**SYLLABUS**

1. **Information about the program**

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| **1.1** Higher education institution | UNIVERSITATEA POLITEHNICA TIMISOARA |
| **1.2** Faculty[[1]](#footnote-2) / Department[[2]](#footnote-3) | CONSTRUCTII/ CMMC+CCI |
| **1.3** Field of study (name/code[[3]](#footnote-4)) | INGINERIE CIVILA/ 10 |
| **1.4** Study cycle | Master |
| **1.5** Study program (name/code/qualification) | ADVANCED DESIGN OF BUILDINGS – PROIECTAREA AVANSATA A CLADIRILOR/ 10/ Master |

1. **Information about discipline**

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| **2.1** Name of discipline/The educational classe[[4]](#footnote-5) | | | Research and Design Assisted by Testing / DCAV | | | | |
| **2.2** Coordinator (holder) of course activities | | | Conf.dr.ing. NAGY-GYÖRGY Tamás / SL.dr.ing. CRIȘAN Andrei | | | | |
| **2.3** Coordinator (holder) of applied activities[[5]](#footnote-6) | | | Conf.dr.ing. NAGY-GYÖRGY Tamás / SL.dr.ing. CRIȘAN Andrei | | | | |
| **2.4** Year of study[[6]](#footnote-7) | 1 | **2.5** Semester | 2 | **2.6** Type of evaluation | E | **2.7** Regime of discipline[[7]](#footnote-8) | DO |

1. **Total estimated time** (direct activities (fully assisted), partially assisted activities and unassisted activities[[8]](#footnote-9))

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| **3.1** Number of hours fully assisted/week | 4 ,of which: | course | 2 | seminar/laboratory/project | | | 4 |
| **3.1\*** Total number of hours fully assisted/sem. | 56 ,of which: | course | 28 | seminar/laboratory/project | | | 28 |
| **3.2** Number of on-line hours fully assisted/sem | 23 ,of which: | course | 16 | seminar/laboratory/project | | | 7 |
| **3.3** Number of hours partially assisted/week | ,of which: | project, research |  | training |  | hours designing M.A. dissertation |  |
| **3.3\*** Number of hours partially assisted/ semester | ,of which: | project of research |  | training |  | hours designing M.A. dissertation |  |
| **3.4** Number of hours of unassisted activities/ week | 6.7 ,of which: | Additional documentation in the library, on specialized electronic platforms, and on the field | | | | | 2.1 |
| Study using a manual, course materials, bibliography and lecture notes | | | | | 2.3 |
| Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays | | | | | 2.3 |
| **3.4\*** Total number of hours of unasssited asctivities/ semester | 94 ,of which: | Additional documentation in the library, on specialized electronic platforms, and on the field | | | | | 30 |
| Study using a manual, course materials, bibliography and lecture notes | | | | | 32 |
| Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays | | | | | 32 |
| **3.5 Total hrs./week**[[9]](#footnote-10) | 10.7 | | | | | | |
| **3.5\* Total hrs./semester** | 150 | | | | | | |
| **3.6 No. of credits** | 6 | | | | | | |

**4. Prerequisites** (where applicable)

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| **4.1** Curriculum | * Statics 1&2; Reinforced concrete and steel structures; Concrete Structures 1&2; Steel Structures 1&2 |
| **4.2** Competencies | * Design and evaluation of civil and industrial buildings |

**5. Conditions** (where applicable)

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| **5.1** of the course | * High capacity room with access to projector, white/black board, laptop |
| **5.2** to conduct practical activities | * Room with a minimum of 30 persons capacity with access to projector, white/black board, laptop. Experimental laboratory with acquisition station, displacement transducers, load cells, hydraulic press |

**6. Specific competencies** acquired through this discipline

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| Specific competencies | * Initiate the students in the experimental techniques and methods specific in civil engineering, for quality control of the materials and structures |
| Professional competencies ascribed to the specific competencies | * provide construction counseling; utilize CAD software; draft technical reports; ensure compliance with environmental legislation; apply numerical computing skills; supervise personnel; conduct sample analysis; manage data in the field of research; conducts scientific research; prepares scientific reports; applies the principles of ethics and scientific integrity in research activities |
| Transversal competencies ascribed to the specific competencies | * oversee quality control; apply scientific, technological, and engineering knowledge; work in teams; train others; |

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

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| **7.1** The general objective of the discipline | * The object of the course is to initiate the students in the experimental techniques and methods specific in civil engineering, for quality control of the materials and structures. In the first part of the course the main aspects concerning the quality in constructions, with reference to the actual norms will be presented. After the introduction in methods and measurement instruments the methods and devices for non-destructive tests, as well as the aspects regarding the survey of the constructions will be presented. In the last part of the course, notions about statistical interpretation of the experimental results will be given. |
| **7.2** Specific objectives | * Understand the principal aspects regarding the quality in constructions, technical agreements for products, new procedures and equipments in constructions, certification of the quality conformity of the products used in constructions. * Get familiar with measuring methods, equipments for static and dynamic loads, stands for testing construction elements and Instruments for measuring loads, displacements and deformations. |

**8. Content**

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| **8.1** Course | | Number of hours | Of which online | Teaching methods |
| Introduction. Objectives and general concepts | | 2 | Max 60% | Presentation, examples, discussions |
| Types of experimental tests. Requirements and stages of an experimental test. Methods and characteristics | | 2 |  |
| Measuring devices: displacement transducers, strain gauges, load cells, image correlation systems. Applications | | 8 |  |
| Deisgn assisted by testing. Applications l | | 2 |  |
| Distructive and non-distructive testing for concrete structures | | 4 |  |
| Experimental testing on structures. Applications. | | 2 |  |
| Case studies: Generalities, objectives, methods and instrumentation | | 4 |  |
| Structural monitoring. Strategies, equipment and methods. | | 4 |  |
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|  | Bibliography[[10]](#footnote-11)  [1] Handbook of experimental analysis. Mindin RD, Salvadori MG, Ed. Wiley & Sons, New York, 1984  [2] Encyclopedie d`analyse des contraintes. J. Avril, Ed. Micromesures, Malakoff, Franta, 1983  [3] Techniques experimentales modernes pour la conduite et exploitation d’essais de structures en genie civil, A. Lachal, Laboratoire des Structures INSA – Rennes, France, 1994  [4] Introducere in tehnica proiectarii asistate de experiment a constructiilor metalice, M. Georgescu, R. Zaharia, Ed. Orizonturi Universitare, Timisoara, 1999  [5] Hejll A., Civil Structural Health Monitoring - Strategies, Methods and Applications, Lulea University of Technology, ISBN 978-91-85685-08-0, 2007  [6] Bungey J.H., Millard S.G., Grantham M.G., Testing of Concrete in Structures (4th ed.), Taylor & Francis, ISBN10: 0–415–26301–8, 2006 | | | |
| **8.2** Applied activities[[11]](#footnote-12) | | Number of hours | Of which online | Teaching methods |
| Design assisted by testing. Applications based on experiments | | 4 | Max 35% | Examples, discussions, experimental testing, applications |
| Examples of experimental testing programs. Instrumentation (displacement transducers, load cells, strain gauges) and test design e | | 10 |  |
| Distructive and non-distructive tests on concrete | | 10 |  |
| Loading tests. Instrumentation with measuring devices, data aquisition and interpretation | | 4 |  |
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|  | Bibliography[[12]](#footnote-13)  [1] Handbook of experimental analysis. Mindin RD, Salvadori MG, Ed. Wiley & Sons, New York, 1984  [2] Encyclopedie d`analyse des contraintes. J. Avril, Ed. Micromesures, Malakoff, Franta, 1983  [3] Techniques experimentales modernes pour la conduite et exploitation d’essais de structures en genie civil, A. Lachal, Laboratoire des Structures INSA – Rennes, France, 1994  [4] Introducere in tehnica proiectarii asistate de experiment a constructiilor metalice, M. Georgescu, R. Zaharia, Ed. Orizonturi Universitare, Timisoara, 1999  [5] Hejll A., Civil Structural Health Monitoring - Strategies, Methods and Applications, Lulea University of Technology, ISBN 978-91-85685-08-0, 2007  [6] Bungey J.H., Millard S.G., Grantham M.G., Testing of Concrete in Structures (4th ed.), Taylor & Francis, ISBN10: 0–415–26301–8, 2006 | | | |

**9. Coroboration 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**

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| * Compatibility with programs from Universite de Liege, Universite de Rennes, Lulea University of Technology |

**10. Evaluation**

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| Type of activity | **10.1** Evaluation criteria[[13]](#footnote-14) | **10.2** Evaluation methods | **10.3** Share of the final grade |
| **10.4** Course | Quality of given solution to theoretical and practical subjects | Written | 50% |
| **10.5** Applied activities | **S:** |  |  |
|  | **L:** |  |  |
|  | **P:**  Project quality | Evaluation test | 50% |
|  | **Pr:** |  |  |
|  | **Tc-R[[14]](#footnote-15):** |  |  |
| **10.6** Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified[[15]](#footnote-16) | | | |
| * The final mark must accumulate a minimum score of 5 points out of 10 possible | | | |

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| **Date of completion** | **Course coordinator**  **(signature)** | **Coordinator of applied activities**  **(signature)** |
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| **Head of Department**  **(signature)** | **Date of approval in the Faculty Council [[16]](#footnote-17)** | **Dean**  **(signature)** |
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1. The name of the faculty which manages the educational curriculum to which the discipline belongs [↑](#footnote-ref-2)
2. The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs. [↑](#footnote-ref-3)
3. The code provided in HG - on the approval of the Nomenclature of fields and specializations / study programs, annually updated. [↑](#footnote-ref-4)
4. The educational classes of disciplines are: thoroughgoing study discipline (DA), advanced knowledge discipline (DCAV), synthesis discipline (DS) or complementary discipline (DC). [↑](#footnote-ref-5)
5. The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr). [↑](#footnote-ref-6)
6. The year of study to which the discipline is provided in the curriculum . [↑](#footnote-ref-7)
7. Discipline may have one of the following regimes: imposed discipline (DI) or compulsory discipline (DOb)-for the other fundamental fields of studies offered by UPT or optional discipline (DO). [↑](#footnote-ref-8)
8. Within UPT, the number of hours from 3.1\*, 3.2\*,…,3.9\* are obtained by multipling by 14 (weeks) the number of hours from 3.1, 3.2,…, 3.9. [↑](#footnote-ref-9)
9. The total number of hours/week is obtained by summing up the number of hours from 3.1, 3.4 şi 3.8. [↑](#footnote-ref-10)
10. At least one title must belong to the department staff teaching the discipline, and at least one title must refer to a relevant work for the discipline, a national and international work that can be found in the UPT Library. [↑](#footnote-ref-11)
11. The types of applied activities are those mentioned in 5. If the discipline containes more types of applied activities then they are marked, consecutively, in the table below. The type of activity will be marked distinctively under the form: „Seminar:”, „Laboratory:”, „Project:” and/or „Practice/Training:”. [↑](#footnote-ref-12)
12. At least one title must belong to the staff teaching the discipline. [↑](#footnote-ref-13)
13. The Syllabus must contain the evaluation method of the discipline, specifying the criteria, the metods and the forms of evaluation, as well as mentioning the share attached to these within the final mark. The evaluation criteria must correspond to all activities stipulated in the curriculum (course, seminar, laboratory, project), as well as to the methods of continuous assessment (homework, essays etc.) [↑](#footnote-ref-14)
14. Tc-R= Homework-Reports [↑](#footnote-ref-15)
15. For this point turn to “Ghid de completare a Fișei disciplinei” found at: <http://www.upt.ro/img/files/2018-2019/calitate/Ghid_de_completare_fisa_disciplinei.pdf> [↑](#footnote-ref-16)
16. The approval is preceeded by discussing the study program’s board’s point of view with redgards to the syllabus. [↑](#footnote-ref-17)