

International University of Sarajevo (IUS), Faculty of Engineering and Natural Sciences (FENS)						
Undergraduate Curriculum - Artificial Intelligence and Data Engineering Program (DDP - IU)						
Semester I						
Code	Title	Prerequisites	T	P/L	ECTS	
ELIT100	Academic English and Effective Communication		2	1	6	
MATH101	Calculus I		3	2	6	
CS103	Introduction to Programming		3	2	6	
xxx	University Elective I	See Table 1	3	2	6	
ENS101	Introduction to Engineering		2	1	3	
xxx	Foreign Language Elective I		0	2	3	
<b>Semester Total =</b>			<b>30</b>			
Semester II						
Code	Title	Prerequisites	T	P/L	ECTS	
ELIT200	Critical Reading and Writing		2	1	6	
CS105	Advanced Programming	CS103	3	2	6	
MATH102	Calculus II	MATH11	3	2	6	
MATH201	Linear Algebra	MATH101	3	2	6	
AID101	Fundamentals of Data Science		3	2	6	
<b>Semester Total =</b>			<b>30</b>			
Semester III						
Code	Title	Prerequisites	T	P/L	ECTS	
AID201	Programming for Data Science	CS103	3	2	6	
MATH204	Discrete Mathematics	MATH101	3	2	6	
CS206	Data Structures	CS105	3	2	6	
MATH203	Introduction to Probability and Statistics	MATH101	3	2	6	
xxx	Faculty Elective I		3	2	6	
<b>Semester Total =</b>			<b>30</b>			
Semester IV						
Code	Title	Prerequisites	T	P/L	ECTS	
CS304	Computer Architecture	CS105	3	2	6	
CS417	Introduction to Data Mining	CS206	3	2	6	
CS207	Analysis of Algorithms	CS206 and MATH204	3	2	6	
AIDE-T-2	Program Elective	See Table 3	3	2	6	
xxx	Faculty Elective II	See Table 2	3	2	6	
<b>Semester Total =</b>			<b>30</b>			
Semester V						
Code	Title	Prerequisites	T	P/L	ECTS	
AIDE3113	Machine Learning		3	2	6	
AIDE3014	Numerical Methods for Engineers		3	2	5	
AIDE3115	Database Design and Management	AIDE1604 (CS105)	3	2	6	
AIDE4022	Formal Languages and Automata Theory	MATH2162 (MATH204)	3	2	5	
AIDE3016	Summer Practice		0	0	5	
TURK0101	Turkish Language I		2	0	2	
HIST0101	Atatürk's Principles and History of the Revolution I		2	0	2	
<b>Semester Total =</b>			<b>31</b>			
Semester VI						
Code	Title	Prerequisites	T	P/L	ECTS	
AIDE3617	Applied Data Engineering		3	2	6	
AIDE3618	Software Engineering for Data Science and AI		3	2	6	
AIDE3619	Optimization for Data Science		3	2	6	
AIDE3620	Big Data & Analytics		3	2	5	
CITA-1	Art Elective*	See Table 6	2	0	3	
TURK0201	Turkish Language II		2	0	2	
HIST0201	Atatürk's Principles and History of the Revolution II		2	0	2	
<b>Semester Total =</b>			<b>30</b>			
Semester VII						
Code	Title	Prerequisites	T	P/L	ECTS	
AIDE4021	Interdisciplinary Project Design	Senior Standing and AIDE2608 (CS207)	0	0	8	
CITF4019	Entrepreneurship and Innovation		2	0	3	
OHES4011	Occupational Health and Safety-I		2	0	2	
AIDE-T-1	Technical Elective-I**	See Table 4	3	2	6	
AIDE-T-2	Technical Elective-II**	See Table 4	3	2	6	
AIDE-T-3	Technical Elective-III**	See Table 4	3	2	6	
<b>Semester Total =</b>			<b>31</b>			
Semester VIII						
Code	Title	Prerequisites	T	P/L	ECTS	
AIDE4524	Engineering Project	AIDE4021	0	0	8	
OHES4012	Occupational Health and Safety-II		2	0	2	
CITS-2	Social Elective***	See Table 5	2	0	2	
AIDE-T-4	Technical Elective-IV**	See Table 4	3	2	6	
AIDE-T-5	Technical Elective-V**	See Table 4	3	2	6	
AIDE-T-6	Technical Elective-VI**	See Table 4	3	2	6	
<b>Semester Total =</b>			<b>30</b>			
<b>Abbreviations: T (Theory), P (Practice), L (Lab), ECTS credit</b>						
<b>Total Credits Required for Graduation</b>						<b>242</b>
<b>No. of Courses</b>						<b>47</b>
<i>University Electives are taken from the pool of University Elective courses, see Table 1.</i>						
<i>Faculty Elective courses are taken from the pool of Faculty Elective courses, see Table 2. Faculty Elective may be selected from other FENS programmes with the approval of Program Coordinator.</i>						
<i>Program Electives are taken from the pool of Program Elective courses, see Table 3. 2 Program Electives may be selected from other FENS programmes (including FENS graduate level courses) with the In exceptional cases only, Faculty Council may make a decision for a student to bypass a prerequisite for any course.</i>						

IUS - Table 1: University Electives			
Code	Title	Prerequisites	ECT
<b>University Electives (3 ECTS)</b>			
ARCH107	Understanding Art and Architecture		3
BIO100	Introduction to Bioengineering		3
CS100	Computer Skills		3
CULT101	Understanding Cultural Encounters		3
ECON105	Understanding Business		3
ECON107	Python		3
ECON108	Matlab		3
HUM100	Social Responsibility and Sustainable Development		3
IBF105	Financial Literacy		3
IR100	Understanding the Contemporary World through Current		3
MAN105	Corporate Social Responsibility		3
NS111	Understanding Nature and Knowledge		3
NS112	Understanding Science and Technology		3
SPS140	Understanding Religion		3
<b>University Electives (6 ECTS)</b>			
ECON111	Introduction to Microeconomics		6
ECON112	Introduction to Macroeconomics		6
ELIT101	Introduction to Literature		6
ENS105	The Brain		6
IBF205	Principles of International Business		6
IR101	Introduction to International Relations		6
LAW109	Law and Ethics		6
LAW110	Introduction to Law I		6
MAN102	Introduction to Management		6
NS102	Physics		6
NS103	Biology		6
NS104	General Chemistry		6
POLS102	Introduction to Political Science		6
PSY103	Introduction to Psychology		6
SOC102	Introduction to Sociology		6
SPS120	Critical Thinking		6
SPS150	World History		6
VA121	History of Art I		6

IUS - Table 2: Faculty Electives			
Code	Title	Prerequisites	ECT
EE325	Embedded Systems	CS103	6
EE331	Introduction to Communication Systems	MATH102	6
EE405	Software Engineering Project		6
EE406	Hardware Engineering Project		6
EE435	Microprocessors-I		6
ENS203	Electrical Circuits I	MATH101	6
ENS205	Materials Science		6
ENS207	Engineering Graphics		6
ENS209	Statics	MATH101	6
MATH102	Calculus II	MATH101	6
MATH202	Differential Equations	MATH102	6
MATH207	Vector Calculus	MATH101	6
MATH209	Discrete Mathematics II	MATH204	6
NS122	Physics II	NS102	6
NS209	Genetics I		6
IE303	Operations Research I	MATH201	6
IE307	Quality and Reliability Engineering	Junior Standing	6

Faculty Electives may be selected from other FENS programs with the approval of

IUS - Table 3: Program Electives			
Code	Title	Prerequisites	ECT
AID403	IoT Fundamentals	CS103 or AID206	6
AID404	Business Intelligence		6
AID405	Natural Language Processing		6
BIO310	Bioinformatics	NS103 or Program Coord	6
BIO405	Biological Data Analysis with Python	ENS213 / CS103	6
CS299	Social, Legal, and Ethical Issues in Computing		6
CS303	Digital Design		6
CS305	Programming Languages	CS105	6
CS304	Computer Architecture	CS105	6
CS307	Operating Systems	CS304	6
CS308	Software Engineering	CS105	6
CS313	Theory of Computation	MATH204 and CS105	6
CS310	Human Computer Interaction	CS105	6
CS402	Introduction to Design of Compilers	CS105 and MATH204	6
CS403	Distributed Systems	CS307	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
CS420	Network Programming	CS105 and SE308	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	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
EE437	Introduction to Robotics	Senior Standing	6
MAN461	Management Information Systems	MAN102	6
SE211	Software Construction	CS103	6
SE302	Software Testing and Maintenance	CS105 and MATH204	6
SE304	Tools and Methods of CASE Technologies	CS105	6
SE308	Communication Systems and Networks	CS105	6
SE322	Software Requirements Analysis	SE211 or CS105	6
SE403	Development of Science and Technology	CS105	6
SE404	Psycho Cybernetics	CS105	6
SE407	Software Quality Management	SE211 or CS105	6
SE423	Automatics and Robotics	CS105	6

IU - Table 4: Technical Electives (for AIDE)			
Ders Kodu	Ders Adı	Prerequisites	ECT
CMPE3625	Internet and Web Programming	Consent of instructor	6
CMPE3626	Game Programming	Consent of instructor	6
CMPE3627	Mobile Application Development	Consent of instructor	6
CMPE3529	Introduction to Computer Graphics	Consent of instructor	6
CMPE3730	Compiler Theory	Consent of instructor	6
CMPE4233	Microprocessors and Embedded Systems	Consent of instructor	6
CMPE4637	Robotics	Consent of instructor	6
CMPE4638	Introduction to Internet of Things	Consent of instructor	6
AIDE3628	Image Processing	Consent of instructor	6
AIDE4132	Bioinformatics	Consent of instructor	6
AIDE3642	Pattern Recognition	Consent of instructor	6
CMPE4640	Software Testing and Quality	Consent of instructor	6
AIDE4134	Data Mining	Consent of instructor	6
AIDE4135	Natural Language Processing	Consent of instructor	6
AIDE4636	Deep Learning	Consent of instructor	6
CMPE4031	Cryptography	Consent of instructor	6
CMPE4641	Human Computer Interaction	Consent of instructor	6
CMPE4739	Wireless Communication Networks	Consent of instructor	6

IU - Table 5: Social Electives			
DERS KODU	DERS ADI	Prerequisites	ECT S
ECON2020	BLOCKCHAIN PRINCIPLES AND APPLICATIONS		2
ECON2010	DIGITAL ECONOMICS		2
ECON2012	LABOUR ECONOMICS		2
ECON2018	LAW OF OBLIGATIONS		2
PHYS2413	VOLUNTEER STUDIES		2
YBSB2012	GAME THEORY AND STRATEGY		2
YBSB2016	INFORMATION AND INTERNET LAW		2
YBSB2014	SCIENTIFIC RESEARCH METHODS AND ETHICS II		2
SUIN2112	CIVIL LAW		2
SUIN2128	ENVIRONMENTAL POLITICS		2
SUIN2118	INTERNATIONAL COMMUNICATION		2
SUIN2114	POLITICAL SOCIOLOGY		2
SUIN2120	TURKISH ECONOMY		2
PSIR2032	AMERICAN FOREIGN POLICY		2
PSIR2043	COMPARATIVE POLITICAL CULTURES		2
PSIR2049	CONCEPTS AND APPROACHES IN POLITICAL		2
PSIR2026	PUBLIC FINANCE		2
PSIR2039	RUSSIAN FOREIGN POLICY		2
PSIR2028	TURKEY AND EU		2
PSIR2051	WOMEN, PEACE AND SECURITY IN THE		2

IU - Table 6: Art Electives			
DERS KODU	DERS ADI	Prerequisites	ECT S
MIMB1053	URBAN PROJECTS IN ISTANBUL HISTORY		3
ODGS0001	FINE ARTS		3
ICMB2105	ART HISTORY		3
ICMB2104	HUMAN FACTORS IN DESIGN		3
ICMB2102	SUSTAINABILITY IN DESIGN		3
EUTB2008	DESIGN THINKING		3
INDE1038	FANTASY FICTION		3
INDE2040	AUTHOR AND HIS/HER WORKS		3
			3