

International University of Sarajevo, Faculty of Engineering and Natural Sciences (FENS)						
First Cycle Curriculum - Software Engineering Program						
Academic Year: 2025-2026						
Click on the course code or title to see the syllabus.						
Semester I						
Code	Title	Prerequisites	T	P	ECTS	
CS103	Introduction to Programming		3	2	6	
ELIT100	Academic English and Effective Communication		2	1	6	
ENS101	Introduction to Engineering		2	1	3	
MATH101	Calculus I		3	2	6	
xxx	University Elective I	See Table 1			6	
xxx	Foreign Language Elective I		2	0	3	
						Semester Total = 30
Semester II						
Code	Title	Prerequisites	T	P	ECTS	
CS105	Advanced Programming	CS103	3	2	6	
ELIT200	Critical Reading and Writing	ELIT100	2	1	6	
MATH201	Linear Algebra	MATH101	3	2	6	
SE211	Software Construction	CS103	3	2	6	
xxx	University Elective II	See Table 2			3	
xxx	Foreign Language Elective II	For. Lang. Ele. 1	2	0	3	
						Semester Total = 30
Semester III						
Code	Title	Prerequisites	T	P	ECTS	
CS206	Data Structures	CS105	3	2	6	
MATH203	Introduction to Probability and Statistics	MATH101	3	2	6	
MATH204	Discrete Mathematics		3	2	6	
SE322	Software Requirements Analysis	CS105	3	2	6	
xxx	Faculty Elective I	See Table 3			6	
						Semester Total = 30
Semester IV						
Code	Title	Prerequisites	T	P	ECTS	
CS207	Analysis of Algorithms	CS206 MATH204	3	2	6	
CS304	Computer Architecture	CS105	3	2	6	
CS306	Database Management	CS105	3	2	6	
CS310	Human Computer Interaction		3	2	6	
xxx	Faculty Elective II	See Table 3			6	
						Semester Total = 30
Semester V						
Code	Title	Prerequisites	T	P	ECTS	
CS305	Programming Languages	CS206	3	2	6	
CS307	Operating Systems	CS304	3	2	6	
CS412	Web Application Development	CS105	3	2	6	
IE408	Project Management	Junior Standing	2	2	6	
SE302	Software Testing and Maintenance	CS105 and MATH204	3	2	6	
						Semester Total = 30
Semester VI						
Code	Title	Prerequisites	T	P	ECTS	
CS308	Software Engineering	CS306	3	2	6	
ENS309	Ethics in Engineering and Natural Sciences	Junior Standing	3	0	6	
SE308	Communication Systems and Networks	Junior Standing	3	2	6	
xxx	Faculty Elective III	See Table 3			6	
xxx	Free Elective I				6	
						Semester Total = 30
Semester VII						
Code	Title	Prerequisites	T	P	ECTS	
CS420	Network Programming	SE308	3	2	6	
SE370	Work placement/Internship	Senior standing			6	
xxx	Program Elective I	See Table 4	3		6	
xxx	Program Elective II	See Table 4	3		6	
xxx	Program Elective III	See Table 4	3		6	
						Semester Total = 30
Semester VIII						
Code	Title	Prerequisites	T	P	ECTS	
ENS490	Graduation Project	Last Semester	0	4	6	
SE407	Software Quality Management	Junior Standing	3	2	6	
xxx	Program Elective IV	See Table 4	3		6	
xxx	Program Elective V	See Table 4	3		6	
xxx	Program Elective VI	See Table 4	3		6	
						Semester Total = 30
No. of Courses						42
Min. ECTS Credits for Applied/Practical Component of the Curriculum						65.8
Elective Ratio						35%
Abbreviations: T (Theory), P (Practice), ECTS credit						
Total Credits Required for Graduation						240
Total Credits of Electives						84
IMPORTANT NOTES TO SE STUDENTS						
2 University Elective courses and 2 Foreign Language Elective courses are taken from the pool of University Elective courses, see Table 1 and Table 2.						
3 Faculty Elective courses are taken from the pool of Faculty Elective courses, see Table 3. Faculty Elective courses may be selected from other FENS programs with the approval of Program Coordinator.						
6 Program Elective courses are taken from the pool of Program Elective courses, see Table 4. 2 Program Elective courses may be selected from other FENS programs (including FENS graduate level courses) with the approval of Program Coordinator.						
1 Free Elective course is 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.						
This new curriculum is being implemented for the new freshman students who entered the freshman class in the year 2025/2026 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 any course.						
Work placement/Internship is typically practiced in summer for a period of at least 25 work days, totaling at least 150 hours.						

Table 1: IUS Pool of 6 ECTS University Courses					
Code	Title	Prerequisites	T	P	ECTS
ECON111	Introduction to Microeconomics		3	0	6
ECON112	Introduction to Macroeconomics		3	0	6
ELIT101	Introduction to Literature		2	1	6
ENS105	The Brain		3	0	6
IBF205	Principles of International Business		3	0	6
IR101	Introduction to International Relations		3	0	6
LAW109	Law and Ethics		3	0	6
LAW110	Introduction to Law I		3	0	6
MAN102	Introduction to Management		3	0	6
NS102	Physics		3	2	6
NS103	Biology		3	0	6
NS104	General Chemistry		3	2	6
POLS102	Introduction to Political Science		3	0	6
PSY103	Introduction to Psychology		3	0	6
SOC102	Introduction to Sociology		3	0	6
SPS120	Critical Thinking		3	0	6
SPS150	World History		3	0	6
VA121	History of Art I		3	0	6

Table 2: IUS Pool of 3 ECTS University 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

* International students are highly encouraged to take Bosnian language courses, while students from Bosnia and Herzegovina and Turkey cannot enroll in courses of their native language.

Table 3: Faculty Elective Courses			
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	Electromagnetism I	MATH102	6
ENS202	Thermodynamics	MATH102 and NS102	6
ENS203	Electrical Circuits I	MATH101	6
ENS205-6	Materials Science		6
ENS206	System Modeling	MATH202	6
ENS207-6	Engineering Graphics		6
ENS208-6	Intro. to Manufacturing Systems	MATH101	6
ENS209-6	Statics	MATH101	6
ENS211	Signals and Systems	MATH102	6
ENS221	Introduction to Engineering		6
ENS302	Engineering Optics	NS102	6
MATH102	Calculus II	MATH101	6
MATH202	Differential Equations	MATH101	6
MATH205	Numerical Analysis	MATH101	6
MATH207	Vector Calculus	MATH101	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
NS102	Physics		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

NB. Faculty Elective courses may be selected from other FENS programs with the approval of Program Coordinator.

Table 4: Program Elective Courses			
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 Approval	6
BIO405	Biological Data Analysis with Python	ENS213 / CS103	6
CS299	Social, Legal, and Ethical Issues in Computing		6
CS303	Digital Design		6
CS309	Advanced Logic Design	CS303	6
CS313	Theory of Computation	CS105 and MATH204	6
CS402	Introduction to Design of Compilers	CS105 and MATH204	6
CS403	Distributed Systems	CS307	6
CS404	Artificial Intelligence	(CS103 or AID201) and MATH201	6
CS405	Computer Graphics	CS302 and MATH201	6
CS413	Developing the Interactive Web	CS105	6
CS414	Computer Vision	MATH201 and CS103	6
CS415	Pattern Recognition	MATH201	6
CS416	Cryptography	CS302 and MATH201	6
CS417	Introduction to Data Mining	CS206	6
CS421	Architecture and Implementation of Database Management Systems	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	SE308	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-mobility	EE201	6
EE325	Embedded Systems	CS103	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
SE304	Tools and Methods of CASE Technologies	CS105	6
SE401	SCADA Systems	MATH101 and CS105 or SE211	6
SE402	Programming of CNC Machines	CS105	6
SE403	Development of Science and Technology	CS105	6
SE404	Psycho Cybernetics	CS105	6
SE421	CAD Systems	CS304	6
SE423	Automatics and Robotics	CS105	6

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