

**STRUCTURE OF ACADEMIC PROGRAM
MATERIAL TECHNOLOGIES
FIRST CYCLE - 240 ECTS (FOUR YEAR STUDIES)**

COURSE PROGRAMS, FIRST YEAR - FIRST SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Mathematics 1	8	3+2+2	240
2	General and inorganic chemistry	8	3+2+2	240
3	Informatics	6	2+2+1	180
4	Elective faculty subjects from the list no. 1-1	4	2+1+1	120
5	Elective faculty subjects from the list no. 1-2	4	2+1+1	120
6	Sport and recreation	*	0+0+2	
Total ECTS		30	12+8+9	900

List no. 1-1 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Organic chemistry	4	2+1+1	120
2	Physics	4	2+1+1	120

List no. 1-2 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1.	English language 1	4	2+1+1	120
2.	Graphic design	4	2+1+1	120

COURSE PROGRAMS, FIRST YEAR, SECOND SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Mathematics 2	8	3+2+2	240
2	Basics of technological engineering	6	2+2+1	180
3	Basic of materials science 1	6	2+2+1	180
4	Elective faculty subjects from the list no. 1-3	4	2+1+1	120
5	Elective university subjects from the list no. 5	4	2+1+1	120
6	Practical teaching *	2		60
Total ECTS		30	11+8+6	900

*** Practical teaching - compulsory realization for transfer to the next academic year, only for first (1) cycle of studies. Performed for 30 days.**

List no. 1-3 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	English language 2	4	2+1+1	120
2.	Mechanics	4	2+1+1	120

COURSE PROGRAMS, SECOND YEAR, THIRD SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Chemistry and physics of polymers	8	3+2+2	240
2	Basic of materials science 2	8	3+2+2	240
3	Physical chemistry	6	2+2+1	180
4	Elective faculty subjects from the list no.2.1	4	2+1+1	120
5	Elective faculty subjects from the list no.2.2	4	2+1+1	120
Вкупно ECTS		30	12+8+7	900

List no. 2.1 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Fundamentals of management	4	2+1+1	120
2	Management of waste	4	2+1+1	120

List no. 2.2 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Business communications	4	2+1+1	120
2	Product development	4	2+1+1	120

COURSE PROGRAMS, SECOND YEAR, FOURTH SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Measurement and dimension analysis	6	2+2+1	180
2	Strength of materials	8	3+2+2	240
3	Kinetics and phenomen of transmission	6	2+2+1	180
4	Elective faculty subjects from the list no. 2.3	4	2+1+1	120
5	Elective university subjects from the list no. 5	4	0+0+4	120
6	Practical teaching *	2	0+0+2	60
Total ECTS		30	9+7+11	900

- **Practical teaching - compulsory realization for transfer to the next academic year, only for first (1) cycle of studies. Performed for 30 days.**

List no. 2.3 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Thermodynamics	4	2+1+1	120
2	Analytical chemistry	4	2+1+1	120
3	Operations on mass transfer	4	2+1+1	120

COURSE PROGRAMS, THIRD YEAR, FIFTH SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	New engineering materials	6	2+2+1	180
2	Planning experiments	8	3+2+2	240
3	Production technologies	8	3+2+2	240
4	Elective faculty subjects from the list no. 3.1	4	2+1+1	120
5	Elective faculty subjects from the list no. 3.2	4	2+1+1	120
Total ECTS		30	12+8+7	900

List no. 3.1 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Metals and alloys	4	2+1+1	120
2	Fundamentals of automatic management	4	2+1+1	120

List no. 3.2 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Building materials	4	2+1+1	120
2	Technologies of plastic tables	4	2+1+1	120

COURSE PROGRAMS, THIRD YEAR, SIXTH SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Composite materials 1	8	3+2+2	240
2	Examination of materials	6	2+2+1	180
3	Nano materials and technologies 1	6	2+2+1	180
4	Elective faculty subjects from the list no. 3.3	4	2+1+1	120
5	Elective university subjects from the list no. 5	4	0+0+4	120
6	Practical teaching *	2	0+0+2	60
Total ECTS		30	9+7+11	900

- **Practical teaching - compulsory realization for transfer to the next academic year, only for first (1) cycle of studies. Performed for 30 days.**

List no. 3.3 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Ceramics	4	2+1+1	120
2	Protective materials	4	2+1+1	120

COURSE PROGRAMS, FOURTH YEAR, SEVENTH SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	High performance fibers	8	3+2+2	240
2	Polymer composite materials	8	3+2+2	240
3	Nano materials and technologies 2	6	2+2+1	180
4	Elective faculty subjects from the list no. 4.1	4	2+1+1	120
5	Elective faculty subjects from the list no. 4.2	4	2+1+1	120
Total ECTS		30	12+8+7	900

List no. 4.1 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Systems for quality and standards	4	2+1+1	120
2	Corrosion and protection	4	2+1+1	120

List no. 4.2 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Industrial management	4	2+1+1	120
2	Recycling of polymers	4	2+1+1	120

COURSE PROGRAMS, FOURTH YEAR, EIGHTH SEMESTER

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Design of technological processes	4	2+1+1	120
2	Biomaterials	4	2+1+1	120
3	Principles of selection of materials	4	2+1+1	120
4	Graduate thesis	6	2+2+1	180
5	Elective faculty subjects from the list no.4.3	4	2+1+1	120
6	Elective university subjects from the list no.5	4	0+0+4	120
7	Practical teaching - interdisciplinary project *	4	0+0+4	120
Total ECTS		30	10+6+13	900

* Practical teaching - interdisciplinary project foreseen in 8 semesters, will be evaluated with 4 ECTS, and it will be provided by a mentor who is a teacher in the professional subjects of the faculty. It will be performed 2 days a week for 4 hours, or one day a week for 8 hours.

List no. 4.3 of elective faculty subjects (one elective subject)

Order no.	Subjects	ECTS	Class of classes	Total hours
1	Technical textiles	4	2+1+1	120
2	Industrial design	4	2+1+1	120

List no. 5 of electives from the free list of University courses for the first cycle of study (4 - four subjects are selected)

Code	List of University electives subjects II, IV, VI and VIII semesters			
	SUBJECTS	Credits	Hours	Total
UGD100117	Macedonian literature and culture	4	0+0+4	120
UGD100217	Macedonian language and spelling	4	0+0+4	120
UGD100317	Ethics	4	0+0+4	120
UGD100417	History of Macedonia	4	0+0+4	120
UGD100517	Authors right	4	0+0+4	120
UGD100617	Tolerance and conflict resolution	4	0+0+4	120
UGD100717	Business systems	4	0+0+4	120
UGD100817	Tourism industry	4	0+0+4	120
UGD100917	Entrepreneurship and innovation	4	0+0+4	120
UGD101017	Management of self-development and behavior	4	0+0+4	120
UGD101117	Business economics	4	0+0+4	120
UGD101217	Choral singing	4	0+0+4	120
UGD101317	Music and art	4	0+0+4	120
UGD101417	Introduction to film history	4	0+0+4	120
UGD101517	Dramaturgy	4	0+0+4	120
UGD101617	Basics of drawing	4	0+0+4	120
UGD101717	History of classical painting	4	0+0+4	120
UGD101817	Health promotion	4	0+0+4	120
UGD101917	Oral health and hygiene	4	0+0+4	120
UGD102017	Precious and semiprecious minerals	4	0+0+4	120
UGD102117	Earth science	4	0+0+4	120
UGD102217	Wildlife Science	4	0+0+4	120
UGD102317	Environmental Protection	4	0+0+4	120
UGD102417	Intelligent electronic components and devices	4	0+0+4	120
UGD102517	Experiment planning	4	0+0+4	120
UGD102617	History of clothing	4	0+0+4	120
UGD102717	Management and quality control	4	0+0+4	120
UGD102817	Informatics	4	0+0+4	120
UGD102917	Basics of programming	4	0+0+4	120