International University of Sarajevo, Faculty of Engineering and Natural Sciences (FENS)
Undergraduate Curriculum - Computer Sciences and Engineering Program
Academic Year: 2024-2025

Click on the course code or title to see its syllabus.

Semester I

Code	Title	Prerequisites	T	P	ECTS
ELIT100	Academic English and Effective Communication		2	1	6
MATH101	Calculus I		3	2	6
CS103	Introduction to Programming		3	2	6
NS102	Physics		3	2	6
ENS101	Introduction to Engineering		2	1	3
xxx	Foreign Language Elective I		0	2	3
		Semester Total =			30

Semester II

Code	Title	Prerequisites	T	P	ECTS
ELIT200	Critical Reading and Writing		2	1	6
CS105	Advanced Programming	CS103	3	2	6
MATH102	Calculus II	MATH101	3	2	6
MATH201	Linear Algebra	MATH101	3	2	6
xxx	University Elective I	See Table 1			3
xxx	Foreign Language Elective II	For. Lang. Ele. 1	0	2	3
		Semester Total =			30

Semester III

Code	Title	Prerequisites	T	P	ECTS
MATH203	Introduction to Probability and Statistics	MATH101	3	2	6
MATH204	Discrete Mathematics	MATH101	3	2	6
CS303	Digital Design		3	2	6
CS305	Programming Languages	CS105	3	2	6
MATH202	Differential Equations	MATH102	3	2	6
		Semester Total =			30

Semester IV

Code	Title	Prerequisites	T	P	ECTS
ENS203	Electrical Circuits I	MATH101	3	2	6
CS304	Computer Architecture	CS105	3	2	6
MATH205	Numerical Analysis	MATH102	3	2	6
CS306	Database Management	CS105	3	2	6
xxx	Faculty Elective I	See Table 2			6
		Semester Total =			30

Semester V

Code	Title	Prerequisites	T	P	ECTS
CS302	Algorithms and Data Structures	MATH204	3	2	6
CS412	Web Application Development	CS105	3	2	6
CS307	Operating Systems	CS304	3	2	6
IE408	Project Management	Junior Standing	2	2	6
xxx	Faculty Elective II	See Table 2			6
		Semester Total =			30

Semester VI

Code	Title	Prerequisites	T	P	ECTS
CS308	Software Engineering	CS105	3	2	6
EE325	Embedded Systems	CS103	3	2	6
SE308	Communication Systems and Networks	CS105	3	2	6
ENS309	Ethics in Engineering and Sciences	Junior Standing	3	1	6
xxx	Free Elective I				6
		Semester Total =			30

Semester VII

Code	Title	Prerequisites	T	P	ECTS
xxx	Program Elective I See Table 3	Senior Standing			6
CS313	Theory of Computation	MATH204	3	2	6
CS370	Work placement/Internship		0	14	6
xxx	Program Elective II See Table 3	Senior Standing	3		6
xxx	Program Elective III See Table 3	Senior Standing	3		6
		Semester Total =			30

Semester VIII

Code	Title	Prerequisites	T	P	ECTS
xxx	Free Elective II				6
xxx	Program Elective IV See Table 3	Senior Standing			6
xxx	Program Elective V See Table 3	Senior Standing			6
xxx	Program Elective VI See Table 3	Senior Standing			6
ENS490	Graduation Project	Last Semester	0	4	6
		Semester Total =			30

Abbreviations: T (Theory), P (Practice), ECTS credit	
Total Credits Required for Graduation	240
Total Credits of Electives	69

No. of Courses	42
Min. ECTS Credits for Applied/Practical Component of the Curriculum	53
Elective Ratio	29%

IMPORTANT NOTES TO CSE STUDENTS

University elective courses and 2 Foreign language elective courses (different from native language of students) are taken from the pool of University Elective Courses, see Table 1.

2 Faculty Elective courses are taken from the pool of Faculty Elective Courses, see Table 2. Faculty elective courses may be selected from other FENS programmes with the approval of Program Coordinator.

6 Program Electives are taken from the pool of Program Elective courses, see Table 3. Two Program elective courses may be selected from other FENS programmes (including FENS graduate level courses) with the approval of Program Coordinator.

2 Free elective courses are taken from any faculty. It is strongly recommended that the students take MAN303 Entrepreneurship and Small Business Management.

Junior standing: student has successfully completed at least 108 ECTS. Senior standing: student has successfully completed at least 168 ECTS.

The curriculum is applicable to students who entered the freshman class in the year 2020-2021 or after.

For the existing sophomore, junior and senior students, the Faculty Council will make plans for proper adaptation to the new curriculum.

In exceptional cases only, Faculty Council may make a decision for a student to bypass a prerequisite for a course.

Work placement/Internship is typically practiced in summer for a period of at least 25 work days, totalling at least 150 hours

TABLE 1: IUS Pool of 3 ECTS University Elective Courses

Code	Title	Prerequisites	T	P	ECTS
ARCH107	Understanding Art and Architecture		2	0	3
BIO100	Introduction to Bioengineering		3	0	3
CS100	Computer Skills		0	2	3
CULT101	Understanding Cultural Encounters		2	0	3
ECON105	Understanding Business		2	0	3
ECON107	Python		1	1	3
ECON108	Matlab		1	1	3
HUM100	Social Responsibility and Sustainable Development		2	0	3
IBF105	Financial Literacy		2	0	3
IR100	Understanding the Contemporary World through Current Events		2	0	3
MAN105	Corporate Social Responsibility		2	0	3
NS111	Understanding Nature and Knowledge		2	0	3
NS112	Understanding Science and Technology		2	0	3
SPS140	Understanding Religion		2	0	3
TURK111	Spoken Turkish I *		0	2	3
BOS111	Spoken Bosnian I *		0	2	3
TURK112	Spoken Turkish II **	TURK111	0	2	3
BOS112	Spoken Bosnian II **	BOS111	0	2	3
	* Scholarship students will take either TURK111 / BOS111				
	** Scholarship students will take either TURK112 / BOS112				

TABLE 2: Faculty Electives

Code	Title	Prerequisites	ECTS
BIO301	Molecular Biology		6
BIO415	Genetic Engineering	Senior Standing	6
EE201	Analog Electronics I	ENS203	6
EE202	Electrical Circuits II	ENS203	6
EE305	Instrumentation and Measurements	ENS203	6
EE311	Control System Design	ENS206	6
EE321	Electrical Machines	EE202	6
EE322	Power Systems	EE202	6
ENS201	Electromagnetics	MATH102	6
ENS202	Thermodynamics		6
ENS205-6	Materials Science		6
ENS206	System Modeling	MATH202	6
ENS207-6	Engineering Graphics		6
ENS208-6	Introduction to Manufacturing Systems	MATH101	6
ENS209-6	Statics	MATH101	6
ENS211	Signals and Systems	MATH102	6
ENS302	Engineering Optics	NS102	6
MATH207	Vector Calculus	MATH101	6
MATH209	Discrete Mathematics II	MATH204	6
MATH306	Statistical Modeling	MATH203	6
ME208-6	Dynamics and Vibrations	MATH202	6
ME304	Fluid Mechanics	MATH202	6
ME306	Heat and Mass Transfer	MATH202	6
NS122	Physics II	NS102	6
NS205	Cell Biology	NS103	6
NS207	Organic Chemistry		6
NS209	Genetics I		6
IE301	Production Planning I	MATH203	6
IE303	Operations Research I	MATH201	6
IE304	Operations Research II	IE303	6
IE307	Quality and Reliability Engineering	Junior Standing	6

Faculty Elective may be selected from other FENS programmes with the approval of Program Coordinator.

TABLE 3: Program Electives

Code	Title	Prerequisites	ECTS
AID201	Programming for Data Science	CS103	6
AID403	IoT Fundamentals	CS103	6
AID404	Business Intelligence		6
BIO310	Bioinformatics	NS103 or Program Coordinator's Approv	6
BIO405	Biological Data Analysis with Python	ENS213 / CS103	6
CS299	Social, Legal, and Ethical Issues in Computing		6
CS309	Advanced Logic Design	CS303	6
CS310	Human Computer Interaction	CS105	6
CS402	Introduction to Design of Compilers	CS105 and MATH204	6
CS403	Distributed Systems	CS307	6
CS404	Artificial Intelligence	MATH204	6
CS405	Computer Graphics	CS302 and MATH201	6
CS413	Developing the Interactive Web	CS105	6
CS414	Computer Vision	CS103 and MATH201	6
CS415	Pattern Recognition	MATH201	6
CS416	Cryptography	CS302 and MATH204	6
CS417	Introduction to Data Mining	CS302	6
CS420	Network Programming	SE308	6
CS421	Architecture and Implementation of Database Management Sy	CS306	6
CS422	Wireless Mobile Networks	SE308	6
CS423	Parallel Computing	CS302 and CS307	6
CS426	Software Engineering II	CS308	6
CS427	Computer and Network Security	CS307 and SE308	6
CS428	Principles of Quantum Computing		6
CS429	Cybersecurity Essentials		6
CS498	Special Topics in Computer Science I		6
CS499	Special Topics in Computer Science II		6
EE307	Microcomputer Systems		6
EE310	Introduction to E-mobiliy	EE201	6
EE331	Introduction to Communication Systems	MATH102	6
EE405	Software Engineering Project	EE325	6
EE406	Hardware Engineering Project		6
EE418	Introduction to Machine Learning		6
EE434	Digital Communications	EE331	6
EE435	Microprocessors-I		6
EE436	Programmable Logic Controllers	CS303	6
EE437	Introduction to Robotics	Senior Standing	6
MAN461	Management Information Systems	MAN102	6
SE211	Software Construction	CS103	6
SE302	Software Testing and Maintenance	SE211 or CS105 and MATH204	6
SE304	Tools and Methods of CASE Technologies	CS105	6
SE322	Software Requirements Analysis	SE211 or CS105	6
SE401	SCADA Systems	SE211 or CS105 and MATH101	6
SE402	Programming of CNC Machines	CS105	6
SE403	Development of Science and Technology	CS105	6
SE404	Psycho Cibernetics	CS105	6
SE406	Software Engineering Management	SE211 or CS105	6
SE407	Software Quality Management	SE211 or CS105	6
SE421	CAD Systems	CS105	6
SE423	Automatics and Robotics	CS105	6

2 Programe Electives may be selected from other FENS programmes (including FENS graduate level courses) with the approval of Program Coordinator.