

SYLLABUS ¹

1. Information about the program

1.1 Higher education institution	Politehnica University of Timisoara
1.2 Faculty ² / Department ³	Civil Engineering Faculty/ CMMC
1.3 Chair	—
1.4 Field of study (name/code ⁴)	Civil Engineering / 80
1.5 Study cycle	Bachelor
1.6 Study program (name/code/qualification)	Civil Engineering (in English)/ 10/ Engineer

2. Information about the discipline

2.1 Name of discipline/ formative category ⁵	Metal Construction 1 / DD						
2.2 Coordinator (holder) of course activities	Conf. dr. ing. Georgescu Mircea						
2.3 Coordinator (holder) of applied activities ⁶	S.I. dr. ing. Neagu Calin						
2.4 Year of study ⁷	3	2.5 Semester	5	2.6 Type of evaluation	E	2.7 Type of discipline ⁸	DI

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) ⁹

3.1 Number of fully assisted hours / week	5,0 of which:	3.2 course	2,5	3.3 seminar / laboratory / project	2,5
3.1* Total number of fully assisted hours / semester	70 of which:	3.2* course	35	3.3* seminar / laboratory / project	35
3.4 Number of hours partially assisted / week	of which:	3.5 training		3.6 hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	3.5* training		3.6* hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	3 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			1
		hours of individual study after manual, course support, bibliography and notes			1
		training seminars / laboratories, homework and papers, portfolios and essays			1
3.7* Number of hours of unassisted activities / semester	42 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			14
		hours of individual study after manual, course support, bibliography and notes			14
		training seminars / laboratories, homework and papers, portfolios and essays			14
3.8 Total hours / week ¹⁰	8				
3.8* Total hours /semester	112				
3.9 Number of credits	5				

4. Prerequisites (where applicable)

4.1 Curriculum	<ul style="list-style-type: none"> Basis of structural design, Structural Analysis 1, Mechanics of materials 1,2
4.2 Competencies	<ul style="list-style-type: none"> Knowledge on basic design principles

¹ The form corresponds to the Discipline File promoted by OMECTS 5703 / 18.12.2011 and to the requirements of the ARACIS Specific Standards valid from 01.10.2017.

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 The code provided in HG no.140 / 16.03.2017 or similar HGs updated annually shall be entered.

⁵ Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).

⁶ Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁷ Year of studies in which the discipline is provided in the curriculum.

⁸ Discipline may have one of the following regimes: imposed discipline (DI), optional discipline (DO) or optional discipline (Df).

⁹ The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.

¹⁰ The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none"> Lecture room. Beamer, screen, multimedia
5.2 to conduct practical activities	<ul style="list-style-type: none"> Computer room. Steel profile tables and text of Eurocode 3 part 1.1 and 1.8

6. Specific competencies acquired through this discipline

Specific competencies	<ul style="list-style-type: none"> Understand basics of steel structures behavior
Professional competencies ascribed to the specific competencies	<ul style="list-style-type: none"> Recognizing typical structures and structural elements, specific to the graduated study programme Design of structural elements in civil engineering, specific to graduated study programme
Transversal competencies ascribed to the specific competencies	<ul style="list-style-type: none"> Documentation in Romanian and foreign language, in view of professional and personal development, via continuous learning and efficient adaptation to the new technical specifications

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	<ul style="list-style-type: none"> To initiate the student in the use of steel as a material for construction
7.2 Specific objectives	<ul style="list-style-type: none"> Metallurgy, structure of the metal, imperfections, global analysis to EC.3, design principles, connections

8. Content¹¹

8.1 Course	Number of hours	Teaching methods ¹²
Advantages of steel. Metallurgy of steel and steel products	2,5	
Metal properties and standard tests of steel. Steel grades	2,5	
Corrosion protection of steel	2,5	
Fire protection of steel	2,5	
Imperfections of steel members. Physical and geometrical imperfections	2,5	
Global analysis of structures to Eurocode 3 Part 1.1. Imperfections role and implementing	5,0	
Plastic design. Plastic global analysis. Cross sections classification	2,5	
Resistance of cross-sections. Strength of class 1,2,3,4 sections. .Interaction cases	2,5	
Connections in steel structures. Welded connections. Technology of welds	2,5	
Connections in steel structures. Bolted connections. Technology of	2,5	

¹¹ It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".

¹² Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

bolts. HSFG bolts.		
Design of joints. Analysis, classification and modelling. Method of the components	2,5	
Design of joints. Global analysis. Structural joints connecting H or I sections. Resistance of joints. Rotational stiffness. Rotation capacity	2,5	
Hollow section joints. Design resistance of the welded joints using SHS, RHS or CHS profiles	2,5	
Bibliography ¹³ 1. Dowling P., Knowles P.R., Owens G.-"Structural Steel Design" The Steel construction Institute-(1988) –ISBN 0-408-03705-9 2. L.Simoes de Silva, R.Simoes, H.Gervasio-"Design of Steel Structures" –ECCS Eurocode Design Manuals, Ed. Ernst & Sohn, 2010 3. EN-1993-1-1: 2003. Eurocode 3: Design of steel structures. Part 1.-1: General rules and rules for buildings 4. EN 1993-1-8: Eurocode 3: Design of steel structures. Part 1-8: Design of joints		
8.2 Applied activities ¹⁴	Number of hours	Teaching methods
Presentation of the laboratory. Standard tests of steel (tensile, bending, toughness, hardness)	5,0	Tests in the laboratory, computer applications, technical drawings
Evaluation and implementing of member imperfections to EC.3	2,5	
Global analysis. Evaluation of structure elastic buckling critical load via SAP computer code	5,0	
Second order analysis	2,5	
Assessment of section class Cross-section resistance to tension and compression	2,5	
Cross-section resistance to bending and shear. Interaction cases	2,5	
Stability checking of steel members to EC.3. Simple cases	2,5	
Simple cases of bolted connections design to EC.3. Method of the components	7,5	
Simple cases of welded connection design to EC. 3	5,0	
Bibliography ¹⁵ 1. L.Simoes de Silva, R.Simoes, H.Gervasio-"Design of Steel Structures" –ECCS Eurocode Design Manuals, Ed. Ernst & Sohn, 2010 3. EN-1993-1-1: 2003. Eurocode 3: Design of steel structures. Part 1.-1: General rules and rules for buildings 4. EN 1993-1-8: Eurocode 3: Design of steel structures. Part 1-8: Design of joints		

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

<ul style="list-style-type: none"> The content of the discipline was discussed with practitioners in the field of steel design

10. Evaluation

Type of activity	10.1 Evaluation criteria ¹⁶	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Capacity to answer basic questions about steel	Theory test	40%
10.5 Applied activities	S:		
	L: Learning simple calculations in steel	Application test during exam	30%+presence
	P¹⁷:		
	Pr: Solving simple design problems	Application test during exam	30%

¹³ At least one title must belong to the discipline team and at least one title should refer to a reference work for discipline, national and international circulation, existing in the UPT library.

¹⁴ Types of application activities are those specified in footnote 5. If the discipline contains several types of applicative activities then they are sequentially in the lines of the table below. The type of activity will be in a distinct line as: "Seminar:", "Laboratory:", "Project:" and / or "Practice/training".

¹⁵ At least one title must belong to the discipline team.

¹⁶ Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)

¹⁷ In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified ¹⁸)

- Minimum mark 5 is required at all theory and application questions. Also 80% presence at applications required

Date of completion

25.01.2018

**Head of Department
(signature)**

.....

**Course coordinator
(signature)**

.....
**Date of approval in the Faculty
Council ¹⁹**

12.02.2018

**Coordinator of applied activities
(signature)**

.....
**Dean
(signature)**

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¹⁸ It will not explain how the promotion mark is awarded.

¹⁹ The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.