

MINISTERUL EDUCAȚIEI ȘI CERCETĂRII



UNIVERSITATEA „OVIDIUS” DIN CONSTANȚA

ȘCOALA DOCTORALĂ DE MATEMATICĂ

PLAN DE ÎNVĂȚĂMÂNT limba engleză

(conține *10* pagini)

Domeniul de doctorat:	Matematică
Ciclul de studii:	III
Programul de studii:	Studii universitare de doctorat
Durata studiilor:	4 ani
Forma de învățământ:	cu frecvență (IF); frecvență redusă (FR)

Valabil începând cu ANUL UNIVERSITAR **2025 – 2026**



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Aleea Universității, nr.1, Campus, Corp A, cod 900470 Constanța, România
Tel./Fax: +4 0241 606.407 / +4 0241 606.467
E-mail: rectorat@univ-ovidius.ro - Web page: www.univ-ovidius.ro

Universitatea Ovidius din Constanța (IOSUD)
Școala doctorală de Matematică

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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;

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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 professors (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 Doctoral School of Mathematics.

4. CERTIFICAREA STUDIILOR

Certification of studies is done with a doctor's degree in Mathematics (Level 8 – CNC).

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PLAN DE ÎNVĂȚĂMÂNT

Programme of university advanced studies

MODULE 1–Probability and stochastic processes

Nr. crt.	Course ID	*C1	**C2	Courses	First semester (14 weeks)								Second semester (14 weeks)								Nr. hours per course		
					SI	C	S	L	P	FV	CR	SI	C	S	L	P	FV	CR	Total	Course	Aplic.		
Compulsory courses																							
1.	SDMate 1.1.01	DSI	DOB	Scientific Writing	97	2				Ex	5								28	28			
2.	SDMate 1.1.02	DSI	DOB	Ethics and academic integrity	97	2				Ex	5								28	28			
Optional courses																							
3.	SDMate 1.1.03	DAP	DOP	Measure theory and applications	97	2				C	5								28	28			
4.	SDMate 1.1.04	DCA	DOP	Special classes of stochastic processes	97	2				Ex	5								28	28			
5.	SDMate 1.1.05	DAP	DOP	Dynamical systems and applications Methodology of scientific research	97	2				Ex	5								28	28			
6.	SDMate 1.1.06	DCA	DOP	Ergodic theory and applications	97	2				Ex	5								28	28			
Total hours					582	12				5Ex+1C	30								168	168			
Total hours per week/Total number of verification forms/Total number of credits					60 SI+12 C						6	30	60 SI				0	0					

MODULE 2 - Probabilities and mathematical statistics

Nr. crt.	Course ID	*C1	**C2	Courses	First semester (14 weeks)							Second semester (14 weeks)							Nr. hours per course		
					SI	C	S	L	P	FV	CR	SI	C	S	L	P	FV	CR	Total	Course	Aplic.
Compulsory courses																					
1	SDMate 1.1.01	DSI	DOB	Scientific Writing	97	2				Ex	5								28	28	
2	SDMate 1.1.02	DSI	DOB	Ethics and academic integrity	97	2				Ex	5								28	28	

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Optional courses																			
7.	SDMate 1.1.07	DAP	DOP	Elements of Probability theory	97	2				C	5							28	28
8.	SDMate 1.1.08	DCA	DOP	Risc models	97	2				Ex	5							28	28
9.	SDMate 1.1.09	DAP	DOP	Special chapters of actuarial and financial mathematics Methodology of scientific research	97	2				Ex	5							28	28
10.	SDMate 1.1.10	DCA	DOP	Special chapters of Mathematical statistics	97	2				Ex	5							28	28
Total hours					582	12				5Ex+1C	30							168	168
Total hours per week/Total number of verification forms/Total number of credits					60 SI+12 C					6	30	60 SI					0	0	

MODULE 3 – Algebra

Nr. crt.	Course ID	*C1	**C2	Courses	First semester (14 weeks)							Second semester (14 weeks)							Nr. hours per course		
					SI	C	S	L	P	FV	CR	SI	C	S	L	P	FV	CR	Total	Course	Aplic.
Compulsory courses																					
1	SDMate 1.1.01	DSI	DOB	Scientific Writing	97	2				Ex	5							28	28		
2	SDMate 1.1.02	DSI	DOB	Ethics and academic integrity	97	2				Ex	5							28	28		
Optional courses																					
11.	SDMate 1.2.11	DAP	DOP	Fundamental Algebraic Structures								97	2				Ex	5	28	28	
12.	SDMate 1.2.12	DCA	DOP	Special classes of algebras. Applications								97	2				Ex	5	28	28	
13.	SDMate 1.1.13	DAP	DOP	Introduction in Cryptography Methodology of scientific research								97	2				C	5	28	28	
14.	SDMate 1.1.14	DCA	DOP	Elements of Coding theory								97	2				Ex	5	28	28	
Total hours					194	4				2E	30	388	8				3Ex+1C		168	168	
Total hours per week/Total number of verification forms/Total number of credits					60 SI+4C					2	10	60 SI+8 C					4	20			

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MODULE 4 - Differential equations

Nr. crt.	Course ID	*C1	**C2	Courses	First semester (14 weeks)							Second semester (14 weeks)							Nr. hours per course		
					SI	C	S	L	P	FV	CR	SI	C	S	L	P	FV	CR	Total	Course	Aplic.
Compulsory courses																					
1	SDMate 1.1.01	DSI	DOB	Scientific Writing	97	2				Ex	5							28	28		
2	SDMate 1.1.02	DSI	DOB	Ethics and academic integrity	97	2				Ex	5							28	28		
Optional courses																					
15.	SDMate 1.1.15	DAP	DOP	Partial differential equations	97	2				Ex	5							28	28		
16.	SDMate 1.1.16	DCA	DOP	Maximum principles and their applications	97	2				Ex	5							28	28		
17.	SDMate 1.1.17	DAP	DOP	Functional Analysis Methodology of scientific research	97	2				C	5							28	28		
18.	SDMate 1.1.18	DCA	DOP	Evolution equations in Hilbert spaces	97	2				Ex	5							28	28		
Total hours					582	12				5Ex+1C	30							168	168		
Total hours per week/Total number of verification forms/Total number of credits					60 SI+12 C					6	30	60 SI					0	0			

MODULE 5 – Solid mechanics

Nr. crt.	Course ID	*C1	**C2	Courses	First semester (14 weeks)							Second semester (14 weeks)							Nr. hours per course		
					SI	C	S	L	P	FV	CR	SI	C	S	L	P	FV	CR	Total	Course	Aplic.
Compulsory courses																					
1	SDMate 1.1.01	DSI	DOB	Scientific Writing	97	2				Ex	5							28	28		
2	SDMate 1.1.02	DSI	DOB	Ethics and academic integrity	97	2				Ex	5							28	28		
Optional courses																					
19.	SDMate 1.2.19	DAP	DOP	Mathematical modeling of composite materials								97	2				Ex	5	28	28	
20.	SDMate 1.2.20	DCA	DOP	Integral transformations								97	2				Ex	5	28	28	
21.	SDMate 1.2.21	DAP	DOP	Numerical analysis of elastic bodies with cracks Methodology of scientific research								97	2				C	5	28	28	
22.	SDMate 1.2.22	DCA	DOP	Chapters of partial differential equations								97	2				Ex	5	28	28	
Total hours					194	4				2Ex	30	388	8				3E+1C		168	168	
Total hours per week/Total number of verification forms/Total number of credits					60 SI+4C					2	10	60 SI+8 C					4	20			

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PROGRAMUL DE CERCETARE ȘTIINȚIFICĂ

	Nr.	Finalizare	ECTS
Project of scientific research	1	Colloquium	30
Report of scientific research defended in front of the PhD supervisor and Comission	3	Colloquium	20/report
Participation at international conferences	2	Certificate of participation	15/participation
Scientific qouted ISI papers with AIS related to the research activity in the scientific research programme	1	Published	60/paper
Scientific qouted ISI papers with WOS related to the research activity in the scientific research programme	1	Published	30/paper
ECTS / Programme of scientific research			210
ECTS (total)			240

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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.”

5. LEARNING OUTCOMES

Nr crt.	LEARNING OUTCOMES			Course ID-Learning outcomes
	Knowledge	Skills	Responsibility and autonomy	
	RÎ1 - The Ph.D student uses advanced principles and methods to explain and interpret, from multiple perspectives, new and complex theoretical and practical situations/problems, specific to the field of Mathematics.	RÎ7 - The Ph.D student creatively identify, formulate and solve research problems.	RÎ11 - has an ethical and responsible attitude in using the domain of Mathematics.	SDMate 1.1.01 – <i>RÎ1, RÎ2, RÎ7</i> SDMate 1.1.02 – <i>RÎ2, RÎ8, RÎ9, RÎ10</i> SDMate 1.1.03 – <i>RÎ3, RÎ8, RÎ7, RÎ9, RÎ13</i> SDMate 1.1.04 – <i>RÎ4, RÎ6, RÎ7, RÎ11, RÎ14</i> SDMate 1.1.05 – <i>RÎ1, RÎ2, RÎ5, RÎ7</i> , SDMate 1.1.06 – <i>RÎ6, RÎ7, RÎ11</i>

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RÎ2 - The Ph.D student knows and uses the methodology of scientific research in the investigation and solution of the problem analyzed and in the elaboration and valorization of scientific works.	RÎ8 - The Ph.D student independently discovers abstract relationships between elements, situations and investigated phenomena.	RÎ12 - The Ph.D student develops projects centered on creativity, as the basis of self-realization.	SDMate 1.1.07– <i>RÎ1, RÎ2, RÎ</i> , SDMate 1.1.08– <i>RÎ2, RÎ8, RÎ9</i> SDMate 1.1.09– <i>RÎ3, RÎ8, RÎ7, RÎ9, RÎ13</i> SDMate 1.1.10– <i>RÎ4, RÎ6, RÎ7, RÎ11</i> SDMate 1.2.11– <i>RÎ3, RÎ8, RÎ7, RÎ9, RÎ13</i> SDMate 1.2.12– <i>RÎ4, RÎ7, RÎ11, RÎ14</i> SDMate 1.2.13– <i>RÎ4, RÎ6, RÎ7, RÎ11, , RÎ14</i> SDMate 1.2.14– <i>RÎ3, RÎ8, RÎ7, RÎ9, RÎ13</i> SDMate 1.1.15– <i>RÎ2, RÎ8, RÎ9, RÎ10</i> SDMate 1.1.16– <i>RÎ2, RÎ10</i> SDMate 1.1.17– <i>RÎ4, RÎ7</i> SDMate 1.1.18– <i>RÎ2, RÎ8, RÎ9, RÎ10</i> SDMate 1.2.19– <i>RÎ3, RÎ8, RÎ7, RÎ9, RÎ13, RÎ14</i> SDMate 1.2.20– <i>RÎ4, RÎ7, RÎ11, RÎ10, RÎ14</i> SDMate 1.2.21– <i>RÎ3, RÎ8, RÎ7, RÎ9, RÎ10RÎ13</i> SDMate 1.2.22– <i>RÎ2, RÎ8, RÎ9, RÎ10, RÎ13</i>
RÎ3 - The Ph.D student knows at least one foreign language of international circulation at an academic level, necessary for the documentation and elaboration of scientific works, including to express and formulate ideas in multicultural and multilingual contexts.	RÎ9 - The Ph.D student apply knowledge of research project management.	RÎ13 - The Ph.D student critically analyze the ontological presuppositions of scientific theories regarding the domain of Mathematics.	
RÎ4 - The Ph.D student has knowledge of critical thinking, including the ability to analyse, interpret or formulate reasoning in different contexts.	RÎ10 - The Ph.D student can process and process data at an advanced level, including by using dedicated software, depending on the field.	RÎ14 - The Ph.D student has interpersonal and teamwork skills, the ability to innovate and master the concepts of economic, technological and social entrepreneurship	
RÎ5 - The Ph.D student has knowledge of career management, as well as mastering the techniques of searching for a job and creating jobs for others..			

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	RÎ6 - The Ph.D student has knowledge of the use of legislation in the field of intellectual property rights.			
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6. POSSIBILITIES TO CONTINUE THE PhD STUDIES

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

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