

SYLLABUS ¹

1. Information about the program

1.1 Higher education institution	Politehnica University Timisoara
1.2 Faculty ² / Department ³	Civil Engineering Faculty/ Department of Mathematics
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	MATHEMATICS III/ DF						
2.2 Coordinator (holder) of course activities	PhD. Assoc. Prof. Tudor BÎNZAR						
2.3 Coordinator (holder) of applied activities ⁶	PhD. Assoc. Prof. Tudor BÎNZAR						
2.4 Year of study ⁷	I	2.5 Semester	2	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	4 of which:	3.2 course	2	3.3 seminar / laboratory / project	2
3.1* Total number of fully assisted hours / semester	56 of which:	3.2* course	28	3.3* seminar / laboratory / project	28
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	2 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			0.5
		hours of individual study after manual, course support, bibliography and notes			1
		training seminars / laboratories, homework and papers, portfolios and essays			0.5
3.7* Number of hours of unassisted activities / semester	28 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			7
		hours of individual study after manual, course support, bibliography and notes			14
		training seminars / laboratories, homework and papers, portfolios and essays			7
3.8 Total hours / week ¹⁰	4				
3.8* Total hours /semester	84				
3.9 Number of credits	4				

4. Prerequisites (where applicable)

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.

4.1 Curriculum	<ul style="list-style-type: none"> College-level Mathematics; Calculus, Linear Algebra and Coordinate Geometry
4.2 Competencies	<ul style="list-style-type: none">

5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none">
5.2 to conduct practical activities	<ul style="list-style-type: none">

6. Specific competencies acquired through this discipline

Specific competencies	<ul style="list-style-type: none"> Learn basic concepts of integral calculus and master the basic concepts and skills to use later in the career
Professional competencies ascribed to the specific competencies	<ul style="list-style-type: none"> Design of structural elements in civil engineering, specific to graduated study programme Technological and economical design for the erection, operation and maintenance works in civil engineering, specific to graduated study programme Organization and management of the execution, operation and maintenance procedures for civil, industrial and agricultural constructions
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"> The goal of this course is to introduce basic concepts of integral calculus of the functions of one and real several variables and differential equations
7.2 Specific objectives	<ul style="list-style-type: none"> The main goal of the course is to help students master the basic concepts and skills they use later in their careers

8. Content ¹¹

8.1 Course	Number of hours	Teaching methods ¹²
Integrals of functions of one variable	5	Disquisition, lecture, dialog, explanation, example
Multiple integrals: Double and triple integrals	5	
Line integrals	6	
Surface integrals	3	
Integral formulas	3	
Differential equations	6	
Bibliography ¹³		
1. S. A. Popescu, Mathematical Analysis II, Integral Calculus, Conspress Bucharest 2011		
2. T Bânzaru, T. Bînzar, Integral Calculus and Differential Equations, Theory and Applications, Politehnica Publishers, Timișoara 2005		
8.2 Applied activities ¹⁴	Number of hours	Teaching methods
<i>Improper integrals. Integrals dependent on parameters</i>	6	Solving problems,
<i>Double integrals. Triple integrals. Change of variables in</i>	6	

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.).

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".

<i>double and triple integrals</i>		explanation, example,
<i>Line integrals of the first and the second type. Line integrals of the second type independent of path. Green's formula</i>	4	conversation, homework
<i>Surface integrals of the first and second type. Gauss-Ostrogradski's formula</i>	3	
<i>The divergence integral formula. The curl integral formula. The gradient integral formula. Stokes' integral formula</i>	3	
<i>Differential equations of the first order. Higher order linear differential equations</i>	6	
Bibliography ¹⁵		
1. T. Bînzaru, C. Lăzureanu, Probleme de calcul integral și ecuații diferențiale (in romanian), Editura Politehnica, Timișoara 2011		
2. T Bânzaru, T. Bînzaru, Integral Calculus and Differential Equations, Theory and Applications, Politehnica Publishers, Timișoara 2005		

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

- Understanding the correct use of mathematical and engineering sciences is essential.
- Discipline creates special mathematical skills of students on which they will be able to meet the requirements of the labor market in various areas or to continue research in the higher stages of study

10. Evaluation

Type of activity	10.1 Evaluation criteria ¹⁶	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Four problems	Written Exam	50%
10.5 Applied activities	S: Two problems for each test	Written tests and oral examination	50%
	L: - -		
	P¹⁷: --		
	Pr: --		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified ¹⁸)			
<ul style="list-style-type: none"> • 50% 			

Date of completion

20.01.2018

Course coordinator
(signature)



Coordinator of applied activities
(signature)



Head of Department
(signature)



Date of approval in the Faculty
Council ¹⁹

12.02.2018

Dean
(signature)

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.

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.

