

ENDORSED:

Rector of EPU: Prof. Marin Marinov, PhD

Educational Degree
„BACHELOR“

Form of Training: *Full-time*
Term of Training: *4 Academic Years (8 Semesters)*

Professional Field

4.6. COMPUTER SCIENCES

ACADEMIC CURRICULUM

PROGRAM:

APPLIED COMPUTER SCIENCE

I. TIME SCHEDULE

Year	Auditoria Workload	Examinations	Practical Training	Industrial/Field Placement	Practice	Work on Diploma Thesis	Vacations	Total (Number of Weeks)
I	30	11	-	-	-	-	11	52
II	30	11	-	-	-	-	11	52
III	15	5	-	20	-	-	12	52
IV	25	11	-	-	-	10	6	52

II. CURRICULUM

<p>ECTS code: (ACS/GC)TNo</p> <ul style="list-style-type: none"> • ACS – “Applied Computer Science” • GC –General University Courses; • T – type of degree: B - “Bachelor”, M - “Master”; • No – serial number of the course; <p>Lectures (L), Seminar Exercises (SE), Lab Exercises (LE), Practical Training/Fieldwork (PT), Auditoria Workload (total) (AT), Self-Study (SS) per week</p> <p>Exam (E), Continuous Assessment (CA); Project Work (PW), Course Work (CW)/Course Tasks (CT)</p>

GC1: European Values and Culture

GC2: Basics of Economics

GC3: Introduction to Informatics

GC4: English

GC5: Bulgarian

SEMESTER I

№	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	total	E	CA	PW	CT		
1	Applied Computer Science Roadmap /Introduction to ACS/ (CN)	2	2	0	-	4	5	9	0	1	0	1	ACSB101	5
2	Programming I /Programming Fundamentals/ (PF)	2	0	2	-	4	6	10	1	0	0	0	ACSB102	6
3	Applied Mathematics (CN)	2	1	1	-	4	6	10	1	0	0	0	ACSB103	6
4	Discrete Mathematics I (CN)	2	1	1	-	4	5	9	1	0	0	0	ACSB104	5
5	Basics of Economics (IM)	2	2	0	-	4	3	7	1	0	0	0	GC2	4
6	European Values and Culture (SP)	2	2	0	-	4	3	7	1	0	0	0	GC1	4
Total		12	8	4	-	24	28	52	5	1	0	1		30

SEMESTER II

№	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
7	Data Structures and Algorithms (PF, AL)	2	1	1	-	4	6	10	1	0	0	0	ACSB205	6
8	Computer Organization (AR)	2	0	2	-	4	6	10	0	1	0	1	ACSB206	6
9	Introduction to Internet Computing (NC)	2	1	1	-	4	6	10	1	0	0	0	ACSB207	6
10	Essential Programming Languages. Object Oriented Programming (PL)	2	1	1	-	4	6	10	0	1	0	1	ACSB208	6
11	Discrete Mathematics II (CN)	2	1	1	-	4	6	10	1	0	0	0	ACSB209	6
Total		10	4	6	-	20	30	50	3	2	0	2		30

SEMESTER III

No	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
12	Development and Design of Software Systems (SE)	2	1	1	-	4	5	9	0	1	0	1	ACSB310	5
13	Databases (IM)	2	1	1	-	4	5	9	1	0	0	0	ACSB311	5
14	Computer Networking (NC)	2	1	1	-	4	5	9	1	0	0	0	ACSB312	5
15	Programming II /Language Translation Systems/ (PL)	2	1	1	-	4	5	9	1	0	0	0	ACSB313	5
16	Elective Course I	2	1	1	-	4	5	9	0	1	0	1		5
17	Elective Course II	2	1	1	-	4	5	9	1	0	0	0		5
Total		12	6	6	-	24	30	54	4	2	0	2		30

Elective Courses:

3-1	Computational Models (CN)	ACSB314
3-2	Semantic Web (NC)	ACSB315
3-3	Software Patterns (SE)	ACSB316

SEMESTER IV

No	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
18	Operating Systems (OS)	2	1	1	-	4	5	9	1	0	0	0	ACSB417	5
19	Parallel Computation /Concurrency/ (CN)	2	1	1	-	4	6	10	0	1	0	1	ACSB418	6
20	Intelligent Systems /Artificial Intelligence/ (IS)	2	1	1	-	4	5	9	1	0	0	0	ACSB419	5
21	Software Engineering (SE)	2	1	1	-	4	6	10	0	1	0	1	ACSB420	6
22	Elective Course I	2	1	1	-	4	5	9	1	0	0	0		5
23	Elective Course II	2	1	1	-	4	5	9	1	0	0	0		5
Total		12	6	6	-	24	32	56	4	2	0	2		32

Elective Courses:

4-1	Internet Programming (NC)	ACSB421
4-2	Intelligent Systems / Robotics/ (IS)	ACSB422
4-3	Systems with Programmable Logic (PL)	ACSB423

SEMESTER V

No	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
24	Advanced Computer Architectures (AR)	2	1	1	-	4	6	10	1	0	0	0	ACSB524	6
25	Computer Graphics (GV)	2	0	2	-	4	5	9	1	0	0	0	ACSB525	5
26	Network Security (NC)	2	1	1	-	4	5	9	1	0	0	0	ACSB526	5
27	Mobile Computing (NC)	2	1	1	-	4	5	9	1	0	0	0	ACSB527	5
28	Elective Course I	2	1	1	-	4	5	9	0	1	0	1		5
29	Elective Course II	2	1	1	-	4	5	9	0	1	0	1		5
Total		12	5	7	-	24	31	55	4	2	0	2		31

Elective Courses:

5-1	Programming in Java (PL)	ACSB528
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5-2	Essential Programming Languages. Procedure Oriented Language (PL)	ACSB529
5-3	Mathematical Modelling (CN)	ACSB530
5-4	Functional Programming (PL)	ACSB531

SEMESTER VI

№	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
30	Industrial Placement ²	0	0	0	24	0	16	40	0	0	1	0	ACSB632	30
	Total	0	0	0	24	0	16	40	0	0	1	0		30

SEMESTER VII^{5,6}

No	Course	Weekly Workload							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
31	Human Computer Interaction (HC)	2	0	2	-	4	5	9	1	0	0	0	ACSB733	5
32	Advanced Topics in SE (SE)	2	1	1	-	4	5	9	0	1	0	1	ACSB734	5
33	Elective Course I	2	1	1		4	5	9	1	0	0	0		5
34	Elective Course II	2	1	1	-	4	5	9	1	0	0	0		5
	Business Oriented Specialization – BO													
35 ⁶	E-Business Technology (IM)	2	1	1	-	4	5	9	0	1	0	1	ACSB735⁶	5
36 ⁶	Financial Computing (SE)	2	1	1	-	4	5	9	1	0	0	0	ACSB736⁶	5
	Science Oriented Specialization – SO													
35 ⁶	Bioinformatics (GV)	2	0	2	-	4	5	9	1	0	0	0	ACSB735⁶	5
36 ⁶	Parallel Algorithms (AL)	2	1	1	-	4	5	9	0	1	0	1	ACSB736⁶	5
37	Project Work ³	0	1	1	-	2	2	4	0	0	1	0	ACSB737	2
	Total	12	6	8	-	26	32	58	4	2	1	2		32

Elective Courses (both specializations):

7-1	Embedded Systems Design (OS) – BO, SO	ASCB738
7-2	Internet of “things” (NC) – BO, SO	ACSB739
7-3	Parallel Programming (PL) – BO, SO	ACSB740

SEMESTER VIII⁴

№	Course	Weekly Workload ⁴							Assessment				Code	ECTS
		L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT		
38	Social, Legal and Ethical Aspects of Science and Engineering (SP)	3	1	1	-	5	8	13	1	0	0	0	ACSB841	5
39	Elective Course I	3	0	2	-	5	8	13	1	0	0	0		5
40	Elective Course II	3	0	2	-	5	8	13	1	0	0	0		5
41	Diploma Thesis	0	0	0	-	0	30	30	0	0	1	0	ACSB844	12
	Total	9	1	5	-	15	24+30	39+30	3	0	1	0		27

Elective Courses (both specializations):

8-1	Programming of Hybrid Architectures (PL)	ASCB842
8-2	Computer Vision (GV)	ACSB843

Optional (Facultative) Courses:

N ^o	Course	L	SE	LE	PT	AT	SS	Total	E	CA	PW	CT	Code	ECTS
1	Data base management with My SQL	2	2	-	-	4	1	5	-	1	-	-		3

Notes:

1. Areas of Computer Science Knowledge: **DS. Discrete Structures; PF. Programming Fundamentals; AL. Algorithms and Complexity; AR. Architecture and Organization; OS. Operating Systems; NC. Net-Centric Computing; PL. Programming Languages; HC. Human-Computer Interaction; GV. Graphics and Visual Computing; IS. Intelligent Systems; IM. Information Management; SP. Social and Professional Issues; SE. Software Engineering; CN. Computational Science**
2. For Industrial placement one semester only is proposed – semester VI
3. The Project Work in semester VII may be accepted as base for Diploma thesis
4. Semester VIII comprises both several courses (up to 3) in shorten period (10 weeks), followed by Diploma thesis (10 weeks)
5. Specialization in Year IV is possible in case of sufficient number of students (minimum 5 students in one group); at this stage two specializations are proposed: business-oriented (BO) and science-oriented (SO). Additional further division inside business-oriented specialization can be analyzed.
6. The most appropriate semester for „mobility“ to partner University is semester VII

III. BASIC PARAMETERS OF THE CURRICULUM

Semester	Weekly Workload							Semester Workload				Assessment			
	L	SE	LE	PT	AT	SS	Total	L	SE	LE	PT	E	CA	PW	CT
I	12	8	4	-	24	28	52	180	120	60	-	5	1	0	1
II	10	4	6	-	20	30	50	150	75	75	-	3	2	0	2
III	12	6	6	-	24	30	54	180	90	90	-	4	2	0	2
IV	12	6	6	-	24	32	56	180	90	90	-	4	2	0	2
V	12	5	7	-	24	31	55	180	90	90	-	4	2	0	2
VI	0	0	0	24	0	16	40	0	0	0	360	0	0	1	0
VII	12	6	8	-	26	32	58	180	105	105	-	4	2	1	2
VIII ⁴	9	1	5	-	15	15+40	30+40	90	30	30	-	3	0	1	0
Total	79	36	42	24	157	214+40	395+40	1140	600	540	360	27	11	3	11

1. Term of study – 4 Years, 8 Semesters
2. Auditoria Workload
 - 2.1 Total - **2640** Hours
 - 2.2 Lectures - **1140** Hours
 - 2.3 Seminar Exercises - **600** Hours
 - 2.4 Lab Exercises - **540** Hours
 - 2.5 Practical Training/Fieldwork – 360 Hours
3. Total number of courses - **41**
 - 3.1. Compulsory- **28**
 - 3.2. Elective - **10**
 - 3.3. Optional – **1**
 - 3.4. Course Project – **1**
 - 3.5. Industrial Placement – **1**

- 3.6. Diploma Thesis - **1**
- 4. Assessment
 - 4.1. Exams - **27**
 - 4.2. Continuous Assessment - **11**
 - 4.3. Project Works - **3**
 - 4.4. Coursetasks – **11**

Head of the Program:

(Prof PhD Vladimir Lazarov)