T E C H N I C A L U N I V E R S I T Y O F G A B R O V O
FACULTY OF MECHANICAL AND PRECISION ENGINEERING

Endorsed with Academic Council resolution
Record№ 9 dated 01.06.2010

Approved by
Rector /s/

Q U A C A T I O N R E F E R E N C E

Degree course: **TECHNOLOGY OF MATERIALS AND MANAGEMENT**
Educational qualification degree: **BACHELOR**
Field of higher education: **TECHNICAL SCIENCES**
Professional trend: 5.6 **MATERIALS AND MATERIALS SCIENCE**
Professional qualification: **ENGINEERING TECHNOLOGIST**

ANNOTATION

This qualification reference specifies the vocational purpose of specialists who are holders of Bachelor degree in Technology of Materials and Management in the professional trend of Materials and Materials Science as well as all qualification requirements for their training and areas of professional realization.

VOCATIONAL PURPOSE

Specialists who have majored in "Technology of materials and management" (TMM), have received training which is in conformity with contemporary scientific and application achievements in the field of treatment and introduction of both traditional and novel materials used in mechanical engineering, transportation, power engineering and all branches of industry which have adopted treatment of contemporary mechanical engineering materials and technologies of their treatment.Their training in management of production, innovations ,human resources, economy and financial-economic analysis of business; industrial engineering and project management enables them to perform successfully in market economy settings characterized by quickly changing environment , substantial economic risk and competition.

They possess theoretic knowledge and practical experience which determine their vocational purpose in terms of investigating projects in the field of material treatment, technology design, business organization, innovative activity in the area of mechanical engineering, introduction of technology systems for quality management in material machining and are also eligible to continue their studies in Master's degree courses.

REQUIREMENTS FOR TRAINING

Graduates' training provides required knowledge and skills for technologies and equipment used in the production and treatment of traditional materials in national economy. It enables them to improve the quality of manufactured goods and introduce novel materials which feature all required operational properties. Basic and specialized knowledge in management correspond to the demand of managers capable to manage manufacturing companies. Bachelors of TMM will be able to utilize modern computer methods for development of production processes and equipment which guarantees technologies for production of articles by means of casting, welding, plastic deformation, sintering. They will also be able to improve electro-chemical and electro-physical properties of manufactured articles and possess required skills in the field of organizing and managing innovative and company activities.

AREAS OF PROFESSIONAL REALIZATION

Specialists with bachelor degree in "Technology of materials and management" should be able to carry out industrial engineering, design and development, diagnostic and repair, administrative, organizational and managerial activity in modern manufacturing and administrative sectors of national economy. They are also eligible to continue their training in Master's degree courses.

This qualification reference was endorsed by Faculty Council with Record No4 dated 27.05.2010.

Department Chair /s/

Dean /s/

T E C H N I C A L U N I V E R S I T Y O F G A B R O V O
FACULTY OF MECHANICAL AND PRECISION ENGINEERING

Endorsed with Academic Council resolution
Record № 9 dated 01.06.2010

Approved by
Rector /s/

Updated with Academic Council resolution
Records № 10 dated 03.07.2012, № 9 dated 13.05.2014 and № 6 dated 03.02.2015

C U R R I C U L U M

Degree course: **TECHNOLOGY OF MATERIALS AND MANAGEMENT**
Academic degree: **BACHELOR**
Higher education area: **TECHNICAL SCIENCES**
Professional trend: **MATERIALS AND MATERIALS SCIENCE**
Professional qualification: **ENGINEERING TECHNOLOGIST**
Form of training: **FULL-TIME**
Duration of training: **4 /FOUR/ YEARS**

№	SUBJECTS TAUGHT	FORMS OF ASSESSMENT **E - EXAMINATION CA – CONTINUOUS ASSESSMENT**		COURSE-WORK	WORKLOAD IN NUMBER OF ACADEMIC HOURS				WEEKLY DISTRIBUTION	TYPE OF SUBJECT	ECTS CREDITS
					LECT-URES	SEMI-NAR CLASS ES	LABORA TOR Y CLAS S-ES	T / C	L + SC + LC		
1	2	3	4	5	6	7	8	9	10	11	12
	First Semester										
1.	Calculus, part 1	E			30	30	0	60	2+2+0	C	5/2.3
2.	Informatics	E		CW	30	0	30	60	2+0+2	C	6/2.3
3.	Chemistry	E			30	0	15	45	2+0+1	C	4/1.7
4.	Engineering Graphics I		CA	CW	15	0	30	45	1+0+2	C	5/1.7
5.	Materials Science	E			30	0	30	60	2+0+2	C	6/2.3
6.	Placement				0	0	30	30	0+0+2	C	1/1
7.	Foreign Language				0	30	0	30	0+2+0	E	3/1.1
8.	Physical Education				0	(30)	0	(30)	(0+2+0)	E	(3/1.1)
	First year, first semester	***4 E***	***1 CA***	***2 CW***	***135***	***60***	***135***	***330***	***9+4+9=22***		***30/12.4***

1	2	3	4	5	6	7	8	9	10	11	12
	Second Semester										
9.	Calculus, part 2	E			30	30	0	60	2+2+0	C	5/2.3
10.	Physics	E			30	0	30	60	2+0+2	C	5/2.3
11.	Mechanics, part 1	E		CW	30	30	0	60	2+2+0	C	6/2.3
12.	Technology of Engineering Materials	E			30	0	30	60	2+0+2	C	6/2.3
13.	Engineering Graphics II		CA	CW	0	0	30	30	0+0+2	C	4/1.1
14	Placement				0	0	30	30	0+0+2	C	1/1
15.	Foreign Language		CA		0	30	0	30	0+2+0	E	3/1.1
16.	Physical Education				0	(30)	0	(30)	(0+2+0)	E	(3/1.1)
	First year, second semester	***4 E***	***2CA***	***2 CW***	***120***	***90***	***120***	***330***	***8+6+8=22***		***30/12.4***
	Third Semester										
17.	Calculus, part 3	E			30	30	0	60	2+2+0	C	5/2.3
18.	Mechanics, part 2	E		CW	30	0	30	60	2+0+2	C	5/2.3
19.	Strength of Materials	E		CW	30	15	15	60	2+1+1	C	6/2.3
20.	Fluid Mechanics		CA		30	0	15	45	2+0+1	C	4/1.7
21.	Non-metal Materials	E			45	0	30	75	3+0+2	C	6/2.8
22.1	Project Management		CA		30	15	0	45	2+1+0	E	4/1.7
22.2	Industrial Marketing		CA		30	15	0	45	2+1+0	E	4/1.7
23.	Physical Education				0	(30)	0	(30)	(0+2+0)	E	(3/1.1)
24.	Foreign Language - specialized course		CA		0	60	0	30	0+4+0	O	5/2.3
	Second year, third semester	***4E***	***2CA***	***2 CW***	***195***	***60***	***90***	***345***	***13+4+6=23***		***30/13.1***
	Fourth Semester										
25.	Electrical Engineering and Electronics		CA		30	0	15	45	2+0+1	C	4/1.7
26.	Fundamentals of Management		CA		30	15	0	45	2+1+0	C	5/1.7
27.	Metrology and Instrumentation	E			30	0	30	60	2+0+2	C	5/2.3
28.	Crystallography	E			30	0	30	60	2+0+2	C	5/2.3
29.	Machine Elements	E		CW	30	0	30	60	2+0+2	C	6/2.3
30.	Thermodynamics	E			30	0	30	60	2+0+2	C	5/2.3
31.	Physical Education				0	(30)	0	(30)	(0+2+0)	E	(3/1.1)
32.	Work Placement, part 1				0	0	0	(120)		C	(4/0)
	Second year, fourth semester	***4E***	***2CA***	***1 CW***	***180***	***15***	***135***	***330***	***12+1+9=22***		***30/12.6***

1	2	3	4	5	6	7	8	9	10	11	12
	Fifth Semester										
33.	Plastic Deformation Treatment of Materials	E			45	0	30	75	3+0+2	C	7/2.8
34.	Welding of Materials	E			45	0	30	75	3+0+2	C	7/2.8
35.	Economics of Industrial Enterprise	E			30	30	0	60	2+2+0	C	5/2.3
36.	Tooling Equipment	E			30	0	30	60	2+0+2	C	6/2.3
37.1	Industrial Property		CA		30	30	0	60	2+2+0	E	5/2.3
37.2	Intellectual Property Protection		CA		30	30	0	60	2+2+0	E	5/2.3
38.	Physical Education				0	(30)	0	(30)	(0+2+0)	O	(3/1.1)
	Third year, fifth semester	***4E***	***1CA***		***180***	***60***	***90***	***330***	***12+4+6=22***		***30/12.5***
	Sixth Semester										
39.	Heat Treatment of Materials	E		CW	45	0	30	75	3+0+2	C	6/2.8
40.	Casting of Materials	E		CW	45	0	30	75	3+0+2	C	7/2.8
41.	Electro-physical and Electrochemical Methods of Material Treatment	E			45	0	30	75	3+0+2	C	6/2.8
42.	Industrial Engineering	E			30	15	15	60	2+1+1	C	5/2.3
43.	Computer Aided Design		CA		15	0	30	45	1+0+2	C	4/1.7
44.	Plastic Deformation Treatment of Materials - project		CA							C	2/0
45.	Work Placement, part 2				0	0	0	(120)		C	(4/0)
46.	Planning and Forecasting		CA		30	15	0	45	2+1+0	O	4/1.7
	Third year, sixth semester	***4E***	***2CA***	***2 CW***	***180***	***15***	***135***	***330***	***12+1+9=22***		***30/12.4***
	Seventh Semester										
47.	Small-waste and Waste-free Technologies in Metal Cutting		CA		30	0	15	45	2+0+1	C	4/1.7
48.	Processes and Equipment for Mechanical Treatment	E			30	0	30	60	2+0+2	C	5/2.3
49.	Powder Metallurgy	E			30	0	30	60	2+0+2	C	5/2.3
50.	Industrial Recycling Technologies	E			30	0	30	60	2+0+2	C	5/2.3
51.	Computer-based Methods for Engineering Analysis		CA		15	0	30	45	1+0+2	C	4/1.7
52.	Welding of Materials - course project		CA							C	2/0
53.	Computerized Machines and Systems in Metal Cutting	E			30	0	30	60	2+0+2	C	5/2.3
54.	Financial and Economic Analysis of Business		CA		30	15	0	45	2+1+0	O	4/1.7
	Fourth year, seventh semester	***4E***	***3CA***		**165**	**0**	**165**	**330**	**11+0+11=22**		**30/12.6**

1	2	3	4	5	6	7	8	9	10	11	12
	Eighth Semester										
55.	Safety Engineering		CA		20	0	10	30	2+0+1	C	2/1
56.	Management of Innovations and Industrial Property	E			30	30	0	60	3+3+0	C	5/2.3
57.	Structural Analysis	E			30	0	30	60	3+0+3	C	5/2.3
58.	Vacuum Technologies in Metal Cutting		CA		30	0	20	50	3+0+2	3	4/1.9
60.	Pre-graduation Apprenticeship										4/0
61.	Graduation Thesis Work										10/0
	Fourth year, eighth semester	***2E***	***2CA***		***110***	***30***	***60***	***200***	***11+3+6=20***		***30/7.5***
	Total for the entire course of study	***30E***	***15CA***	***9 CW***	***1265***	***330***	***930***	***2525***			***240/95.5***

ABBREVIATIONS USED:

C – compulsory subjects
E – elective subjects
O – optional subjects

SUBJECTS		WORKLOAD	
Type	Number	Hours	%
C	45	2390	94.6
E	4	135	5.4
Total	49	2525	100
O	4	120	

Note: The numbers quoted in column 11 under the abbreviations T / C refer to: T – total number of credits, C – credits from contact hours.

Endorsed with Faculty Board resolution, Record No 4 dated 27.05.2010.

Updated with Faculty Board resolution, Records № 6 dated 26.06.2012, № 3 dated 23.04.2014 and № 1 dated 28.01.2015.

Department Chair /s/ Dean /s/