**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  |
| **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) | Aluminium Structures / DCAV  |
| **2.2** Coordinator (holder) of course activities |  Conf. dr. ing. Dogariu Adrian |
| **2.3** Coordinator (holder) of applied activities[[5]](#footnote-6) |  Conf. dr. ing. Dogariu Adrian |
| **2.4** Year of study[[6]](#footnote-7) |  2  | **2.5** Semester |  3  | **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 |  2  |
| **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 |  22 ,of which:  | course | 14  | seminar/laboratory/project |  8  |
| **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 |  6.71 ,of which:  | Additional documentation in the library, on specialized electronic platforms, and on the field | 1  |
| Study using a manual, course materials, bibliography and lecture notes |  3 |
| Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays | 2.71  |
| **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 |  14  |
| Study using a manual, course materials, bibliography and lecture notes |  42  |
| Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays | 38  |
| **3.5 Total hrs./week**[[9]](#footnote-10) |  10.71  |
| **3.5\* Total hrs./semester** | 150 |
| **3.6 No. of credits** |  6  |

**4. Prerequisites** (where applicable)

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| **4.1** Curriculum | *
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| **4.2** Competencies | *
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**5. Conditions** (where applicable)

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| **5.1** of the course | * Medium capacity room, video projector
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| **5.2** to conduct practical activities | * Medium capacity room, video projector, computers
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**6. Specific competencies** acquired through this discipline

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| Specific competencies | * Design of alluminum structures using methods of evaluating the strength according with dedicated european design norms SREN 1999-1-1 and SREN 1999-1-4
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| Professional competencies ascribed to the specific competencies | * ensure compliance with security legislation; provide instructions to staff; provide construction counseling; apply health and safety standards; draw sketches; utilize CAD software; manage engineering projects; draft technical reports; apply numerical computing skills; supervise personnel; evaluates the integrated design of buildings;
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| Transversal competencies ascribed to the specific competencies | * oversee quality control; apply scientific, technological, and engineering knowledge; work in teams; train others;
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**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 | * Constructions made of aluminum are currently one of the growing sectors of the construction industry. Using these materials involves solving different design problems that are not encountered in designing structures made from steel profiles. The course provides students with the necessary knowledge to address the problems encountered in using these materials and designing these types of structures
 |
| **7.2** Specific objectives | * Methods of assessing the strength of an aluminum structure according to SREN 1999-1-1 Design of aluminum structures will be analyzed. Part 1-1: General rules and SREN 1999-1-4 Design of aluminum structures. Part 1-4: Cold formed structures. Analytical methods based on regular formula calculations will be performed and presented. At the end of this course, students are expected to be able to recognize typical structures and their behavior under different loading conditions and design them by applying the appropriate regulations in the calculation rules
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**8. Content**

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| **8.1** Course | Number of hours | Of which online | Teaching methods |
| Introduction. Objective and scope of course. Fabrication proccess. Materials.Charactheristics of the Structural aluminum  |  2  |  Max 50%  |  lecturing, conversation, explication, demonstration  |
| Connecting devices. Bolts. Welding | 2  |   |
| Structural modelling for analysis and basic assumptions according with SREN 1999-1-1. | 2 |   |
| Cross-section class. Resistance of cross-sections. Tension. Bending. Compression. Bending and axial force  |  4  |   |
| Buckling resistance of members. Members in compression. Members in bending. Members in bending and axial compression  |  6  |   |
| Aluminium plates under in-plane loading. General  |  2  |   |
| Members with corrugated webs  | 4  |   |
| Basis of joints design. Welding. Bolts. Hybrid connection.Design assumption and formulas  | 4  |   |
| Fatique of aluminium strcutres. Basic concepts  |  2  |   |
|   |   |   |
|   |   |   |
|   |   |   |
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|   |   |   |
|  | * Bibliography[[10]](#footnote-11)

Burgan, B. (1993). Concise Guide to the Structural Design of Stainless Steel, The Steel Construction Institute, Ascot, UK.Eurocode 3: Proiectarea structurilor de oţel. Partea 1-4: Reguli generale – Reguli suplimentare pentru elemente structurale din oţeluri inoxidabile. iunie 2008.John Dwight: Aluminium Design and Construction. E & FN SPON. 1999.F.M. MAZZOLANI; Aluminium-Alloy Structures, 2nd Edition, E. and FN. Spon, London, 1995.EN 1999-1-1. Eurocode 9 - Design of aluminium structures - Part 1-1: General structural rules. 2007EN 1999-1-4. Eurocode 9 - Design of aluminium structures - Part 1-4: Cold-formed structural sheeting. February 2007; UK |
| **8.2** Applied activities[[11]](#footnote-12) | Number of hours | Of which online | Teaching methods |
| Cross-section class. Class 4 design procedures |  4 |  Max 30% | Explication, example |
| Axial-force capacity |  4 |   |
| Bending moment capacity |  4  |   |
| Transversal welds | 4  |   |
| Buckling design. Compression. Bending. Bending and axial compression  | 8  |   |   |
|  Design of joints  | 4  |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|  | Bibliography[[12]](#footnote-13) Burgan, B. (1993). Concise Guide to the Structural Design of Stainless Steel, The Steel Construction Institute, Ascot, UK.Eurocode 3: Proiectarea structurilor de oţel. Partea 1-4: Reguli generale – Reguli suplimentare pentru elemente structurale din oţeluri inoxidabile. iunie 2008.John Dwight: Aluminium Design and Construction. E & FN SPON. 1999.F.M. MAZZOLANI; Aluminium-Alloy Structures, 2nd Edition, E. and FN. Spon, London, 1995.EN 1999-1-1. Eurocode 9 - Design of aluminium structures - Part 1-1: General structural rules. 2007EN 1999-1-4. Eurocode 9 - Design of aluminium structures - Part 1-4: Cold-formed structural sheeting. February 2007, U.K. |

**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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| * Preparing and evaluating students in the specific field of advanced analysis of complex aluminum structures t
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**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 |  Theoretical subjects and applications from course content  |  Written examination | 50%  |
| **10.5** Applied activities  | **S:** Aplication solved according to EN | Presentation, attendance | 50%  |
|  | **L:**   |   |   |
|  | **P:**   |   |   |
|  | **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) |
| * All subjects should obtain a passing grade mark
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| **Date of completion** | **Course coordinator****(signature)** | **Coordinator of applied activities****(signature)** |
|  15.11.2024  |   |   |

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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)