



UNIVERSITETI "NËNË TEREZA" - SHKUP
УНИВЕРЗИТЕТ "МАЈКА ТЕРЕЗА" - СКОПЈЕ
"MOTHER TERESA" UNIVERSITY - SKOPJE

UNIVERSITY "MOTHER THERESA" – SKOPJE

Faculty of Informatics

Description of the Vocational (Professional) study program

Applied Programming

First cycle studies (3 years, 180 ECTS credits)

Curriculum and program of first cycle studies in applied Programming, Faculty of Information Sciences - UNIVERSITY "MOTHER TERESA" - SKOPJE

Code	COURSES	Hours	Contact classes	Total hours of Engagement	Credits
	Required courses	11 + 8	315	720	30
FIP101	Fundamentals of Probability Theory and Basics of statistics	3 + 2	75	180	6
FIP 102	Programming 1	3 + 2	75	180	6
FIP 103	Introduction to Internet Technologies	3 + 2	75	180	6
FIP 104	Basics of Web Design	2 + 2	60	180	6
	<i>Elective subject from List 1</i>	2 + 2	60	180	6
	Electives List 1	2 + 2	60	180	6
FIP 1Z1	English Language for Specific Needs 1	2 + 2	60	180	6
FIP 1Z2	Graphic Applications	2 + 2	60	180	6
TOTAL		14 + 9 = 23	315	900	30

Code	COURSES	Hours	Contact classes	Total hours of engagement	Credits
	Required courses	9 + 5	210	600	30
FIP 201	Analytical and other skills to solve problems	3 + 2	75	180	6
FIP 202	Programming 2	3 + 2	75	180	6
FIP 203	Algorithms and structures of Data	3 + 1	60	180	6
	<i>Elective subject from List 2</i>	2 + 2	60	180	6
	<i>Elective subject from university list</i>	2 + 1	45	120	4
FIP 204	Teaching practice	2 + 0	60	6 60	6 20

	Electives List 2	2 + 2	60	180	6
FIP 2Z1	English Language for Specific Needs 2	2 + 2	60	180	6
FIP 2Z2	Multimedia tools	2 + 2	60	180	6
	Elective subject from university list	2 + 1	45	120	4
	Teaching practice (compulsory)	2 + 0	60	60	2
TOTAL		14 + 7 = 21	315	900	30

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Code	COURSES	Hours	Contact classes	Total hours of engagement	Credits
	Required courses	9 + 5	210	600	30
FIP 3O1	Programming customized interfaces	3 + 2	75	180	6
FIP 3O2	Web programming	3 + 2	75	180	6
FIP 3O3	Operative system	3 + 1	60	180	6
	<i>Elective subject from List 3</i>	2 + 2	60	180	6
	<i>Elective subject from List 3</i>	2 + 2	60	180	6
	Electives List 3	2 + 2	60	180	6
FIP 3Z1	Architecture and organization of computers	2 + 2	60	180	6
FIP 3Z2	Programming in script languages 1	2 + 2	60	180	6
FIP 3Z3	Research methods	2 + 2	60	180	6
TOTAL		13 + 8 = 21	315	900	30

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Code	COURSES	Hours	Contact classes	Total hours of engagement	Credits
	Required courses	6 + 4	150	480	12
FIP 4O1	Software Engineering	3 + 2	75	180	6
FIP 4O2	Database programming on data	3 + 2	75	180	6
	<i>Elective course from List 4</i>	2 + 2	45	180	6
	<i>Elective subject from List4</i>	2 + 2	45	180	6
	<i>Elective subject from university list</i>	2 + 1	45	120	4
FIP 4O3	Teaching practice	2 + 0	60	60	2
	Electives List 4	2 + 2	90	360	12
FIP 4Z1	Programming in .NET platform	2 + 2	45	180	6
FIP 4Z2	Programming in script languages 2	2 + 2	45	180	6
FIP 4Z3	Design of logical circuits	2 + 2	45	180	6
FIP 4Z4	Internet on things (IoT)	2 + 2	45	180	6
	Elective subject from university list	2 + 1	45	120	4
	Teaching practice (mandatory)	2 + 0	60	60	2
TOTAL		14 + 7 = 21	300	900	30

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Code	COURSES	Hours	Contact classes	Total. hours of delivery.	Credits
	Required courses	6 + 3	135	360	12
FIP 5O1	Programming Mobile devices	3 + 2	75	180	6

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FIP 5O2	Advanced Web Programming	3 + 1	60	180	6
FIP 5O2	Programming games	2 + 2	45	180	6
	<i>Elective course from List 5</i>	2 + 2	45	180	6
	<i>Elective course from List 5</i>	2 + 2	45	180	6
	Elective courses List 5 2 + 2		135	450	15
FIP 5Z1	Programming in Java	2 + 2	45	180	6
FIP 5Z2	Visual Programming	2 + 2	45	180	6
FIP 5Z3	Data Engineering	2 + 2	45	180	6
FIP 5Z4	Software Testing	2 + 2	45	180	6
FIP 5Z5	Internet Marketing and communications	2 + 2	45	180	6
FIP 5Z6	Computer networks	2 + 2	45	180	6
TOTAL		14 + 7 = 21	330	960	30

Code	COURSES	Hours	Contact classes	Total hours of engagement	Credits
	Required courses	9 + 4	195	510	17
FIP 6O1	Programming for Science at Data (Data Science)	3 + 2	75	180	6
FIP 6O2	Programming Electronic and mobile commerce	3 + 1	60	180	6
FIP 6O3	Graduate thesis	3 + 1	60	180	6
	<i>Elective course from List 6</i>	2 + 2	45	180	6
	<i>Elective subject from university list</i>	2 + 1	45	120	4
	<i>Teaching practice (mandatory)</i>	2 + 0	30	60	2
	Elective courses List 6 2 + 2		90	300	10
FIP 6Z1	Software Project management	2 + 2	45	150	6
FIP 6Z2	Advanced aspects of programming and artificial intelligence	2 + 2	45	150	6
FIP 6Z1	Geographic information systems	2 + 2	45	150	6
FIP 6Z2	Management of information systems	2 + 2	45	150	6

	Elective course from a university list	2 + 1	45	120	4
	Teaching practice (mandatory)	2 + 0	30	120	2
TOTAL		15 + 6 = 21	315	930	30

The candidate who will successfully pass the exams of the undergraduate studies and will successfully pass the diploma paper will gain the title BSc in Applied Programming.

The part-time study program is realized with 50% of the contact hours envisaged in the regular study program. The organization of contact hours is adapted to the availability of the students and lasts longer than the regular study program but no longer than 2 study years.

Students are supposed to choose Elective courses from the List of free elective courses from the units of UMT.

Electives from the List of Free Electives from the University					
	Electives	Hours	Contact hours	Total load	ECTS
1	Introduction to Programming	2 + 1	45	90	4
2	Information skills	2 + 1	45	90	4
3	Advanced Information skills	2 + 1	45	90	4
4	Internet Technology	2 + 1	45	90	4
5	Business Ethics	2 + 1	45	90	4
6	Entrepreneurship	2 + 1	45	90	4
7	Selected chapters from Probability and statistics	2 + 1	45	90	4
8	Selected chapters from Physics	2 + 1	45	90	4
9	Parts of elementary mathematics, applied in engineering	2 + 1	45	90	4
10	Web programming	2 + 1	45	90	4

11	Numerical Mathematics and its application	2 + 1	45	90	4
12	Food, media and the society	2 + 1	45	90	4
13	Introduction to the food industry	2 + 1	45	90	4
14	Fundamentals of Science of materials	2 + 1	45	90	4
15	Selected chemistry chapters	2 + 1	45	90	4
16	Fundamentals of renewable resources energy	2 + 1	45	90	4
17	Selected chapters in Biology	2 + 1	45	90	4
18	General cartography	2 + 1	45	90	4
19	Geoinformatics	2 + 1	45	90	4
20	Human Resources Management	2 + 1	45	90	4
21	Architecture of computers	2 + 1	45	90	4
22	Traffic policy	2 + 1	45	90	4
23	Urban logistics	2 + 1	45	90	4
24	Basics of the economy	2 + 1	45	90	4
25	Fundamentals of Engineering	2 + 1	45	90	4
26	Modern things on construction	2 + 1	45	90	4
27	Modern trends of Architecture	2 + 1	45	90	4
28	Eco-Architecture and durable Design	2 + 1	45	90	4
29	Communication with the public and the art of speaking	2 + 1	45	90	4
30	Research Journalism	2 + 1	45	90	4
31	Controversies in public debate	2 + 1	45	90	4
32	European multiculturalism	2 + 1	45	90	4
33	English for specific needs 1	2 + 1	45	90	4
34	English for specific needs 2	2 + 1	45	90	4
35	Romanian languages for specific needs 2	2 + 1	45	90	4

Total	2 + 1	45	90	4
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In accordance with amendments of the Law on Higher Education (The official gazette of RM no.25/11), the number of free elective courses in the study program Applied Software Engineering should amount 10% from the total number of courses.

Table . Type of courses and the ratio of obligatory and elective courses within the study program of Applied Programming

Ed. No.	Type of object	No. of Courses	% of representation
1	Obligatory courses	18	60%
2	Elective courses	9	30%
3	Graduate thesis	1	
4	Free elective courses	3	10%
Total		31	100%

How to choose an elective course? – By choosing a subject from the list of elective courses, the subject gets a mandatory status. At the beginning of the semester the student selects two possible courses from the given choices. The final decision for the course will be based on the number of the students who have chosen a particular course.

Purpose and justification for introduction /changes and additions to the study program

enabling students to acquire concrete and applicable knowledge and a high level of understanding in a range of issues in the field of applied programming and informatics;

developing critical thinking skills among students, as well as the skills of analytical problem solving;

preparation of academic staff for the needs of the Faculty, other units at the University "Mother Teresa" in Skopje, staff that will cover most of the needs of this field, both from the country and from abroad;

strengthening the institutional capacity of the sectors that cover the profile graduated engineer in applied programming.

increasing the employability of future graduate engineers in applied programming through a wide range of contemporary and relevant study programs, oriented towards the needs of the dynamic software and data systems market, and

producing quality human resources, ready to respond to the challenges of the business sector.

The dynamic environment, as well as the rapid development of technology and technology requires that we are able to prepare a workforce that will meet the needs of the labor market, in order to meet the demands arising from foreign and domestic information companies, it is necessary to permanently educate personnel who have applied information knowledge and who will successfully respond to global trends. Faculty of Information Science at the University "Mother Teresa" in Skopje presents a study program that stems from the previously performed comprehensive analysis and identification of the needs and possibilities for employment of the finished students in: the development and research units in enterprises, higher education institutions and scientific research institutes, the public sector in the specialized sections are engaged in the field of studies (informatics, mathematics, electrical engineering, education and science, and others) and international governmental and non-governmental organizations. Recognizing the basic competencies of the profile and the acquired qualifications, this study program justifies the expectations in the field of knowledge of the organization and realization of complex research, realization of research related to the development programs in the enterprises, preparation, definition and participation in the national, bilateral and international scientific-research projects, etc.