

SYLLABUS¹

1. Information about the program

1.1 Higher education institution	Politehnica University Timisoara
1.2 Faculty ² / Department ³	Civil Engineering Faculty / Dep. CMMC & CCI
1.3 Chair	—
1.4 Field of study (name/code ⁴)	Civil Engineering / 10
1.5 Study cycle	Master
1.6 Study program (name/code/qualification)	Civil engineering / 10 / Civil engineer

2. Information about the discipline

2.1 Name of discipline	Research and design assisted by testing						
2.2 Coordinator (holder) of course activities	Prof.dr.ing. NAGY-GYÖRGY Tamás / SL.dr.ing. BOTH Ioan						
2.3 Coordinator (holder) of applied activities ⁵	Prof.dr.ing. NAGY-GYÖRGY Tamás / SL.dr.ing. BOTH Ioan						
2.4 Year of study ⁶	I	2.5 Semester	I	2.6 Type of evaluation	E	2.7 Type of discipline	DA

3. Total estimated time (hours / semester of didactic activities)

3.1 No. of hrs. / week	3 , of which:	3.2 course	1	3.3 seminar/laboratory/ project/training	2
3.4 Total no. of hrs. in the education curricula	42 , of which:	3.5 course	14	3.6 applied activities	28
3.7 Distribution of time for individual activities related to the discipline					hrs.
Study using a manual, course materials, bibliography and lecture notes					10
Additional documentation in the library, on specialized electronic platforms and on the field					6
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					6
Tutoring					2
Examinations					2
Other activities					
Total hrs. of individual activities					26
3.8 Total hrs. / semester ⁷	68				
3.9 No. of credits	7				

4. Prerequisites (where applicable)

¹ The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex3).

² The name of the faculty which manages the educational curriculum to which the discipline belongs.

³ The name of the department entrusted with the discipline, and to which the course coordinator / holder belongs.

⁴ Fill in the code provided in GD no. 493/17.07.2013.

⁵ The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁶ The year of study to which the discipline is provided in the curriculum.

⁷ It is obtained by summing up the number of hrs. from 3.4 and 3.7.

4.1 Curriculum	<ul style="list-style-type: none"> Structural analysis1&2, Concrete structures 1&2; Steel structures 1&2
4.2 Competencies	<ul style="list-style-type: none"> Design of structures

5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none"> Large class room . Support materials: laptop, video projector, screen, board
5.2 to conduct practical activities	<ul style="list-style-type: none"> Classroom: min 30 chairs. Laptop projector, laboratory, data acquisition system, transducers,

6. Specific competencies acquired

Professional competencies ⁸	<ul style="list-style-type: none"> Technological and economical design for construction works according to the graduation field Planning and leading of erecting processes, maintenance of civil engineering structures Quality requests check and sustainability of civil engineering structures Acknowledge of experimental devices Conceive, perform and organize of experimental tests Preliminary data interpretation
Transversal competencies	<ul style="list-style-type: none"> Applying efficient and responsible strategies for work, punctuality, responsibility based on professional principles Applying efficient team work Documentation and updating for professional and personal development

7. Objectives of the discipline (based on the grid of specific competencies acquired)

7.1 General objective of the discipline	<ul style="list-style-type: none"> Introducing students to experimental techniques and setup in the civil engineering domain, for qualitative control of materials and structures. The student must acknowledge the lab devices, setup a test and data processing
7.2 Specific objectives	<ul style="list-style-type: none"> Acknowledgment of performant material characteristics for future civil engineers to be able to apply for general works and refurbishment of existing structures.

8. Content

8.1 Course	No. of hours	Teaching methods
Basics	1	Lecturing, presentations, examples, discussions
Types of tests. Stages and characteristics	2	Lecturing, presentations, examples, discussions

⁸ The professional competencies and the transversal competencies will be treated according to the Methodology of OMECTS 5703/18.12.2011. The competencies listed in the National Register of Qualifications in Higher Education [Registrul Național al Calificărilor din Învățământul Superior RNCIS] (http://www.ncis.ro/portal/page?_pageid=117,70218&_dad=portal&_schema=PORTAL) will be used for the field of study from 1.4 and the program of study from 1.6 of this form, involving the discipline.

TRANSDUCERS: displacement transducers, strain gages, load cells, digital image correlation measurement errors	3	Lecturing, presentations, examples, discussions
Experiment based design	2	Lecturing, presentations, examples, discussions
Destructive and non destructive tests	2	Lecturing presentations, examples, discussions
Structural load tests	1	Presentations, examples, discussions
Case studies	2	Presentations, examples, discussions
Maintenance and monitoring of structures	1	Presentations, examples, discussions
<p>Bibliography⁹ Handbook of experimental analysis. Mindin RD, Salvadori MG, Ed. Wiley & Sons, New York, 1984</p> <p>Encyclopedie d'analyse des contraintes. J. Avril, Ed. Micromesures, Malakoff, Franta, 1983</p> <p>Techniques experimentales modernes pour la conduite et exploitation d'essais de structures en genie civil, A. Lachal, Laboratoire des Structures INSA – Rennes, France, 1994</p> <p>Introducere in tehnica proiectarii asistate de experiment a constructiilor metalice, M. Georgescu, R. Zaharia, Ed. Orizonturi Universitare, Timisoara, 1999</p> <p>Hejll A., Civil Structural Health Monitoring - Strategies, Methods and Applications, Lulea University of Technology, ISBN 978-91-85685-08-0, 2007</p> <p>Bungey J.H., Millard S.G., Grantham M.G., Testing of Concrete in Structures (4th ed.), Taylor & Francis, ISBN10: 0-415-26301-8, 2006</p> <p>Malhotra V.M., Carino N.J., Handbook of Nondestructive Testing of Concrete, CRC Press LLC, ISBN 0-8031-2099-0, 2004</p> <p>Monitoring and safety evaluation of existing concrete structures, fib Bulletin No. 22, ISBN: 978-2-88394-062-8, 2003</p> <p>Cedric Stewart , Analyse experimentale et numerique de modeles reduits en vibration. Diploma work , Faculte des Sciences Appliquees, Universite de Liege,Belgium, 1996-1997.</p> <p>Encyclopedie d'analyse des contraintes, J. Avril, Ed. Micromesures, Malakoff, Franta,1983</p> <p>Handbook of experimental analysis. Mindin RD, Salvadori MG, Ed. Wiley & Sons, New York, 1984</p> <p>Handbook on structural testing, R. T. Reese, W. A. Kawahara, The Fairmont Press Inc.,1993</p> <p>Introducere in tehnica proiectării asistate de experiment a construcțiilor metalice, M. Georgescu, R. Zaharia, Ed. Orizonturi Universitare, Timisoara, 1999</p>		

⁹ At least one title must belong to the department staff teaching the discipline, and at least 3 titles must refer to national and international works relevant for the discipline, and which can be found in the Politehnica University Library.

<p>Manuel du laboratoire de resistance des materiaux ; Notes de cours redigees par J.</p> <p>Rondal, M. Braham, S. Cescotto, R. Maquoi. Faculte des Sciences Appliquees, Universite de Liege, Belgia, 1980.</p> <p>Techniques experimentales modernes pour la conduite et exploitation d'essais de structures en genie civil, A. Lachal, Laboratoire des Structures INSA – Rennes, France, 1994</p> <p>Theory and design for mechanical measurements, R. S. Figliola, D. E. Beasley, John Wiley & Sons, Inc., 1994 (second edition)</p> <p>Theory and practice of force measurement - Monographs in physical measurement - A. Bray, Giulio Barbato, Raffaello Levi Academic Press, University of California, 1990</p>		
8.2 Applied activities ¹⁰	No. of hours	Teaching methods
Experiment based design	4	Discussions, examples, experimental tests, application – hand-on
Examples of tests – test setup	10	Discussions, examples, experimental tests, application – hand-on
Destructive and non destructive concrete tests, durability tests, chemical tests, integrity tests	10	Discussions, examples, experimental tests, application – hand-on
Loading tests -	4	
<p>Bibliography ¹¹ Handbook of experimental analysis. Mindin RD, Salvadori MG, Ed. Wiley & Sons, New York, 1984</p> <p>Encyclopedie d'analyse des contraintes. J. Avril, Ed. Micromesures, Malakoff, Franta, 1983</p> <p>Techniques experimentales modernes pour la conduite et exploitation d'essais de structures en genie civil, A. Lachal, Laboratoire des Structures INSA – Rennes, France, 1994</p> <p>Introducere in tehnica proiectarii asistate de experiment a constructiilor metalice, M. Georgescu, R. Zaharia, Ed. Orizonturi Universitare, Timisoara, 1999</p> <p>Hejll A., Civil Structural Health Monitoring - Strategies, Methods and Applications, Lulea University of Technology, ISBN 978-91-85685-08-0, 2007</p> <p>Bungey J.H., Millard S.G., Grantham M.G., Testing of Concrete in Structures (4th ed.), Taylor & Francis, ISBN10: 0-415-26301-8, 2006</p> <p>Malhotra V.M., Carino N.J., Handbook of Nondestructive Testing of Concrete, CRC Press LLC, ISBN 0-8031-2099-0, 2004</p> <p>Monitoring and safety evaluation of existing concrete structures, fib Bulletin No. 22, ISBN: 978-2-88394-062-8, 2003</p> <p>Cedric Stewart , Analyse experimentale et numerique de modeles reduits en vibration. Diploma work , Faculte des Sciences Appliquees,</p>		

¹⁰ The types of applied activities are those specified in footnote 5. If the discipline contains several types of applied activities, then these will be written consecutively in the lines of the table below. The type of activity will be written in a distinct line, as „Seminar:”, „Laboratory:”, „Project:” and/or „Practice/Training:”.

¹¹ At least one title must belong to the staff teaching the discipline.

Universite de Liege,Belgium, 1996-1997.

Encyclopedie d'analyse des contraintes, J. Avril, Ed. Micromesures, Malakoff, Franta,1983

Handbook of experimental analysis. Mindin RD, Salvadori MG, Ed. Wiley & Sons, New York, 1984

Handbook on structural testing, R. T. Reese, W. A. Kawahara, The Fairmont Press Inc.,1993

Introducere in tehnica proiectării asistate de experiment a construcțiilor metalice, M. Georgescu, R. Zaharia, Ed. Orizonturi Universitare, Timisoara, 1999

Manuel du laboratoire de resistance des materiaux ; Notes de cours redigees par J.

Rondal, M. Braham, S. Cescotto, R. Maquoi. Faculte des Sciences Appliquees,Universite de Liege, Belgia, 1980.

Techniques experimentales modernes pour la conduite et exploitation d'essais de structures en genie civil, A. Lachal, Laboratoire des Structures INSA – Rennes, France,1994

Theory and design for mechanical measurements, R. S. Figliola, D. E. Beasley, John Wiley & Sons, Inc., 1994 (second edition)

Theory and practice of force measurement - Monographs in physical measurement - A.Bray, Giulio Barbato, Raffaello Levi Academic Press, University of California, 1990

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- Compatibility to Syllabus of Liege University, Rennes University, Lulea University of Technology

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Qualitative approach of theoretical subjects and applications	Written exam	50%
10.5 Applied activities	S:		
	L: Project quality	Evaluation test	50%
	P:		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified)			
<ul style="list-style-type: none">• Minimum grade = 5			

Date of completion

2016.10.13

Course coordinator
(signature)

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Coordinator of applied activities
(signature)

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Head of Department
(signature)

Date of approval in the Faculty Council¹²

Dean
(signature)

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¹² Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparține programul de studiu cu privire la fișa disciplinei.