



TECHNICAL UNIVERSITY OF VARNA

Ratified by:

Rector:

/Prof. Dragomir Dimitrov, PhD/

CURRICULUM

Professional orientation: **COMMUNICATIONS AND COMPUTER ENGINEERING**

Educational and qualification degree: **BACHELOR**

Programme: **ARTIFICIAL INTELLIGENCE (in English Language)**

Professional qualification: **COMPUTER ENGINEER**

Form of study: **FULL - TIME**

Term of study: **4 YEARS / 8 SEMESTERS**

Number	Subject name	Types of term control				Auditorium load						Unsupervised load	Total work hours	ECTS credits
		Examination	Progressive assessment	Course project	Approved	Lectures	Seminars			Laboratories	Total load			
							Seminar exercises	Course project	Course work					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Mathematics, part 1		*			30	45				75	105	180	7
2	Digital Logic		*			30	30				60	120	180	7
3	Programming Fundamentals, part 1	*				30	30			30	90	110	200	8
4	Electronics		*			30				30	60	100	160	6
5	English for IT Engineers				*		45				45	45	90	3
6	<i>Elective Subject</i>				*							30	30	1
a	Specialized Sport Activities, part 1													
b	Adapted Physical Activity*													
Total for the 1 semester:		1	3	0	2	120	150	0	0	60	330	510	840	32
7	Mathematics, part 2	*				30	30			15	75	105	180	7
8	Corporate Management	*				30				30	60	120	180	7
9	Algorithms and Data Structures	*				30				30	60	120	180	7
10	Programming Fundamentals, part 2		*			30				30	60	120	180	7
11	Practical Training, part 1				*							30	30	1
12	<i>Elective Subject</i>				*							30	30	1
a	Specialized Sport Activities, part 2													
b	Adapted Physical Activity*					(30)	(15)				(45)	(75)	(120)	(4)
Total for the 2 semester:		3	1	0	2	120	30	0	0	105	255	525	780	30
13	Discrete Structures	*				30	30				60	120	180	7
14	Object Oriented Programming	*				30				30	60	120	180	7
15	Probability Theory for Computer Science	*				30				30	60	120	180	7
16	Computer Organization		*			30				30	60	120	180	7
17	Practical Training, part 2				*							30	30	1

Number	Subject name	Types of term control				Auditorium load						Unsupervised load	Total work hours	ECTS credits
		Examination	Progressive assessment	Course project	Approved	Lectures	Seminars			Laboratories	Total load			
							Seminar exercises	Course project	Course work					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
18	<i>Elective Subject</i>				*							30	30	1
a	Specialized Sport Activities, part 3													
b	Adapted Physical Activity*													
Total for the 3 semester:		3	1	0	2	120	30	0	0	90	240	540	780	30
19	Fundamentals of Artificial Intelligence	*				30				30	60	100	160	6
20	Data Bases	*				30				30	60	80	140	5
21	Microprocessors	*				30				30	60	100	160	6
22	Digital Signal Processing		*			30				30	60	80	140	5
23	System Analysis		*			30				30	60	80	140	5
24	<i>Elective Subject, project</i>			*				30			30	30	60	2
a	Discrete Structures													
b	Object Oriented Programming													
c	Computer Organization													
25	<i>Elective Subject</i>				*							30	30	1
a	Specialized Sport Activities, part 4													
b	Adapted Physical Activity*													
Total for the 4 semester:		3	2	1	1	150	0	30	0	150	330	500	830	30
26	Fundamentals of Machine Learning	*				30				30	60	100	160	6
27	Computer Graphics and Virtual Reality	*				30				30	60	100	160	6
28	Sensors, Actuators and Controllers	*				30				30	60	80	140	5
29	Computer Architectures	*				30				30	60	100	160	6
30	Operating Systems		*			30				30	60	80	140	5
31	<i>Elective Subject, project</i>			*				30			30	30	60	2
a	Fundamentals of Artificial Intelligence													
b	Data Bases													
c	System Analysis													
Total for the 5 semester:		4	1	1	0	150	0	30	0	150	330	490	820	30
32	Internet Programming Technologies		*			30				30	60	80	140	5
33	Functional Programming Languages	*				30				30	60	100	160	6
34	Selected Methods for Machine Learning	*				30				30	60	100	160	6
35	Computer Networks	*				30				30	60	100	160	6
36	Specialized Practice				*						0	150	150	5
37	<i>Elective Subject, project</i>			*				30			30	30	60	2
a	Fundamentals of Machine Learning													
b	Operating Systems													
c	Computer Architectures													
Total for the 6 semester:		3	1	1	1	120	0	30	0	120	270	560	830	30
38	Ethics and Legal Regulation in Artificial Intelligence	*				30				30	60	120	180	7
39	Robot Systems Programming	*				30				30	60	140	200	8

Number	Subject name	Types of term control				Auditorium load						Unsupervised load	Total work hours	ECTS credits
		Examination	Progressive assessment	Course project	Approved	Lectures	Seminars			Laboratories	Total load			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
40	Parallel Algorithms and Systems	*				30				30	60	140	200	8
41	<i>Elective Subject</i>		*			15				30	45	70	115	4
a	Information Collection and Storage Systems													
b	Design of Human-oriented Systems													
42	Software Engineering	*				30				30	60	120	180	7
43	<i>Elective Subject, project</i>			*				30			30	30	60	2
a	Internet Programming Technologies													
b	Functional Programming Languages													
c	Computer Networks													
Total for the 7 semester:		4	1	1	0	135	0	30	0	150	315	620	935	36
44	<i>Elective Subject 1</i>	*				30				30	60	140	200	8
45	<i>Elective Subject 2</i>	*				30				30	60	140	200	8
46	<i>Elective Subject 3</i>	*				30				30	60	140	200	8
	<u><i>Elective Subject:</i></u>													
1	Bayesian Reasoning													
2	Image Processing and Computer Vision													
3	Logic Programming and Production Systems													
4	Intellectual Property Rights Protection													
5	Commercial Law													
6	Natural Language Processing													
7	Embedded Microcontrollers													
8	Programmable Logic Design													
9	Object-Oriented Applications													
10	Block-chain Technologies and Applications													
11	Programming for Mobile Devices													
12	E-commerce													
13	Methods of Control and Planning in Robotics													
Total for the 8 semester:		3	0	0	0	90	0	0	0	90	180	420	600	24
Totals for the whole course of education		24	10	4	8	1005	210	120	0	915	2250	4165	6415	242

Number	Subject name	Types of term control				Auditorium load						Unsupervised load	Total work hours	ECTS credits
		Examination	Progressive assessment	Course project	Approved	Lectures	Seminars			Laboratories	Total load			
							Seminar exercises	Course project	Course work					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Facultative Subjects														
1	Ecology		5			30				30	60	60	120	4
2	Copyright Regulations		6			30	30				60	60	120	4
3	Business Accounting		4			30	30				60	60	120	4
4	Publishing Systems		7			30				30	60	60	120	4
5	Philosophy		2			30	30				60	60	120	4
6	English for Computing		2				60				60	60	120	4
7	Introduction in Competitive Programming		3				15			45	60	60	120	4
8	Competitive Programming		4				15			45	60	60	120	4
9	Advanced Competitive Programming		5				15			45	60	60	120	4

Types of graduation	Semester	Unsupervised load	ECTS credits
Preparation of Diploma Thesis / Preparation for State Examination	8	300	10
Defence of Diploma Thesis / State Examination			

Note:

* The discipline "Adapted Physical Activity" is an alternative to "Specialized Sport Activities", it is studied in the second semester and is intended for students who cannot do sports for health reasons.

Approved by the Academic Board of TU-Varna:

Protocol No 22 / 28.10.2024

Modified with Protocols:

Valid from the 2024/2025 academic year.

The weekly allocation of the classes is fixed according to the "Structure of the Learning Process" Academic Board adopted for the current academic year.

Head of Department:

/ Prof. V. Aleksieva, PhD /

Dean of Faculty:

/ Assoc. Prof. M. Aleksandrova, PhD /