



*FIRST CYCLE*  
*INTERDISCIPLINARY UNIVERSITY STUDY PROGRAMME*  
*COMPUTER SCIENCE AND MATHEMATICS*

*HANDBOOK*

*for students enrolled for the first time in the first year in the 2025/2026 academic year*

*Ljubljana, 2025*

## INFORMATION ABOUT THE STUDY PROGRAMME COMPUTER SCIENCE AND MATHEMATICS

### *Main objectives of the programme*

*The objectives of the programme cover the acquisition of skills to develop and work with new information technologies, to conduct research in the fields of mathematics and theoretical computing, and the skills to rapidly assimilate new knowledge in the fields of computer science and information technology and in related fields of mathematics.*

### *General competences*

*General competences of a graduate acquired through the programme:*

- the ability to use abstraction and analyse problems,*
- the ability to synthesise and critically assess solutions,*
- the ability to apply knowledge in practice,*
- the ability to transfer knowledge and professional communication and writing skills,*
- the ability to search sources and critically analyse information,*
- the ability to undertake autonomous professional work and work in an (international) group,*
- develop professional responsibility and ethics.*

### *Subject-specific competences*

*Subject-specific competences of a graduate acquired through the programme:*

- fundamental skills in the field of theoretical computing, logic and discrete mathematics covering basic and advanced theoretical knowledge, practical knowledge and skills essential for both the computer science and mathematics fields,*
- translate practical problems into the language of mathematics and theoretical computer science and qualitatively analyse the mathematical problems obtained in this way,*
- create algorithms to solve problems and implement developed algorithms in relevant programming environments,*
- analyse and present results,*
- understanding of computer science and information science content and integrating it into other professionally relevant fields (economics, financial mathematics, organisational science, etc.),*
- practical knowledge and skills in the use of software, hardware and information technologies,*
- first-cycle graduates are capable of independently performing less complex and complex developmental engineering and organisational tasks in their own fields,*
- basic competences in the field of computer science and mathematics that enable the continuation of studies in the second cycle.*

### *Admission requirements*

*Enrolment in the programme is open to students who:*

- a) have passed the general school-leaving examination (matura),*
- b) have passed the vocational matura in any four-year secondary school programme and an examination in the matura subject of Mathematics; if the candidate has already passed this subject in the vocational matura, an examination in any other matura subject; the optional subject may not be a subject which the candidate has already taken in the vocational matura,*
- c) have completed an academic secondary programme (gimnazija) or any four-year secondary school programme before 1 June 1995.*

### *Selection criteria for limited enrolment*

*If enrolment is limited, candidates referred to in points*

*a) and c) will be selected based on:*

- overall grades in the general matura or school-leaving exam, 60% of points,*

- GPA in years 3 and 4 of secondary school, 20% of points,
- grades in mathematics in years 3 and 4 of secondary school, 20% of points;

b) will be selected depending on:

- overall grades in the vocational matura, 30% of points,
- grade in one matura exam subject, 30% of points,
- GPA in years 3 and 4 of secondary school, 20% of points,
- grades in mathematics in years 3 and 4 of secondary school, 20% of points.

#### *Criteria for recognising knowledge and skills acquired prior to enrolment*

The study programme enables the recognition of relevant knowledge acquired through non-formal or experiential learning. This knowledge can be recognised as part of the completed study requirements, generally at up to 6 ECTS for knowledge acquired outside the university. Formally acquired knowledge is recognised such that comparable study content of a programme is recognised at the level of ECTS ascribed to the acquired knowledge. In the recognition process certificates and other documents are taken into account.

#### *Assessment methods*

The methods of assessment comply with the [UL Statutes](#) and are set out in the curriculums.

#### *Requirements for progression through the course*

*Requirements for progressing to a higher year.*

*Students who have completed course units consisting of 53 credit points may enrol in the second year.*

*Students who have completed all the requirements of the first year and course units consisting of 53 credits in the second year may enrol in the third year.*

#### *Requirements for retaking a year*

*To retake a year, students must complete the following:*

- a) at least half of the requirements from the study programme of that year (30 ECTS),*
- b) all exams from the years before.*

*Students can only retake a year once in their course of study; changing programme is also considered retaking a year, because of the uncompleted requirements of the previous study programme.*

#### *Requirements for transferring between programmes*

*In accordance with the Criteria for Transferring between Programmes, transferring is possible from study programmes which upon completion guarantee similar competences and which enable the recognition of at least half of the obligations based on the European Credit Transfer System (ECTS) from the first study programme relating to compulsory subjects of the second study programme. Transferring from other programmes is possible after the first year of study. Conditions for transfer to the interdisciplinary first-cycle academic study programme Computer Science and Mathematics from another programme:*

- *completed requirements for enrolment in the programme,*
- *the relevant authority of participating faculties defines, on the basis of a comparison of programmes, the requirements to be recognised and the year in which the candidate can enrol, and consequently issues a decision. Transferring to other programmes is possible on the basis of the provisions applicable to such programmes.*

#### *Transfer from other programmes at the Faculty of Computer and Information Science*

*Transfer to the programme is possible after the first and second years of study at FRI.*

*Transfer is possible after the first year if in the programme Computer and Information Science (UN) candidates have completed the following subjects: Programming 1, Basics of Mathematical Analysis, Discrete Structures, Basics of Digital Circuits, Programming 2, Linear Algebra, Computer Communications*

*and Architecture of Computer Systems. Candidates must also within one year pass the exams in Analysis 2 and Discrete Structures 2 in the Computer Science and Mathematics programme.*

*After the second year transfer is possible if in the programme Computer and Information Science (UN) candidates have completed all the stated subjects from the first year and joint subjects from the second year (Algorithms and Data Structures 1 and 2, Basics of Databases, Computability and Computational Complexity and Principles of Programme Languages) in the programme Computer Science and Mathematics (UN). Candidates must also within one year pass the exams in Analysis 3, Combinatorics and Optimisation Methods in the Computer Science and Mathematics (UN) programme.*

*Transfer from programmes at the Faculty of Mathematics and Physics*

*Transfer to the programme is possible after the first and second years of study at FMF.*

*Transfer is possible after the first year if in the programme Mathematics (UN) candidates have completed the subjects Analysis 1, Algebra 1, Logic and Sets, Introduction to Programming and Computer practical classes. Candidates must also within one year pass the exams in Discrete Structures 2, Basics of Digital Circuits and Architecture of Computer Systems in the Computer Science and Mathematics (UN) programme.*

*After the second year transfer is possible if in the programme Mathematics (UN) candidates have completed all the stated subjects from the first year and the subjects Analysis 2a and 2b (or Analysis 2), Programming 1, Programming 2 and Discrete Mathematics 1. Candidates must also within one year pass the exams in Algorithms and Data Structures 1 and 2, Optimisation Methods, Principles of Programme Languages, Basics of Databases, Computability and Computational Complexity and Computer Communications in the Computer Science and Mathematics (UN) programme.*

*Requirements for completing the study programme*

*The requirements for completion of the proposed programme are the passing of all exams and other requirements, including the diploma seminar, in a total of 180 ECTS.*

*Requirements for completing individual parts of the programme if the programme contains them*

*The study programme contains no parts that can be completed individually. The programme is integral.*

*Professional or academic title*

- Bachelor of Science

*Professional or academic title (abbreviated)*

- B. Sc.

## STUDY PROGRAMME CURRICULUM COMPUTER SCIENCE AND MATHEMATICS

2025/2026

Name of study programme	Computer science and mathematics
Programme characteristics	interdisciplinary
Type	academic
Cycle	bachelor
University of Ljubljana members	<ul style="list-style-type: none"> <li>• Faculty of Mathematics and Physics, Jadranska ulica 19, 1000 Ljubljana, Slovenija</li> <li>• Faculty of Computer and Information Science, Večna pot 113, 1000 Ljubljana, Slovenija - coordinator</li> </ul>

Year 1

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039511	Analysis 1	Janez Mrčun, Oliver Dragičević, Sašo Strle	45		45			120	210	7	1st semester	no
2.	0039514	Discrete Structures 1	Primož Potočnik, Riste Škrekovski	45		45			90	180	6	1st semester	no
3.	0039580	Introduction to Digital Circuits	Nikolaj Zimic	45		30			105	180	6	1st semester	no

4.	0153574	Programming 1	Luka Fürst	45		30			105	180	6	1st semester	no
5.	0039516	Linear algebra	David Dolžan, Jakob Cimprič, Klemen Šivic	60		60			180	300	10	All-year	no
6.	0039512	Analysis 2	Barbara Drinovec Drnovšek, Janez Mrčun, Sašo Strle	45		45			120	210	7	2nd semester	no
7.	0039515	Discrete Structures 2	Primož Potočnik, Riste Škrekovski, Sandi Klavžar	45		45			90	180	6	2nd semester	no
8.	0039584	Programming 2	Boštjan Sliunik	45		30			105	180	6	2nd semester	no
9.	0039576	Computer Systems Architecture	Branko Šter	45		30			105	180	6	2nd semester	no
Total				420	0	360	0	0	1020	1800	60		

## Year 2

				Contact hours									
University Course Code	Course title	Lecturers		Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039522	Analysis 3	Aleš Vaupetič, Barbara Drinovec	30		30			90	150	5	1st semester	no

			<i>Drnoušek, Paule Saksida</i>										
2.	0039525	<i>Combinatorics</i>	<i>Matjaž Konvalinka, Primož Potočnik, Sandi Klavžar</i>	45		45			120	210	7	<i>1st semester</i>	<i>no</i>
3.	0039586	<i>Algorithms and data structures 1</i>	<i>Tomaž Hočevar</i>	45		30			105	180	6	<i>1st semester</i>	<i>no</i>
4.	0039591	<i>Basics of Databases</i>	<i>Marko Bajec</i>	45		30			105	180	6	<i>1st semester</i>	<i>no</i>
5.	0039588	<i>Computability and Computational Complexity</i>	<i>Borut Robič</i>	45		30			105	180	6	<i>1st semester</i>	<i>no</i>
6.	0039526	<i>Optimization Methods</i>	<i>Arjana Žitnik</i>	45		45			120	210	7	<i>2nd semester</i>	<i>no</i>
7.	0039606	<i>Principles of Programming Languages</i>	<i>Andrej Bauer</i>	45		30			105	180	6	<i>2nd semester</i>	<i>no</i>
8.	0039587	<i>Algorithms and data structures 2</i>	<i>Borut Robič</i>	45		30			105	180	6	<i>2nd semester</i>	<i>no</i>
9.	0039585	<i>Computer Communications</i>	<i>Zoran Bosnić</i>	45		30			105	180	6	<i>2nd semester</i>	<i>no</i>
10.	0644117	<i>Probability</i>	<i>Matija Vidmar, Mihael Perman, Roman Drnoušek</i>	30		30			90	150	5	<i>2nd semester</i>	<i>no</i>

	<i>Total</i>	420	0	330	0	0	1050	1800	60	
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Year 3

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039531	Numerical methods	Bor Plestenjak, Emil Žagar, Marjetka Knez	45		45			120	210	7	1st semester	no
2.	0039610	Introduction to Artificial Intelligence	Zoran Bosnić	45		30			105	180	6	1st semester	no
3.	0101002	Module elective course 1/3		45		30			105	180	6	1st semester	yes
4.	0101003	Module elective course 2/3		45		30			105	180	6	1st semester	yes
5.	0644116	Statistics	Jaka Smrekar, Martin Raič, Mihael Perman, Roman Drnoušek	30		30			90	150	5	1st semester	no
6.	0039523	Topics in Mathematics	Petar Pavešič	30		30			90	150	5	2nd semester	no
7.	0101005	Module elective course 3/3		45		30			105	180	6	2nd semester	yes



8.	0070324	General elective course FMF		45		30			75	150	5	2nd semester	yes
9.	0070326	Specialist elective course		60		60			180	300	10	2nd semester	yes
10.	0039530	Undergraduate Thesis						20	100	120	4	2nd semester	no
<b>Total</b>				<b>390</b>	<b>0</b>	<b>315</b>	<b>0</b>	<b>20</b>	<b>1075</b>	<b>1800</b>	<b>60</b>		

### Year 3, Module Informatics

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039614	Electronic Business	Denis Trček	45		30			105	180	6	1st semester	yes
2.	0039622	Data Management Technologies	Matjaž Kukar	45	10	20			105	180	6	1st semester	yes
3.	0100860	Information Systems Development	Marko Bajec	45	20	10			105	180	6	2nd semester	yes
<b>Total</b>				<b>135</b>	<b>30</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>315</b>	<b>540</b>	<b>18</b>		

### Year 3, Module Software

				Contact hours									
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	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039629	Software Development Processes	Branko Matjaž Jurič	45	10	20			105	180	6	1st semester	yes
2.	0039613	System Software	Tomaž Dobravec	45	10	20			105	180	6	1st semester	yes
3.	0100872	Analysis of Algorithms and Heuristic Problem Solving	Marko Robnik Šikonja	45	10	20			105	180	6	2nd semester	yes
<b>Total</b>				135	30	60	0	0	315	540	18		

### Year 3, Module Computer Systems and Networks

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039625	Computer Networks Modeling	Miha Mraz	45	10	20			105	180	6	1st semester	yes
2.	0039627	Distributed Systems Computer	Uroš Lotrič	45		30			105	180	6	1st semester	yes
3.	0039623	Mobile and Wireless Networks	Nikolaj Zimic	45	10	20			105	180	6	2nd semester	yes

	<i>Total</i>	135	20	70	0	0	315	540	18	
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### Year 3, Module Artificial Intelligence

				<i>Contact hours</i>									
	<i>University Course Code</i>	<i>Course title</i>	<i>Lecturers</i>	<i>Lectures</i>	<i>Seminar</i>	<i>Tutorials</i>	<i>Clinical tutorials</i>	<i>Other forms of study</i>	<i>Individual student work</i>	<i>Total hours</i>	<i>ECTS</i>	<i>Semesters</i>	<i>Elective</i>
1.	0039643	<i>Intelligent Systems</i>	<i>Marko Robnik Šikonja</i>	45	6	24			105	180	6	<i>1st semester</i>	<i>yes</i>
2.	0039645	<i>Machine Perception</i>	<i>Matej Kristan</i>	45	10	20			105	180	6	<i>1st semester</i>	<i>yes</i>
3.	0100896	<i>Introduction to Data Mining</i>	<i>Blaž Zupan</i>	45	20	10			105	180	6	<i>2nd semester</i>	<i>yes</i>
<i>Total</i>				135	36	54	0	0	315	540	18		

### Year 3, Module Media Technologies

				<i>Contact hours</i>									
	<i>University Course Code</i>	<i>Course title</i>	<i>Lecturers</i>	<i>Lectures</i>	<i>Seminar</i>	<i>Tutorials</i>	<i>Clinical tutorials</i>	<i>Other forms of study</i>	<i>Individual student work</i>	<i>Total hours</i>	<i>ECTS</i>	<i>Semesters</i>	<i>Elective</i>
1.	0039619	<i>Computer Graphics and Game Technology</i>	<i>Matija Marolt</i>	45	10	20			105	180	6	<i>1st semester</i>	<i>yes</i>

2.	0039617	Multimedia Systems	Luka Čehovin Zajc	45	10	20			105	180	6	1st semester	yes
3.	0069537	Platform Based Development	Veljko Pejović	45		30			105	180	6	2nd semester	yes
Total				135	20	70	0	0	315	540	18		

### Year 3, Specialist elective courses FMF

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0039569	General Topology	Dušan Repouš, Janez Mrčun, Petar Pavešić	30		30			90	150	5	1st semester	yes
2.	0039565	Algebraic Curves	Jakob Cimprič, Paule Saksida, Tomaž Košir	30		30			90	150	5	2nd semester	yes
3.	0039572	Introduction to Geometric Topology	Dušan Repouš, Sašo Strle	30		30			90	150	5	2nd semester	yes
4.	0039564	Affine and Projective Geometry	Aleš Vaupetič, Tomaž Košir	30		30			90	150	5	2nd semester	yes
5.	0039571	Coding Theory and Cryptography	Arjana Žitnik, Primož Potočnik	30		30			90	150	5	2nd semester	yes

6.	0039566	<i>Financial Mathematics 1</i>	<i>Janez Bernik, Mihael Perman, Tomaž Košir</i>	30		30			90	150	5	<i>2nd semester</i>	<i>yes</i>
7.	0039570	<i>Game Theory</i>	<i>Matjaž Konvalinka, Sergio Cabello Justo</i>	45		45			90	180	6	<i>1st semester</i>	<i>yes</i>
8.	0039567	<i>Mathematical Modelling</i>	<i>Emil Žagar, George Mejak</i>	30		30			90	150	5	<i>2nd semester</i>	<i>yes</i>
9.	0039568	<i>Numerical Methods 2</i>	<i>Bor Plestenjak, Marjetka Knez</i>	30		30			90	150	5	<i>2nd semester</i>	<i>yes</i>
<i>Total</i>				285	0	285	0	0	810	1380	46		