University of Information Science and Technology
"St. Paul the Apostle" - Ohrid

Faculty of Computer Science and Engineering

Undergraduate FIRST CYCLE OF STUDIES

Study program: **COMPUTER SCIENCE AND ENGINEERING (CSE) 3 years**

Active from the academic year 2023/2024

Three-year (180 ECTS) studies

Degree: Bachelor of Science in Computer Engineering.

Acquired skills: The study program provides students with a strong foundation in computer science, including programming, databases, algorithms, information systems, and network technologies. Students develop practical skills in modern technologies, including web application development and internet programming. The program emphasises problem-solving, critical thinking, and real-world application of knowledge in multidisciplinary environments. Graduates gain strong communication and teamwork skills, preparing them to successfully manage and contribute to ICT projects.

CSE 4 years

Year I				
Semester I				
No.	Code	Course Name	No. of classes	ECTS
Core Courses				
1	CSE11M01	Introduction to Programming	2+4	6
2	CSE11M02	Discrete Mathematics	3+2	6
3	CSE11M03	Mathematics 1	3+2	6
4	CSE11M04	Physics	3+2	6
5	CSE11M05	English for Technical Communication 1	3+2	6
Year I				
Semester II				
No.	Code	Course Name	No. of classes	ECTS
1	CSE12M01	Object-Oriented Programming	3+2	6
2	CSE12M02	Mathematics 2	3+2	6
3	CSE12M03	English for Technical Communication 2	3+2	6
4	CSE12M04	Logic circuits and digital electronics	3+2	6
Elective				
5	CSE12EXX	Course from Faculty elective list	3+2	6

Year II				
Semester III				
No.	Code	Course Name	No. of classes	ECTS
Core Courses				
1	CSE13M01	Script Programming	3+2	6
2	CSE13M02	Algorithms and Data Structures 1	3+2	6
3	CSE13M03	Databases 1	3+2	6
4	CSE13M04	Data Engineering	3+2	6
Elective				
5	XXX13UXX	Course from the University elective list	3+2	6

Year II				
Semester IV				
No.	Code	Course Name	No. of classes	ECTS
1	CSE14M01	Algorithms and Data Structures 2	3+2	6
2	CSE14M02	Network Technologies	3+2	6
3	CSE14M03	Web Application Development	3+2	6
Elective				
4	CSE14EXX	Course from the Faculty elective list	3+2	6
5	XXX14UXX	Course from the University elective list	3+2	6

Year III				
Semester V				
No.	Code	Course Name	No. of classes	ECTS
Core Courses				
1	CSE15M01	Modelling and Simulations	3+2	6
2	CSE15M02	Probability and Statistics	3+2	6
3	CSE15M03	Computer Organisation and Architecture	3+2	6
Elective				
4	CSE15EXX	Course from the Faculty elective list	3+2	6

5	XXX15UXX	Course from the University elective list	3+2	6

Year III				
Semester VI				
No.	Code	Course Name	No. of classes	ECTS
1	CSE16M01	Internet Programming	3+2	6
2	CSE16M02	Databases 2	3+2	6
3	CSE16M03	Operating Systems	3+2	6
4	CSE16M04	Bachelor Thesis	3+2	6
Elective				
5	CSE16EXX	Course from the Faculty elective list	3+2	6

Total credits		180

The first cycle of university studies recognises the modules:

- M - mandatory (core courses),
- E - elected from the faculty list of courses
- U – elected from the university list of courses.

List of Faculty Elective courses				
id	**code**	**Course**	**Weekly fund of hours**	**ECTS**
1	CSE12E01	Signals and Systems	3+2	6
2	CSE12E02	Processing of multimedia data	3+2	6
3	CSE12E03	Digital Society	3+2	6
4	CSE14E01	Social networks		
5	CSE14E02	Graph theory	3+2	6
6	CSE14E03	e-Governance	3+2	6
7	CSE14E04	Communication Theory	3+2	6
8	CSE14E05	Introduction to Robotics	3+2	6
9	CSE14E06	Software Engineering	3+2	6
10	CSE14E07	Computer crime	3+2	6
11	CSE15E01	Optical and wired networks	3+2	6
12	CSE15E02	Digital signal processing	3+2	6
13	CSE15E03	Linear algebra	3+2	6

14	CSE15E04	Computer Graphics	3+2	6
15	CSE15E05	Management theory	3+2	6
16	CSE15E06	Mechatronics	3+2	6
17	CSE15E07	Multimedia information systems	3+2	6
18	CSE15E08	Human-Computer Interaction	3+2	6
19	CSE15E09	Business Information Systems	3+2	6
20	CSE15E10	Music Programming	3+2	6
21	CSE16E01	Information Theory	3+2	6
22	CSE16E02	Numerical Methods	3+2	6
23	CSE16E03	Microprocessors	3+2	6
24	CSE16E04	Programmable logic controllers (PLC)	3+2	6
25	CSE16E05	Data Visualisation	3+2	6
26	CSE16E06	User interface design	3+2	6
27	CSE16E07	Stochastic processes	3+2	6
28	CSE16E08	Management of Information Systems	3+2	6
29	CSE16E09	Decision Methods	3+2	6
30	CSE16E10	Wireless networks	3+2	6
31	CSE16E11	Music and Mathematics	3+2	6

List of University courses				
id	**code**	**Course**	**Weekly fund of hours**	**ECTS**
1	CSE13U01	Economics	3+2	6
2	CNS13U02	Digital Arts	3+2	6
3	ICS13U03	e-Ethics	3+2	6
4	ICS13U04	e-Media	3+2	6
5	MIR13U05	e-Democracy	3+2	6
6	MIR13U06	Open data	3+2	6
7	MIR13U07	Law in Information Technologies	3+2	6
8	MIR14U01	Business Law	3+2	6
9	CNS14U02	The art of graphic design	3+2	6
10	CNS14U03	Visual arts and 3D modeling	3+2	6
11	CSE14U04	Digital Banking	3+2	6
12	CSE14U05	Accounting Information Systems	3+2	6
13	ICS14U06	e-Culture	3+2	6
14	ICS14U07	e-Journalism	3+2	6
15	MIR14U08	e-Diplomacy	3+2	6
16	CNS15U01	2D and 3D techniques for concept art	3+2	6
17	CNS15U02	Introduction to New Media Art	3+2	6
18	CSE15U03	e-Commerce	3+2	6
19	CSE15U04	Financial Management	3+2	6
20	MIR15U05	Data Security and Privacy	3+2	6
21	ICS15U06	Animated storytelling	3+2	6
22	ICS15U07	Intertextuality and hypertextuality in e-gaming	3+2	6
23	MIR15U08	Public speaking	3+2	6
24	MIR15U09	Electronic Elections	3+2	6