



MINISTERUL EDUCAȚIEI



UNIVERSITATEA “OVIDIUS” DIN CONSTANȚA

ȘCOALA DOCTORALĂ DE MATEMATICĂ

PLAN DE ÎNVĂȚĂMÂNT

(conține 7 pagini)

Domeniul de doctorat: **Matematică**
Ciclul de studii: **III**
Programul de studii: **Studii universitare de doctorat**
Durata studiilor: **3 ani**
Forma de învățământ: **cu frecvență (IF); frecvență redusă (FR)**

Valabil începând cu anul universitar 2021 – 2022



1. THE MISSION OF THE STUDY PROGRAMME

Ovidius University of Constanta (OUC) has the mission to produce, maintain and distribute knowledge to the society through education, scientific research and artistic works at the EU levels. OUC is first concerned with Constanta town, but it has an important impact in the Black Sea area, in Europe and beyond it. Inside OUC the Faculty of Mathematics and Informatics (FMI) is a stable and strong structure, with teachers of a high scientific level, a good teaching schedule and having a top position among romanian universities. Through its mission, which follows the OUC one, FMI obtained and mentained at a top level the Bachelor and Master programmes in Mathematics and Informatics. In parallel was founded also the Doctoral School in Mathematics, according OM 7187/1992, OM 1805/2007 and HG 778/2015. According to its mission Doctoral School in Mathematics is developing highly qualified specialists for scientific research, who get the PhD degree after defending the PhD Thesis. The main objective of Doctoral School in Mathematics is to prepare top level scientists who can produce new and important results in different subdomains of Mathematics as well as in inter and/or transdisciplinary areas. Both in the University Advanced Studies step (first year of the PhD programme) and Scientific Research step (years 2 and 3 of the PhD programme) the PhD students get top level professional skills in the subdomains of Mathematics covered by the PhD advisors of the School: Numerical Analysis, Functional Analysis, Probabilities and Statistics, Solid Mechanics and Algebra, as well as cross-cutting skills.

A. Professional skills:

- a) an advanced knowledge in the (sub)domains of the PhD programme;
- b) identification and solution of the appropriate research problems;
- c) top level methods in advanced scientific research;
- d) the management of research projects;
- e) learning the principles of ethics in the scientific research;
- f) skills for writting scientific papers;

B. Cross-cutting skills:

- a) using the new technologies in information and communication;
- b) working in a research team;
- c) skills for leading professional and research teams;
- d) knowledge on plagiarism and copyright principles.



2. QUALIFICATION, OPPORTUNITIES FOR THE INCLUSION IN THE LABOR MARKET (ACCORDING TO COR 2017)

Leader in the domain of research and/or development (1223), Leader in different level teaching institutions (1345), Researcher in Mathematics (212015), Researcher in Mechanics (212017), Researcher in matematica aplicata (212019), Researcher in Mathematical Physics (212021), Researcher in Mathematical Informatics (212023), 2330 Teachers in gymnasiums and high schools (2330), University teachers (2310)

3. ADMISSION

The admission colloquium at the PhD programme is held in the month of September, following a schedule approved by the OUC Senate. It consists on two challenges: an interview and an oral discussion upon a scientific subject proposed by the candidate according with the topics of the DSM.

4. EDUCATION QUALIFICATION

PhD diploma



PLAN DE ÎNVĂȚĂMÂNT

Programme of university advanced studies

Nr. crt.	Course ID	*C1	**C2	Courses		Number of hours per course												Total	Course	Appli- cations
						First semester						Second semester								
					SI	C	S	L	P	F.V.	CR	SI	C	S	L	P	F.V.			
				MODULE 1 – Functional Analysis																
1.	SDM31	DSP	DI	Special chapters of Functional Analysis I	126	2				E	6							24	24	
2.	SDM32	DSP	DI	Special chapters of Functional Analysis II	126	2				E	6							24	24	
3.	SDM33	DSP	DO	Special chapters of Integration Theory	126	2				C	6							24	24	
4.	SDM34	DSI	DC,DO	Methodology of scientific research																
5.	SDM35	DSP	DI	Bochner, Dunford and Pettis integrals	126	2				E	6							24	24	
6.	SDM36	DSI	DC,DI	Ethics and academic integrity	126	2				E	6							24	24	
				Hours per week / number of verification procedures / ECTS	630	10				4e+1c	30							120	120	
				MODULE 2 – Functional Analysis																
7.	SDM41	DSP	DI	Summable operators and their applications	126	2				E	6							24	24	
8.	SDM42	DSP	DI	Multilinear summable operators and their applications	126	2				E	6							24	24	
9.	SDM43	DSP	DO	Geometric properties in Functional Analysis	126	2				C	6							24	24	
10.	SDM44	DSI	DC,DO	Methodology of scientific research	126															
11.	SDM45	DSP	DI	Hardy, Schur and Hilbert inequalities	126	2				E	6							24	24	
12.	SDM46	DSI	DC,DI	Ethics and academic integrity	126	2				E	6							24	24	
				Hours per week / number of verification procedures / ECTS	630	10				4e+1c	30							120	120	



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				MODULE 3 – Probabilities and Mathematical Statistics																
13.	SDM51	DSP	DI	Elements of Probability theory elements	126	2				E	6								24	24
14.	SDM52	DSP	DI	Risc models	126	2				E	6								24	24
15.	SDM53	DSI	DC,DO	Methodology of scientific research	126	2				C	6								24	24
16.	SDM54	DSP	DO	Special chapters of Actuarial and Financial Mathematics	126															
17.	SDM55	DSP	DI	Special chapters of Mathematical Statistics	126	2				E	6								24	24
18.	SDM56	DSI	DC,DI	Ethics and academic integrity	126	2				E	6								24	24
				Hours per week / number of verification procedures / ECTS	630	10				4e+1c	30								120	120
				MODULE 4 – Solid Mechanics																
19.	SDM61	DSP	DI	Mathematical modeling of composite materials									2				E	6	24	24
20.	SDM62	DSP	DI	Integral transformations									2				E	6	24	24
21.	SDM63	DSP	DC,DO	Methodology of scientific research									2				C	6	24	24
22.	SDM64	DSI	DO	Numerical analysis of elastic bodies with cracks																
23.	SDM65	DSP	DI	Chapters of partial differential equations									2				E	6	24	24
24.	SDM66	DSI	DC,DI	Ethics and academic integrity	126	2				E	6								24	24
				Hours per week / number of verification procedures / ECTS	126	2				1e	6	504	8				3e+1c	24	120	120
				MODULE 5 - Algebra																
25.	SDM71	DSP	DI	Fundamental Algebraic Structures									2				E	6	24	24
26.	SDM72	DSP	DI	Special classes of algebras. Applications									2				E	6	24	24
27.	SDM73	DSP	DO	Introduction in Cryptography									2				C	6	24	24
28.	SDM74	DSI	DC,DO	Methodology of scientific research																



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29.	SDM75	DSP	DI	Introducing in Coding Theory								2				E	6	24	24	
30.	SDM76	DSI	DC,DI	Ethics and academic integrity	126	2				E	6							24	24	
				Hours per week / number of verification procedures / ECTS	126	2				1e	6	504	8			3e+1c	24	120	120	
				MODULE 6 – Algebra																
31.	SDM81	DSP	DI	Fundamental Algebraic Structures									2			E	6	24	24	
32.	SDM82	DSP	DI	Special classes of algebras. Applications									2			E	6	24	24	
33.	SDM83	DSP	DO	Representation Theorems of Cassels and Pfister types									2			C	6	24	24	
34.	SDM84	DSI	DC,DO	Methodology of scientific research																
35.	SDM85	DSP	DI	Quadratic forms over fields									2			E	6	24	24	
36.	SDM86	DSI	DC,DI	Ethics and academic integrity	126	2				E	6							24	24	
				Hours per week / number of verification procedures / ECTS	126	2				1e	6	504	8			3e+1c	24	120	120	
				MODULE 7 – Differential equations																
37.	SDM91	DSP	DI	Partial differential equations	126	2				E	6							24	24	
38.	SDM92	DSP	DI	Maximum principles and their applications	126	2				E	6							24	24	
39.	SDM93	DSI	DC,DO	Methodology of scientific research	126	2				C	6							24	24	
40.	SDM94	DSP	DO	Functional Analysis	126															
41.	SDM95	DSP	DI	Evolution Equations in Hilbert Spaces	126	2				E								24	24	
42.	SDM96	DSI	DC,DI	Ethics and academic integrity	126	2				E	6							24	24	
				Hours per week / number of verification procedures / ECTS	630	10				4e+1c	30							120	120	

LEGENDA: *C1 = the criterion of contents: DSP – speciality course, DSI – synthesis course, DCA – fundamental course.

**C2 = the criterion of binding: DI – mandatory course, DO – optional (non-mandatory) course; DC – complementary course,

SI – individual study, C – lecture, S – seminar, L – laboratory, P – project, CR – ECTS, FV – verification procedure, Ex - exam, C – colloquium.

Note. The students will select 4 mandatory courses, among them being “Ethics and academic integrity” and 1 optional (non-mandatory) course.

Rector,
Conf.univ.dr. Dan Marcel Iliescu

Director CSUD,
Prof.univ.dr. Monica Vlad

Director Școala doctorală,
Prof.univ.dr. Eduard Marius Crăciun



PROGRAMME OF SCIENTIFIC RESEARCH

	Nr.	Finalizare	ECTS
Project of scientific research	1	Colloquium	30
Report of scientific research defended in front of the PhD supervisor and Commission	3	Colloquium	20/report
Participation at conferences, PhD thesis presentations, conferences of invited speakers (non-mandatory)		Certificate of participation	2/participation
Scientific papers related to the research activity in the scientific research programme	2	At least accepted for publication	30/paper
ECTS (partial)			150
ECTS (total)			180

5. SPECIFIC CONSTRAINTS FOR ACCESS / ADMISSION, PROMOTION, EQUIVALENCE OF UNIVERSITY ADVANCED STUDIES PROGRAMME, etc.

The promotion of PhD students on the Programme of Scientific Research is made upon acceptance of the Project of scientific research defended in front of the PhD supervisor and Commission. The equivalence of University Advanced Studies programme followed in a different institution is made upon the analysis of the corresponding teaching plan and is approved by the Council of the Doctoral School of Mathematics.

6. DEFENDING THE PhD THESIS

This is made according to „Regulamentul de finalizare a studiilor universitare de doctorat”, articles 28, 29, 30.

7. POSSIBILITIES TO CONTINUE THE PhD STUDIES

By postdoc studies in the same institution or a different one.