

## Distribution of courses per semesters and years

### Study program: Computer science and engineering

Year I				
Semester I				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.3.F.1101.C	Programming 1	3+2	6
2	11.1.F.1102.C	Mathematics 1	3+2	6
3	11.9.F.1103.C	Discrete Mathematics	3+2	6
4	09.0.F.1104.C	Technical Communication 1	3+2	6
5	13.2.F.1105.C	Physics 1	3+2	6

Year I				
Semester II				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.3.F.1201.C	Programming 2	3+2	6
2	11.1.F.1202.C	Mathematics 2	3+2	6
3	09.0.F.1203.C	Technical Communication 2	3+2	6
4	11.3.CSE.1201.MR	Computer organization	3+2	6
5	11.3.CSE.1202.MR	Network architecture	3+2	6

Year II				
Semester III				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.2.F.1301.C	Probability and Statistics	3+2	6
2	11.3.F.1302.C	Data Base Systems	3+2	6
3	11.3.F.1303.C	Algorithms and Data Structures	3+2	6
4	11.3.CSE.1301.MR	Computing Systems Configuration	3+2	6
Electives				
5	1 course of MiE list		3+2	6

Year II				
Semester IV				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.3.F.1401.C	Software Engineering	3+2	6
2	11.3.F.1402.C	Operating systems	3+2	6
3	11.3.F.1403.C	Programming 3	3+2	6
4	11.3.CSE.1401.MR	Assembly Language Programming	3+2	6
Electives				
5	1 course of MiE list		3+2	6

Year III				
Semester V				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.3.F.1501.C	Programming 4	3+2	6
2	11.9.CSE.1501.MR	Finite State Machines	3+2	6
Electives				
3	1 course of MaE list		3+2	6
4	1 course of MiE list		3+2	6
5	1 course of MiE list		3+2	6

Year III				
Semester VI				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.2.F.1601.C	Descriptive and Inferential Statistics	3+2	6
2	11.9.CSE.1601.MR	Programming language Concepts	3+2	6
Electives				
3	1 course of MaE list		3+2	6
4	1 course of MiE list		3+2	6
5	1 course of MiE list		3+2	6

Year IV				
Semester VII				
#	Code	Name of course	Hours per week	ECTS
Compulsory				
1	11.9.F.1701.C	R&D Methods for Science and Engineering	3+2	6
Electives				
2	11.9.F.1701.MaE*	Industrial Internship	3+2	6
3	1 course of MaE list		3+2	6
4	1 course of MaE list		3+2	6
5	11.9.F.1701.MiE	Final project	3+2	6

Година IV				
Семестар VIII				
Р.бр	Шифра	Назив на предметот	Фонд на часови	ЕКТС
Изборни				
1	11.9.F.1801.MaE*	Industrial Internship	3+2	6
3	1 course of MaE list		3+2	6
3	1 course of MaE list		3+2	6
4	11.9.F.1802.MiE	Final project	3+2	6
5	11.9.F.1801.MiE	Final project	3+2	6

## Major Electives – MaE List

1	11.3.CSE.1501.MaE	<b>Compiler Theory</b>	3+2	6
2	11.9.CSE.1601.MaE	<b>Data Base System II</b>	3+2	6
3	11.9.F.1701.MaE*	<b>Industrial Internship</b>	3+2	6
4	11.9.CSE.1702.MaE	<b>Data mining</b>	3+2	6
5	04.9.CSE.1703.MaE	<b>Project Management</b>	3+2	6
6	11.9.F.1801.MaE*	<b>Industrial Internship</b>	3+2	6
7	11.3.CSE.1802.MaE	<b>Software Agents</b>	3+2	6
8	11.4.CSE.1803.MaE	<b>Artificial Intelligence</b>	3+2	6
9	11.9.F.1x01.MaE	<b>System theory</b>	3+2	6
10	11.9.F.1x02.MaE	<b>Chaos theory</b>	3+2	6
11	11.9.F.1x03.MaE	<b>Advanced algorithms</b>	3+2	6
12	11.9.F.1x04.MaE	<b>Advanced logic</b>	3+2	6
13	11.9.F.1x05.MaE	<b>Model checking</b>	3+2	6
14	11.9.F.1x06.MaE	<b>Discrete Mathematics 2</b>	3+2	6
15	11.9.F.1x07.MaE	<b>Advanced calculus</b>	3+2	6
16	11.9.F.1x08.MaE	<b>Design of integrated systems</b>	3+2	6
17	11.9.F.1x09.MaE	<b>Digital electronics</b>	3+2	6
18	11.9.F.1x10.MaE	<b>Digital libraries</b>	3+2	6
19	11.9.F.1x11.MaE	<b>Distance education</b>	3+2	6
20	11.9.F.1x12.MaE	<b>e-Business</b>	3+2	6
21	11.9.F.1x13.MaE	<b>e-Government</b>	3+2	6
22	11.9.F.1x14.MaE	<b>Embedded systems</b>	3+2	6
23	11.9.F.1x15.MaE	<b>Ethics and law for IT</b>	3+2	6
24	11.9.F.1x16.MaE	<b>Fundamentals of telecommunications</b>	3+2	6
25	11.9.F.1x17.MaE	<b>Geographical information systems</b>	3+2	6
26	11.9.F.1x18.MaE	<b>Health information systems</b>	3+2	6
27	11.9.F.1x19.MaE	<b>Information society fundamentals</b>	3+2	6
28	11.9.F.1x20.MaE	<b>Innovation technologies</b>	3+2	6
29	11.9.F.1x21.MaE	<b>Innovation and sustainable systems</b>	3+2	6
30	11.9.F.1x22.MaE	<b>Internet programming</b>	3+2	6
31	11.9.F.1x23.MaE	<b>Internet technologies</b>	3+2	6
32	11.9.F.1x24.MaE	<b>IT supported learning</b>	3+2	6
33	11.9.F.1x25.MaE	<b>Knowledge based systems</b>	3+2	6
34	11.9.F.1x26.MaE	<b>Knowledge management</b>	3+2	6
35	11.9.F.1x27.MaE	<b>Knowledge systems</b>	3+2	6
36	11.9.F.1x28.MaE	<b>Management of technical support</b>	3+2	6
37	11.9.F.1x29.MaE	<b>Management of virtual environments &amp; visualization</b>	3+2	6
38	11.9.F.1x30.MaE	<b>Media and communications</b>	3+2	6

39	11.9.F.1x31.MaE	<b>Microcomputer systems</b>	3+2	6
40	11.9.F.1x32.MaE	<b>Modeling of business processes</b>	3+2	6
41	11.9.F.1x33.MaE	<b>Modeling of telecommunications</b>	3+2	6
42	11.9.F.1x34.MaE	<b>Natural language processing</b>	3+2	6
43	11.9.F.1x35.MaE	<b>Theory of traffic</b>	3+2	6
44	11.9.F.1x36.MaE	<b>Virtual society</b>	3+2	6
45	11.9.F.1x37.MaE	<b>Visual programming</b>	3+2	6
46	11.9.F.1x38.MaE	<b>Web design</b>	3+2	6
47	11.9.F.1x39.MaE	<b>Bioinformatics fundamentals</b>	3+2	6
48	11.9.F.1x40.MaE	<b>Next generation networks</b>	3+2	6
49	11.9.F.1x41.MaE	<b>Identity &amp; Security Management</b>	3+2	6
50	11.9.F.1x42.MaE	<b>Network Security Architectures</b>	3+2	6
51	11.9.F.1x43.MaE	<b>Biomedical imaging</b>	3+2	6
52	11.9.F.1x44.MaE	<b>Biomedical instrumentation</b>	3+2	6
53	11.9.F.1x45.MaE	<b>Biomedical signal processing</b>	3+2	6
54	11.9.F.1x46.MaE	<b>Electrical circuits</b>	3+2	6
55	11.9.F.1x47.MaE	<b>Principles of biomedical engineering</b>	3+2	6
56	11.9.F.1x48.MaE	<b>Game theory</b>	3+2	6
57	11.9.F.1x49.MaE	<b>Information auditing</b>	3+2	6
58	11.9.F.1x50.MaE	<b>Optimization theory</b>	3+2	6
59	11.9.F.1x51.MaE	<b>Parallel computing</b>	3+2	6
60	11.9.F.1x52.MaE	<b>Applying UML patterns. Object oriented design</b>	3+2	6
61	11.9.F.1x53.MaE	<b>Cloud Computing Technologies</b>	3+2	6
62	11.9.F.1x54.MaE	<b>Patenting &amp; Protecting Technical Ideas</b>	3+2	6
63	11.9.F.1x55.MaE	<b>Service Oriented Architectures</b>	3+2	6
64	11.9.F.1x56.MaE	<b>Software Engineering Economics</b>	3+2	6
65	11.9.ISVMA.1501.MaE	<b>Graph Theory</b>	3+2	6
66	11.9.ISVMA.1601.MaE	<b>Clustering</b>	3+2	6
67	11.9.ISVMA.1802.MaE	<b>Morphological Filters</b>	3+2	6
68	11.9.ISVMA.1803.MaE	<b>Image Processing</b>	3+2	6
69	11.9.ITA.1501.MaE	<b>Image and Signal Processing</b>	3+2	6
70	11.9.ITA.1702.MaE	<b>Formal Methods for Computer Science</b>	3+2	6
71	11.4.ITA.1803.MaE	<b>Artificial Intelligence</b>	3+2	6
72	11.2.MIR.1501.MaE	<b>Statistical Learning Systems</b>	3+2	6
73	11.9.MIR.1601.MaE	<b>Stochastic Processes</b>	3+2	6
74	11.3.CNS.1501.MaE	<b>Server and Client Systems</b>	3+2	6
75	11.9.CNS.1601.MaE	<b>Information Theory (Cryptography)</b>	3+2	6

## Minor Electives – MiE List

1	03.0.F.1301.MiE	<b>Art</b>	3+2	6
2	14.1.F.1302.MiE	<b>Political Science</b>	3+2	6
3	14.3.F.1303.MiE	<b>Economics</b>	3+2	6
4	08.0.F.1304.MiE	<b>Humanities 1</b>	3+2	6
5	03.6.F.1401.MiE	<b>History of art</b>	3+2	6
6	14.2.F.1402.MiE	<b>Sociology</b>	3+2	6
7	04.0.F.1403.MiE	<b>Management</b>	3+2	6
8	07.1.F.1404.MiE	<b>Geography</b>	3+2	6
9	08.0.F.1405.MiE	<b>Humanities 2</b>	3+2	6
10	08.4.F.1501.MiE	<b>Archeology</b>	3+2	6
11	04.7.F.1502.MiE	<b>Marketing</b>	3+2	6
12	13.9.F.1503.MiE	<b>Physics (Electricity and Magnetism)</b>	3+2	6
13	08.3.F.1505.MiE	<b>History of art of Ohrid</b>	3+2	6
14	16.0.F.1506.MiE	<b>Military Science</b>	3+2	6
15	13.9.F.1507.MiE	<b>Physics (Waves and Optics)</b>	3+2	6
16	13.9.F.1601.MiE	<b>Environmental Physics</b>	3+2	6
17	14.7.F.1602.MiE	<b>Anthropology</b>	3+2	6
18	04.9.F.1603.MiE	<b>E-business</b>	3+2	6
19	13.9.F.1604.MiE	<b>Relativity and Quantum Physics</b>	3+2	6
20	15.3.F.1605.MiE	<b>Public Speaking</b>	3+2	6
21	03.0.F.1606.MiE	<b>Digital art and graphic design</b>	3+2	6
22	11.9.F.1701.MiE	<b>Final project</b>	3+2	6
23	11.9.F.1802.MiE	<b>Final project</b>	3+2	6
24	11.9.F.1801.MiE	<b>Final project</b>	3+2	6
25	13.3.F.1x01.MiE	<b>Conceptual physics</b>	3+2	6
26	08.1.F.1x02.MiE	<b>Philosophy</b>	3+2	6
27	03.9.F.1x03.MiE	<b>Drawing</b>	3+2	6
28	03.9.F.1x04.MiE	<b>Painting</b>	3+2	6
29	09.9.F.1x05.MiE	<b>English for Academic Purposes</b>	3+2	6
30	09.9.F.1x06.MiE	<b>Macedonian language</b>	3+2	6
31	09.9.F.1x07.MiE	<b>Linguistics</b>	3+2	6
32	08.3.F.1x08.MiE	<b>History of Africa</b>	3+2	6
33	08.3.F.1x09.MiE	<b>History of Asia</b>	3+2	6
34	08.3.F.1x10.MiE	<b>History of America</b>	3+2	6
35	08.9.F.1x11.MiE	<b>Ethnography</b>	3+2	6
36	08.3.F.1x12.MiE	<b>History of Europe</b>	3+2	6
37	13.3.F.1x13.MiE	<b>Introductory chemistry</b>	3+2	6
38	13.3.F.1x14.MiE	<b>Advanced chemistry</b>	3+2	6

39	13.1.F.1x15.MiE	<b>Introductory biology</b>	3+2	6
40	13.1.F.1x16.MiE	<b>Advanced biology</b>	3+2	6
41	13.9.F.1x17.MiE	<b>Geology</b>	3+2	6
42	13.9.F.1x18.MiE	<b>Neurophysiology</b>	3+2	6
43	12.8.F.1x19.MiE	<b>Medicine and medical technology</b>	3+2	6
44	12.9.F.1x20.MiE	<b>Pharmacology</b>	3+2	6
45	13.9.F.1x21.MiE	<b>Ecology</b>	3+2	6
46	13.9.F.1x22.MiE	<b>Genetics</b>	3+2	6
47	09.9.F.1x23.MiE	<b>Theatre</b>	3+2	6
48	09.9.F.1x24.MiE	<b>Poetry</b>	3+2	6
49	09.9.F.1x25.MiE	<b>Commercializing Technology, Venturing &amp; Entrepreneurship</b>	3+2	6