedures:

- visual presentation of slides with the help of computer graphics and projections, suplimentary explanations on the board; the students will individually be handed the material on paper before the course;
- the stages of the project will be presented on the board; sketches and will be also handed;
- tabel and catalogues of products will be given on infographic support;
- individual information will be reccomended regarding the books and magazines existent in the library of the faculty.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignments:
b) means and working conditions for reaching the goal:
c) percentage of the evaluation in the final mark

Speciality projects(applications)

j) The students will design elements of the structures presented during the courses: cold formed thin gauge steel sections and a main composite structural element.
k) Mixed procedure (both traditional and computer assisted design).
l) 50%.

***Final evaluation*: C,** written examination **Percentage of the final mark**: 40 %

9. Content of the subject:

9.1. Course

No	Chapter	Nr. of hrs.
1	**Industrial buildings made of light structural elements :** Cold formed sections used for industrial buildings-roof covering, roof purlins, elements of the transversal frame, structural connections between the rafter and the column made of cold formed sections; trusses made of cold formed sections; bracing systems of the light structures made of cold formed sections	8
2	Specific concepts of design and calculation of the elements made of cold-formed shapes	6
3	Verification of the members subjected to compresion and bending;	3
	Verification of members subjected to combined sectional efforts	3
4	Joints and coonnections of cold-formed sections	4

Cumulated _28_ hrs

9.2. Applications

1	Determination of the effective characteristics of a cold formed section	2
2	Verification of cold formed elements in compression and in bending and subjected to combined efforts: column and beam.	8
3	Design of a structural connection made of cold formed sections	4

Cumulated _14_.hrs

10. References

1. Axinte, E. Ţăranu, N., Teleman, C., *Construcţii din oţel. Calculul elementelor din profile formate la rece după Eurocode,* Ed. Soc. Acad, Iasi, 2004, ISBN 973-7962-43-5
2. Dima, S., *Comportarea şi calculul diafragmelor din tablă cutată utilizate in cadrul construcţiilor cu structură metalică*, Ed. MatrixRom, Bucureşti, 2000, ISBN 9736851842
3. Bridgeman L,T.D., *Calculul structurilor metalice - Eurocode 3,* Tempus Phare, 1997, ISBN 973-04-8383-1
4. Şerbescu, C., s.a, *Structuri metalice speciale - exemple de calcul, partea 2*, Ed. „Gh. Asachi" Iaşi, 1986
5. Şerbescu, C., Axinte, E , *Structuri metalice speciale*, Ed. „Gh. Asachi" Iaşi, 1985
6. Dalban, C. ş.a., *Construcţii metalice*, E.D.P. Bucureşti 1983
7. Mateescu, D., Caraba, I.- *Construcţii metalice. Proiectarea elementelor din oţel*, Ed. Tehnică Bucureşti, 1980.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Carmen TELEMAN, Ph.D.	
Instructors:	Senior Lecturer Carmen TELEMAN, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**LIGHT STEEL STRUCTURES**

Codul disciplinei	**CE412**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Elemente de Constructii din otel 1+2 ; Constructii din otel
	Recomandate	Rezistenta Materialelor, Statica, Dinamica Structurilor, Metode Numerice, Metode de analiza cu elemente finite

Obiective	-Studiul comportarii profilelor cu pereti subtiri in cadrul structurilor industriale usoare; -Calculul elementelor din profile cu pereti subtiri ca parti ale constructiilor civile si industriale; -Cunoasterea posibilitatilor de productie uzinata si de santier a elementelor ca parti ale sistemelor structurale de ansamblu.
Conţinut (descriptori)	Alcatuirea de ansamblu si in detaliu a cladirilor industriale din profile cu pereti subtiri, Particularitati de calcul a sectiunii profilelor cu pereti subtiri; Verificari simple si combinate ale sectiunilor elementelor structurale alcatuite din profile cu pereti subtiri.

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**C**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru T pondere 40 %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin colocviu		**40%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrari**	**-%**
		Teste pe parcurs	**-%**
		Lucrări de specialitate (M) **3**	**50%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	S.l. dr.ing. Carmen TELEMAN	

Titular aplicatii	Gradul didactic, titlul, prenume, nume	Semnătura
	S.l. dr.ing. Carmen TELEMAN	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

SPECIAL STEEL STRUCTURES

1. Course leader: **Senior Lecturer TELEMAN Elena-Carmen, Ph.D.**
2. Topic characteristics: DO, DS **code: CE412**
3. Contents:

Semester	Number of hours per week				Final assesment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		C	28		14		42

4. Objectives of the topic:

The course gives the opportunity to widen and diversify the skills for design of the students that are interested in special structures specific for telecommunications, certain industries or economic fields Based on course and applications during the training period, the students will be able to master the complex aspects that define the design of a steel structure.

5. Concordance between the objectives of the topic and the objectives of the training plan

The performance of the student will lead him to be capable to identify the types of structures corresponding to the constructions specific to the field of study and perform design calculation for the elements of these constructions. He must be able to identify the actions, evaluate the loads, also the physical and mechanical properties of the structural steel, identifying the optimum use of various construction elements and to apply the design methods designed for these structures. Finally, the student will be able to implement the design results into the required format of technical files corresponding to the project

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge : the students enhance their knowledge regarding the fundamental and particular laws that govern the physic phenomena afecting the steel structures subjected to the environmetal necesities and conditions and learn how to apply the main design relationships that govern the proces of concept of various steel structural elements as parts of structures

b. Technical skills and abilities

- find the best solutions for the whole structure and for the design details;
- know how a steel structure is made, identifying major errors in the design and also in the execution;
- understand the technical drawings and elaborate them.

7. Teaching procedures:

- visual presentation of slides with the help of computer graphics and projections, suplimentary explanations on the board; the students will individually be handed the material on paper before the course;
- the stages of the project will be presented on the board; sketches and will be also handed;
- tabel and catalogues of products will be given on infographic support;
- individual information will be reccomended regarding the books and magazines existent in the library of the faculty.

8. Evaluation system:

Stages:

Continuous assesment

a) type of imposed assignments:
b) means and working conditions for reaching the goal:
c) percentage of the evaluation in the final mark

Speciality projects(applications)

m) The students will design elements of the structures presented during the courses: cold formed thin gauge steel sections and a main composite structural element.
n) Mixed procedure (both traditional and computer assisted design).
o) 50%.

***Final evaluation*: C** **Examination:** written examination **Percentage of the final mark**: 40 %

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
1. Cold formed thin gauge steel shapes (4hrs): Specific concepts of design and calculation of the elements made of cold-formed shapes; verification of the members subjected to compresion and bending; joints and coonnections of cold-formed sections	4
2. Composite structural elements (4hrs): Beams with composite sections: concept of design and calculations; floors with composite section: basis of design and calculations;**;** connections between structural elements with composite section.	4
3. High slender structures: Towers, Masts, Chimneys	6
4. Electric supply transmission Lines	4
5. Structures with suspended roofs	6
6. Structures made of thick steel plates: Tanks, Bunkers, Silos	4

Cumulated _28_ hrs

9.2. Applications

	Name of task and content	**Nr. of hrs.**
1	Determination of the effective characteristics of a cold formed section	2
2	Verification of cold formed elements in compression and in bending	4
3	Design of a composite structural element in bending (girder) and its conections	8

Cumulated _14_.hrs

10. References

1. Axinte, E. Ţăranu, N., Teleman, C., *Construcţii din oţel. Calculul elementelor din profile formate la rece după Eurocode,* Ed. Soc. Acad, Iasi, 2004, ISBN 973-7962-43-5
2. Axinte, E., *Elemente mixte oţel-beton pentru construcţii. Alcătuirea şi calculul după Eurocode 4*, Ed. Cermi, Iasi, 2005, ISBN 973-667139-9
3. Dima, S., *Comportarea şi calculul diafragmelor din tablă cutată utilizate in cadrul construcţiilor cu structură metalică*, Ed. MatrixRom, Bucureşti, 2000, ISBN 9736851842
4. Bridgeman L,T.D., *Calculul structurilor metalice - Eurocode 3,* Tempus Phare, 1997, ISBN 973-04-8383-1
5. Bridgeman L.T.D., *Calculul structurilor mixte din otel - beton - Eurocode 4,* Tempus Phare, 1997, ISBN 963-04-8384-X
6. Cosmulescu, s.a., *Structuri metalice speciale*, Ed. Junimea, Iaşi, 1991, ISBN 973-37-0042-8
7. Şerbescu, C., s.a, *Structuri metalice speciale - exemple de calcul, partea 2*, Ed. „Gh. Asachi" Iaşi, 1986
8. Şerbescu, C., Axinte, E , *Structuri metalice speciale*, Ed. „Gh. Asachi" Iaşi, 1985

9. Şerbescu, C., s.a , *Probleme speciale in construcţii metalice*, Ed. Tehnică, Bucureşti, 1984
10. Dalban, C. ş.a., *Construcţii metalice*, E.D.P. Bucureşti 1983
11. Mateescu, D., Caraba, I.- *Construcţii metalice. Proiectarea elementelor din oţel*, Ed. Tehnică Bucureşti, 1980.

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Elena Carmen TELEMAN, Ph.D.	
Instructors:	Senior Lecturer Elena Carmen TELEMAN, Ph.D.	
	Senior Lecturer Elena-Victoria ROSCA, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**SPECIAL STEEL STRUCTURES**

Codul disciplinei	**CE412**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DIS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Elements of Steel Structures I and II ; Steel Structures
	Recomandate	Strength of Materials, Statics, Structural Dynamics, Numerical Methods in Engineering, Finite Element Analysis

Obiective	• to identify the types of structures corresponding to the constructions specific to the field of study; • perform design calculation for the elements of these constructions; • identify the actions and evaluate them and their combinations • apply the design methods designed for these structures and translate the design results into the required format of technical files corresponding to the project
Conţinut (descriptori)	1. Specific concepts of design and calculation of the elements made of cold-formed shapes 2. Composite (steel-concrete) structural elements 3. High slender structures: Towers, Masts, Chimneys 4. Electric supply transmission Lines 5. Structures with suspended roofs 6. Structures made of thick steel plates: Tanks, Bunkers, Silos

Sistemul de evaluare:			
Evaluarea finală*	**Forma** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)		**E**
	Probele evaluării 1. prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;		
Stabilirea notei finale (procentaje)	Evaluare finală prin examen		**40%**
	Evaluare a pe parcurs*)	**Activitatea la seminar / lucrari**	**-%**
		Teste pe parcurs	**-%**
		Lucrări de specialitate (M)	**50%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Sef lucrari dr. ing. Elena-Carmen TELEMAN	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

MASONRY CONSTRUCTIONS

1. Course leader: **Senior Lecturer Radu - Aurel PESCARU, Ph.D.**
2. Topic characteristics: DI **code: CE413**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	P W	P		C	S	PW	P	Total
8	2		1		VP	28		14		42

4. Objectives of the topic:
- *The course gives to the students knowledge regarding the overall composition and calculation of load bearing masonry structures;*
- *The students learn about the* design of masonry structures according to the requirements of specific performance and mechanical stresses.

5. Concordance between the objectives of the topic and the objectives of the training plan
The course fills in the basic training of a civil engineer in order to conceive and design buildings.
The objectives of the course fall in the objectives of the curricula as concerns the use of advanced means of study and the principles of conceiving civil buildings and solving some problems of masonry building elements design and construction.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge
- Specific information and regarding civil building constructions as the possibility: to identify the structural and functional part of the construction elements, to identify the types of structures corresponding to constructions specific to civil buildings;
- Communication skills (speak clearly using an adequate technical English language, read with comprehension, work effectively in groups, interpret / use graphic communication);

b. Technical skills and abilities
Upon successful completion of this course, the student should be able to:
- make sketches and scale drawings of floor plans, foundation plans, elevations, section and working drawings of individual or collective dwellings or other public buildings with specific standard symbols;
- to know specific performance requirements for building elements;
- to select appropriate constructive solutions for structures, non-structural elements and finishing;
- work from the ideas and plans of authorized designers to recognize the eventually design mistakes / errors for the building elements and to propose repairing solutions in accordance with the specific condition of the site or building structure.
- use local building regulations and specifications (Romanian Standards and Euronorms or Eurocodes) to develop a set of working drafts for a civil building that would meet all requirements for a building authorize;

7. Teaching procedures:
Relationship between student and professor is a collaboration type, where everybody assumes the responsibility to reach the learning results.

Learning subjects are clearly explained and discussed with students from their relevance perspective for their professional enhancement. There are presented constructive solutions for masonry structures located in seismic zones and adapt to specific requirements and also there are analyzed case studies.
In the teaching process, professors utilized the classical methods and also the resources of the new technologies: e-mail, personal web page for themes and references, PowerPoint slides and overhead projections, computer programs for static and seismic analysis of civil buildings etc.

8. Evaluation system:

Stages:

Continuous assessment

- Imposed project personalized for each student: checking will be for every student, every student will present the solved subject in front of their colleagues;
- Means and working conditions for reaching the goal: students will calculate using standard requirements and adequate computer programs compression and tensile forces, shear forces and moments for main transverse shear walls for a malty storey masonry building;

The course grade will be determined by the students' performance during project work using the following procedures:

Specialty projects (applications) **-** The students elaborate a project of a building (G+3Fl… G+4Fl) with rigid structure made of masonry walls.

(*Students' performance is assessed according to the quality of work performed and systematic record of significant information created by the student in the project*)

Percentage of the final mark: 45 %

Final evaluation**: Examination**

Evaluation of theoretical knowledge acquired during the semester - written and oral examination.

Percentage of the final mark: 45 %

Mark: (*The final grade will be the weighted average of the following marks*)

1. project evaluation: 45%
2. final examination test paper: 45%

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
I. Types of masonry, mortars, concretes, steel for re-bars, other materials. Support between the layers and elements	4
II. Types of masonry walls. 2.1 Structural walls. 2.2 Buttress bracing walls. 2.3 Non-structural walls. 2.4 In filling walls.	4
III. Mechanical characteristics of the masonry. 3.1Characteristic unit compression strength. Design unit compression strength. 3.2 1Characteristic unit strength to shear force along bead joints (sliding shear). Design unit strength to shear force along bead joints. 3.3 Requisites of use for non-reinforced masonry (ZNA), reinforced masonry (ZC or ZC + RW). Behaviour factors.	4
IV. The favourable mechanism of seismic energy dissipation. 4.1Resistance requirements. 4.2Stability requirements. 4.3 Stiffness requirements. 4.4 Ductility requirements.	4
V. Preliminary design of buildings with structural walls.	4

VI. The design of the buildings with masonry structural walls. 6.1 The estimation of axial compressive forces, eccentricity. 6.2 Evaluation to the horizontal actions. 6.3 Estimation of the shear stresses in walls. 6.4 The computation of the design resistance to compression, flexure in the median plane, shear force.	8

Cumulated 28 hrs

a) 9.2. Applications

Civil Constructions – Project - *Design Conception / design of a building (G+3Fl ... G+4Fl) with the structure of masonry load-bearing walls,*	**Nr. of hrs.**
I. Theme of the project and individual student data.	2
II. The composition of structural and non-structural elements of the building. Compound effect.	2
III. Conception of the building structure.	2
IV. Loads evaluation: permanent actions, variables actions (live, snow, walls) and accidental (seismic loading). Load combination the effects on the structure.	2
V. Structural characteristics. Estimation of the structural elements bearing capacity.	4
VI. Sectional design.	2

Cumulated 14 hrs

10. References

10. *Al. Vereş, M. Vasilache - Construcţii civile. Elemente de construcţii, Ed. Cermi, Iaşi, 2004*
11. *Al. Vereş, M. Vasilache - Construcţii civile. Forme structurale pentru construcţii civile, Ed. Cermi, Iaşi, 2003*
12. *D. Marusceac. - Construcţii civile, ET Bucureşti 1998*
13. *A.l Ciornei. - Cum concepem construcţiile civile, Ed. Junimea, Iaşi, 2000*
14. *A. Radu, Al. Vereş - Construcţii civile partea I Ed. Univ. Tehn. Iaşi 1985*
15. *P100/1 – 2006 Cod de proiectare seismică. Prevederi de proectare pentru clădiri*
16. *Al. Ciornei, M. Vasilache, Al. Secu. – Îndrumător pentru calculul construcţiilor civile, U.T. Iaşi, 1991*
17. *CR6 - Cod de proiectare pentru structuri din zidărie*
18. *P85/ 87 şi P101 Calculul construcţiilor din diafragme.*
19. *Eurocode 6 Part 1 - prEN 1996-1-2-2000 _ Design of masonry structures*
20. *Eurocode 6 Part 2 - DDENV 1996-2-1998_Design, selection of materials for masonry structure*
21. *Eurocode 6 Part 3 - DDENV 1996-3-1999_Simplified calculation methods for masomry*

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Senior Lecturer Radu - Aurel PESCARU, PH. D.	
Instructors:	Senior Lecturer Radu - Aurel PESCARU, PH. D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**MASONRY CONSTRUCTIONS**

Codul disciplinei	**CE413**	Semestrul	**8**	Numărul de credite	**3**

Facultatea	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domeniul	Inginerie Civilă		Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**		**42**	**28**		**14**	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	Obligatorii (condiţionare)	BUILDINGS; HYGROTHERMICS AND ACOUSTICS OF BUILDINGS.
	Recomandate	PROGRAMMING LANGUAGE

Obiective	To provide principles, solutions, and procedures of thermal upgrading of buildings; To relate of Building Physics to Building Services Engineering.
Conţinut (descriptori)	Notions of Heat Transfer; Assessing of Thermal Balance; Assessing of Energetic Efficiency (Energetic Audit); (Un)Conventional Technical Solutions; Case-Study.

Final Assessment:			
Evaluarea finală*	Form (E , C , VP)		**VP**
	Examination: 1. Theoretic part; loads 3Q/3A; work means Software; weight 50 % 2. Design part; loads Audit problem; work means input data; weight 50 %		
Stabilirea notei finale (procentaje)	Final Assessment		45%
	Evaluarea pe parcurs*	Continuing Assessment (M):	
		Laboratory activity (CC)	20%
		Specialty Contribution: home work, suplementary doc.	25%
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Şef lucr.dr.ing. Radu Auirel PESCARU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

THERMO-PHYSICAL REHABILITATION OF CONSTRUCTIONS

1. Course leader: **Professor Broşteanu Magda, Ph.D.**
2. Topic characteristics: DO code: CE413
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	L	P		C	S	L	P	Total
8	2		1		VP	28		14		42

4. Objectives of the topic:

The lectures are intended to provide principles, solutions, and procedures of thermal upgrading of buildings that relates the subject of "Building Physics to the Building Services Engineering", Sections of Notions of Heat Transfer, and Energetic Audit, and Techniques of Thermal Insulation Upgrading.

The laboratory works are intended to perform a computer simulation and a home-work of "Case-Study and Conclusions from the Summary of Case-Study for a building (re)design before and after thermal upgrading", concerning of Assessing of the Thermal Balance, Assessing of the Energetic Efficiency, and (Un) Conventional Technical Solutions.

5. Concordance between the objectives of the topic and the objectives of the training plan:

There is a suitable concordance between both types of the objectives: to identify the elements corresponding to the field of study, to perform design calculation for the elements of constructions, to use the case-study, to make a decision for the upgrading.

6. Learning outcomes expressed in knowledge, technical skills and abilities
a. Knowledge: engineering knowledge
b. Technical skills and abilities: from the theory to the engineering professional competence.

7. Teaching procedures: e-presentation, computer-aided methods, and a conversational method of teaching by step by step Q/A .

8. Evaluation system:

Stages:

Continuous assessment

a) type of the imposed assignements:

a1) to perform Q/A of theoretic notions, technical solutions, and applied sequences of computing programs

b) means and working conditions for reaching the goal:

b1) Students' interventions are counted into % of qualification.

b2) Entrance Requirement in the Examination is to discuss on the subject during the semester and to make a home-work of a Case-Study / documentation.

c) percentages in the final mark: 50%

c1) laboratory activity 20%

Laboratory activity is evaluated function of the assimilation of theoretic and practic applied sequences of computing programs.

c2) specialty contribution 20%

Specialty contribution has evaluated the students' general and specific competence by frequency

and quality of students' interventions and supplementary documentation / work on the subject.

***Final evaluation*:** VP **Examination:** e-presentation **Percentages in the final mark:** 50%
To mention: Theory
a) 3Q of the computer driving on the subject
b) 3A with Software as work means
c) 50%.

To mention: Design home-work on the subject "Energetic Audit of an Existing Building before and after Thermal Upgrading".
a) Audit problem
b) chosen input data
c) 50%.

9. Content of the subject:

9.1. Courses

Chapter	No of hours
1 ***Introduction***	4
1.1 Aim of Thermal Insulation Upgrading	
1.2 Volume of the Existing Buildings	
1.3 Energy Savings Concept	
1.4 Thermal Protection Levels	
1.5 Well-insulated Area versus Poorly-insulated Area.	
2 ***Heat Balance of Buildings***	4
2.1 Room Thermal Comfort	
2.2 Influence of the Anvelope Elements	
2.3 Cold Bridges Effects	
2.4 Brief Review of Heat Balance	
2.5 Seasonal Heat Losses. Casual and Solar Heat Gains	
2.6 Total Heat Transfer Coefficient per Volume and Other Influence Factors	
2.7 Yearly Useful Energy Rate for Heating or Cooling	
2.8 Software	
3 ***Insulating Materials***	2
3.1 Features. Thermal Conductivity of Building Materials	
3.2 Declared and Design Values	
3.3 Classification. Advertising	
3.4 Use Criteria	
3.5 Professional Selection	
4 Anvelope Components	2
4.1 Brief Review About:	
Outer and Internal Walls	
Warm and Cold Pitched Roofs	
Flat Roofs	
Woodworks	
Basement Walls	
Floors	
4.2 Computation of Standard R-values and Standard U-values	
4.3 Software	
5 ***Fundamental Principles of the Adjustment to R -values***	4
5.1 Warm or Cold Spaces	
5.2 Ventilation Concept	
5.3 Tightness Concept	
5.4 Condensation Risk	
5.5 Residential Buildings and Historical Buildings	
5.6 Computation of the Additional Insulation Thickness	
6 ***Applied Solutions of the Additional Insulating Material***	4

6.1 The Best Position of Wall Outer/Inner Insulation 6.2 Basement Wall and Flooring Insulation 6.3 Attic Development; Roofing Insulation or Last Floor Insulation i.e. Inner or Outer Garret; Reverse Flat Roof and Garden-Terrace and Double Terrace; Technological Systems 6.4 New Woodworks or the 3rd Window Pane	
7 ***House Efficiency*** 7.1 Energetic Audit in Buildings. Software 7.2 Useful Energy Rate and Delivered Energy Rate 7.3 Consumers' Heating System 7.4 Calorific Value of Conventional Fuel 7.5 Amount of Fuel Required 7.6 Running Costs 7.7 Yearly Primary Energy Demand for Heating and Cooling (fossil fuel, electricity) 7.8 Ecological Damage 7.9 Thermal Upgrading 7.10 Damping Span of the Invested Cost 7.11 Responsibilities	4
8 ***Virtual Laboratory by Case-Stadies Solving*** 8.1 T14 Students' Hostel Thermal Upgrading 8.2 Dwellings Thermal Upgrading 8.3 Schools Thermal Upgrading 8.4 Blocks of Flats Thermal Upgrading 8.5 Historical Buildings Thermal Upgrading	4

Cumulated 28 hours

9.2. Applications: ***Laboratory Works: Case-Study Preparing of the Energetic Audit of an Existing House before and after Thermal Upgrading.***

Stages	**Name of task** and content	No of hours
1	Input Data; Geometric Survey; Wall Layouts and Façade	2
2	Assessing of Thermal Features of the Envelope Components by C107-3:1997	2
3	Heat Balance in an Existing House; Computation of Heat Transfer Coefficient per Volume by C107-1:1997; % Influence of each Envelope Component	2
4	Making Decision for Thermal Upgrading; Solutions; (Re)Assessing of Thermal Features of the Envelope Components by C107-3:1997	4
5	Heat Balance in an Upgrading House; Computation of Heat Transfer Coefficient per Volume by C107-1:1997; % Influence of each Envelope Component	2
6	Conclusions from the Summary of Case-study and Deadline of Performing	2

Cumulated 14 hours

10. References

1. *Broşteanu, M., Rotberg, R., Building Physics in Visual IT Approach, from the Theory to the Professional Competence, „Matei-Teiu Botez" Academic Society Publishing House, Iaşi, România, 2008, ISBN (xx) 973xxxx-xxx, ISBN (xx) 978-973-xxxx-xx-x (for publishing)*
2. *Radu, A., Bliuc, I., Vasilache, M., Higrotermică aplicată, Applied Hygrothermics, Matei-Teiu Botez" Academic Society Publishing House, Iaşi, 2003, ISBN 973 7962 45 1 (in the Romanian)*
3. *Velicu, Cr., Noţiuni de reabilitare termofizică a clădirilor, Notions of Thermal Upgrading of Buildings*
   About, Editura Experţilor Tehnici, SET Publishing House, Iaşi, 2002, ISBN (xx) 973 xxxx-xxx (in the Romanian)
4. *Gavrilas, I., Reabilitarea higrotermică a clădirilor, Hygrothermic Upgrading of Buildings, Cerni Publishing House, Iaşi,1999, ISBN (xx) 973 xxxx-xxx (in the Romanian)*

5. *Vasilache, M., Velicu, C., Ghid pentru reabilitarea termică a clădirilor de locuit, Guide for Thermal Retrofitting of Dwellings, SET Publishing House, Iaşi, 1997, ISBN (xx) 973 xxxx xxx (in the Romanian)*
6. *Moss, Keith J., Heat and Mass Transfer in Building Services Design, E&FN Spon Publishing House, London, 1998, ISBN 0 419 22650 8*
7. *Velicu, Cr., and Co., Ştefănescu, D., Vasilache, M., Broşteanu, M., Protecţia termică a clădirilor, Elemente pentru specializare, Editura Experţilor Tehnici, Thermal Protection of Buildings. Professional Training, SET Publishing House, Iaşi,1998, ISBN 973 9821 54 5 (in the Romanian)*
8. *xxx SR EN ISO 6946:1996:1998:2004: Building Components and Building Elements. Thermal Resistance and Thermal Transmittance. Calculation Method*

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Professor Magda BROŞTEANU, Ph.D.	
Instructor:	Professor Magda BROŞTEANU, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**THERMO-PHYSICAL REHABILITATION OF CONSTRUCTIONS**

Codul disciplinei	**CE413**	Semestrul	**8**	Numărul de credite	**3**

Facultatea	Construcţii şi Instalaţii		Numărul orelor pe semestru				
Domeniul	Inginerie Civilă		Total	C	S	L	P
Specializarea	**CIVIL ENGINEERING**		**42**	**28**		**14**	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DIS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	Obligatorii (condiţionare)	BUILDINGS; HYGROTHERMICS AND ACOUSTICS OF BUILDINGS.
	Recomandate	PROGRAMMING LANGUAGE

Obiective	To provide principles, solutions, and procedures of thermal upgrading of buildings; To relate of Building Physics to Building Services Engineering.
Conţinut (descriptori)	Notions of Heat Transfer; Assessing of Thermal Balance; Assessing of Energetic Efficiency (Energetic Audit); (Un)Conventional Technical Solutions; Case-Study.

Final Assessment:			
Evaluarea finală*	Form (E , C , VP)		C
	Examination: 1. Theoretic part; loads 3Q/3A; work means Software; weight 50 % 2. Design part; loads Audit problem; work means input data; weight 50 %		
Stabilirea notei finale (procentaje)	Final Assessment		50%
	Evaluarea pe parcurs*	Continuing Assessment (M):	
		Laboratory activity (CC)	20%
		Specialty Contribution: home work, suplementary doc.	20%
*) La toate formele de evaluare se precizează tipul: T - tradiţional, CC - cu calculatorul, M – mixt.			

Titularul disciplinei	Gradul didactic, titlul, prenume, nume	Semnătura
	Profesor dr. ing. Magda BROŞTEANU	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M
of the topic:
TRANSPORTATION INFRASTRUCTURE

1. Titularul disciplinei: **Professor ANDREI Radu, Ph.D.**
2. Tipul disciplinei: DO codul disciplinei: CE414
3. Structura disciplinei:

Semestrul	Numărul de ore pe săptămână				Forma de evaluare finală	Numărul de ore pe semestru				
	C	S	L	P		C	S	L	P	Total
8	2		1		E	28		14		42

4. Obiectivele cursului:
Cerinţele actuale privind performanța constructiilor in exploatare impun familiarizarea studentilor cu principalele tehnologii utilizate in prezent in acest domeniu. Cursul are drept obiectiv introducerea studentilor in domeniul proiectarii, constructiei si managementului cailor de comunicatie terestre.

Obiectivele disciplinei se referă la:

- Însuşirea cunoștințelor privind proiectrea geometrica si structurala a cailor de comunicatie terestre: drumuri , poduri, cai ferate, aeroporturi, etc.
- Familiarizarea cu principalele tehnologii de constructie utilizate în construcția infrstructurilor de transport terestre
- Însușirea cunoștințelor privind managementul infrastructurilor de transport(drumuri, poduri, cai ferate, aeroprturi, etc)

5. Concordanţa între obiectivele disciplinei şi obiectivele planului de învăţământ:
a. Contribuţia rezultatelor învăţării disciplinei la formarea competenţelor specializării

Disciplina asigura specialistului în Inginerie Civilă cu diploma de licenţă cunoştinţe avansate pentru proiectarea geometrica si structurala a cailor de comunicatie terestra, selectarea și aplicarea eficientă a metodelor de proiectare, a tehnologiilor moderne de executie si la metodelor de management specifice acestora.

b. Cerinţele disciplinare prealabile:
Materiale de construcție,, Fundatii, Topografie

6. Rezultatele învăţării exprimate în competenţe cognitive, tehnice sau profesionale
a. Cunoştinţele generale

- Cunoaşterea şi înţelegerea metodelor privind selectarea si utilizarea în practica a diverselor metode de proiectare geometrica si structurala a infrastructurilor de transport terestre.
- Absolvenţii vor obţine noi valenţe tehnice necesare pentru proiectarea si conducerea proceselor de productie inclusiv pentru managementul specific (PMS/BMS) al infrstructurilor de transport

b. Competenţe tehnice sau profesionale

-Să cunoască si să aplice in practica principalele metode de proiectare geometrica si structurala a infrastructurilor de transport

-Să organizeze si să conduca procese de execuție a constructiilor de drumuri, poduri , căi ferate, aeroporturi, etc.

7. Proceduri folosite la predarea disciplinei:

Metode şi medii de învăţare centrate pe student:

- note de curs şi aplicaţii tipărite;
- materiale didactice prezentate pe web;
- prezentări în Power Point;
- documentări şi studii in situ
- lecții experimentale

8. Sistemul de evaluare:

Probele:

Verificări pe parcurs

a) categoria de sarcini

Verificările vor fi individualizate iar prezentarea subiectelor se va face oral în faţa colegilor şi va fi supusă evaluării colegiale şi evaluării cadrului didactic, concretizată prin notă. Ponderea în nota finală: 30%

b) condiţiile de lucru (mijloace accesibile studentului în timpul probei)

Studenţii vor utiliza reţeaua de calculatoare, echipamentele de achiziţie şi programele specializate aflate în dotarea Laboratorului de specialitate

c) ponderea în procente a fiecărei probe în nota examenului

Lucrări de specialitate

- Studenţii vor primi o tema de proiectare geometrica si structurala a unui drum , proiectul avand ponderea de 30% din calificativul final.

***Evaluarea finală*: Examen** ***Ponderea în nota finală*: 40%**

Studenţii sunt informaţi, la primul curs, asupra cerinţelor disciplinei, a modului şi programului de evaluare.

9. Conţinutul disciplinei:

9.1. Curs

Capitol	**Nr. ore**
Cap.1 Introduction in Transportation Engineering Introduction in Transportation Engineering . Transportation Structures. Actual challenges and research trends.	4
Cap. 2 Route Selection Land Transportation Engineering. Route selection and principles of location and survey. Location and survey for Specific Transportation Structures	4
Cap.3 Geometric Design/Horizontal alignment Route geometric design, horizontal alignment. Circular curves. Transition curves . Super-elevation, sight distance and widening in horizontal curves.	4
Cap.4 Geometric design/ Vertical alignmnent Route geometric design, vertical alignment, the vertical profile. Transverse profiles. Sight distance in vertical alignment	8
Cap.5 Construction Technology and Management Structural design. Principles for the design and construction of highway, railway and airfield superstructures. Principles for design and construction of earthworks in transportation engineering. Principles for design and construction of specific, long lasting, highway, railway and airfield structures: bridges, viaducts, retaining walls, towers and buildings, etc Management of works in transportation engineering. Pavement Management Systems-PMS. Bridge Management Systems-BMS. Integrated PMS/BMS systems . Airport Management systems -AMS	8

Total 28 ore

9.2. Lucrări:

1	**Proiectarea geometrica si structurala a unui drum** Pe un plan de situatie dat se cere sa se efectueze studiul traseului si proiectarea geometrica si structurala a unui drum	14

Total 14 ore

10. Bibliografie

1. Andrei R., Land transportation Engineering ,Editura Tehnica Info , Chisinau, 2002
2. Andrei R. Special transportation Structures, Editura ,Tehnica Info Chisinau, 2006

Date: 25.03.2009

Titular disciplină,
Professor Radu ANDREI, Ph.D.

Semnătura:

FIŞA DISCIPLINEI

Denumirea disciplinei	**TRANSPORTATION INFRASTRUCTURE**

Codul disciplinei	**CE414**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestrul II**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	**42**	**28**	**14**		

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DS**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Construction Materials, Geotechnics & Foundatins , Topography
	Recomandate	

Obiective	• Geometric and structural design of roads, railways, airports, and various road structures (bridges, viaducts, retaining walls, etc) • The specific construction technologies in transportation infrastructure field • The maintenance and management methods applied in this field
Conţinut (descriptori)	Introduction in Transportation Engineering ; Route Selection; Geometric Design/Horizontal alignment; Geometric design/ Vertical alignmnent; Construction Technology and Management

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**E**
	Probele evaluării 1.prezentare orală ; sarcini: referat ; condiţii de lucru M pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală**			30 %
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări**		30 %
		Teste pe parcurs [*număr)* 2		
		Lucrări de specialitate, teme de casă [*număr***]** 2		30 %
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, NUME	Semnătura
	Professor Radu ANDREI, Ph.D	

Titular aplicaţii	Gradul didactic, titlul, prenume, NUME	Semnătura
	Professor Radu ANDREI, Ph.D	

TECHNICAL UNIVERSITY "GHEORGHE ASACHI" OF IASI
Civil Engineering and Building Services Faculty
Profile: Civil Engineering **Specialization: Civil Engineering**
Education form: day courses **Year of study: IV** **Academic Year: 2008-2009**

L E A R N I N G P R O G R A M

of the topic:

SPECIAL FOUNDATIONS

1. Course leader: **Assoc. Professor. Irina LUNGU, Ph.D.**
2. Topic characteristics: DID **code: CE414**
3. Contents:

Semester	Number of hours per week				Final assessment	Number of hours per semester				
	C	S	PW	P		C	S	PW	P	Total
8	2		1		VP	28		14		42

4. Objectives of the topic:

- to identify and characterize potential difficult soils on construction sites
- to select soil improvement techniques corresponding to the foundation soil difficulties
- to identify causes of infrastructure damages and select intervention measures

5. Concordance between the objectives of the topic and the objectives of the training plan

This course aims to introduce difficult site conditions as input data when deciding over infrastructure solutions. Solutions to problems of such nature are given in both soil and foundations perspective. New construction materials and technologies are introduced as options to consider in changing landscape to urban develop new areas.

6. Learning outcomes expressed in knowledge, technical skills and abilities

a. Knowledge

- identification of difficult foundation soils and various soil profiles;
- identification of soil improvement techniques;
- design aspects of infrastructures on difficult soils.

b. Technical skills and abilities

- basic design stages of foundation elements on difficult soils;
- characterization of difficult soils;
- basic representation of technological stages of soils improvement and infrastructure performance.

7. Teaching procedures:

- powerpoint presentations highlighting the most relevant aspects by traditional teaching,
- applications over the course subjects and discussions of the outcomes,
- case studies and site visits of constructions relevant for the presented subject.

8. Evaluation system:

Stages:

Continuous assessment

a) type of imposed assignments: 2 reports regarding a difficult site condition and a case study over infrastructure design stages to accommodate a specific situation

b) means and working conditions for reaching the goal: written material and powerpoint presentation

c) percentage of the evaluation in the final mark: 20% each report

Speciality projects (applications)

a) The students will design elements of infrastructure works in various site conditions in working groups followed by discussions of the results – 6 themes.

b) Mixed procedure (both traditional and computer assisted design)
c) 30%

Tests during the term

a) Written test on difficult soil conditions identification and characterization.
b) Grid test – traditional procedure
c) 20%

***Final evaluation*:** **Examination: Percentage of the final mark**: -

9. Content of the subject:

9.1. Course

Chapter	**Nr. of hrs.**
1. Stability issues on natural urban slopes *Relevant geotechnical issues of construction on urban slopes, soil investigations, safety factors computation, mitigation measures*	3
2. Difficult foundation soils *Collapsible soils; active soils; soils with liquefaction potential or sensitivity to frost and thaw*	6
3. Soil improvement *Temporary soil improvement, permanent soil improvement with and without adding materials*	9
4. Reinforced soil and structures *Reinforced soil concept, types of reinforced soil structures and corresponding design elements, technologies to perform structures of reinforced soil*	6
5. Rehabilitation of foundations and soils *Damages of infrastructures, causes and investigation reports, solutions of rehabilitations*	4

Cumulated 28hrs

g) **9.2. Applications**

	Name of task and content	
	Safety factor by blocks' method – assessment of soil failure surface, identification of blocks, equilibrium equations, earth pressure diagrams, safety factor	2
	Collapsible soils – supplementary settlement calculation and identification of the loess group	2
	Active soils – soil diagram and soil swelling in free field	2
	Soil improvement – soil cushion and footing design	2
	Reinforced soil – retaining wall of reinforced soil, number and location of the reinforcement	4
	Rehabilitation of foundations – footing re-design when bearing capacity decreases	2

Cumulated 14hrs

10. References

- Palossy, László - Earth walls, 1993, Akademiai Kiadó, Budapest
- Punmia, B. C. - Soil mechanics and foundations, 2006, LAXMI, New Delhi
- Schexnayder, Cliff - Soil - Cement and other construction practices in geotechnical engineering, 2000, ASCE, Reston
- Lungu, I. – Course notes, 2008

Date: 25.03.2009

	Name and surname	**Signatures:**
Course leader:	Assoc.Professor Irina Lungu, Ph.D.	
Instructor:	Assoc.Professor Irina Lungu, Ph.D.	

FIŞA DISCIPLINEI

Denumirea disciplinei	**SPECIAL FOUNDATIONS**

Codul disciplinei	**CE414**	Semestrul	**8**	Număr de credite	**3**

Facultatea	Construcţii şi Instalaţii	**Numărul orelor pe semestru**				
Domeniul	Inginerie Civilă	**Total**	**C**	**S**	**L**	**P**
Specializarea	**CIVIL ENGINEERING**	42	28		14	

Categoria formativă a disciplinei **DF** – fundamentală, **DID** – în domeniu, **DS** – de specialitate, **DC** – complementară	**DID**
Categoria de opţionalitate a disciplinei **DI** – impusă, **DO** –opţională, **DL** –liber aleasă (facultativă)	**DO**

Discipline anterioare	**Obligatorii (condiţionale)**	Foundations
	Recomandate	Industrial constructions, Reinforced concrete structures, Technology of constructions 2

Obiective	• to identify and characterize potential difficult soils on construction sites • to select soil improvement techniques corresponding to the foundation soil difficulties • to identify causes of infrastructure damages and select intervention measures
Conţinut (descriptori)	Stability issues on natural urban slopes. Difficult foundation soils: collapsible soils; active soils; soils with liquefaction potential or sensitivity to frost and thaw. Temporary and permanent soil improvement methods. Reinforced soil and structures. Rehabilitation of foundations and soils

Sistemul de evaluare:				
Evaluarea finală*	**Forma de evaluare finală** (**E** - *examen*, **C** - *colocviu*, **VP** - *verificare pe parcurs*)			**VP**
	Probele evaluării 2. - ; sarcini: ; condiţii de lucru pondere %;			
Stabilirea notei finale (procentaje)	**Evaluare finală prin examen**			**%**
	Evaluarea pe parcurs*)	**Activitatea la seminar / lucrări T**		**30%**
		Teste pe parcurs	**1T**	**20%**
		Lucrări de specialitate, teme de casă	**2M**	**40%**
) La toate formele de evaluare se precizează tipul: **T - tradiţional, **CC** - cu calculatorul, **M** – mixt.*				

Titular disciplină	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr.ing. Irina LUNGU	

Titular aplicaţii	Gradul didactic, titlul, prenume, nume	Semnătura
	Conf.dr.ing. Irina LUNGU	