

**TECHNICAL UNIVERSITY OF GABROVO**  
**FACULTY OF MECHANICAL AND PRECISION ENGINEERING**

Endorsed with Academic Council resolution  
Record № 1 dated 06.10.2009

Approved by  
Rector /s/

**QUALIFICATION REFERENCE**

Degree course: **MECHANICAL ENGINEERING AND TECHNOLOGIES**  
Educational qualification degree: **MASTER**  
Field of higher education: **TECHNICAL SCIENCES**  
Professional trend: **5.1 MACHINE ENGINEERING**  
Professional qualification: **MASTER-ENGINEER**

**ANNOTATION**

This qualification reference specifies the vocational purpose and training requirements as well as the prospective areas of professional realization of all graduates who have acquired the professional qualification of “Master-engineer”.

**VOCATIONAL PURPOSE**

Master engineers in Mechanical engineering and technologies possess a substantial bulk of theoretical knowledge and practical experience that underlie their vocational aptitude for:

- research and optimization of projects in the field of mechanical engineering;
- design and engineering development of equipment; technology-based tool engineering;
- application of CAD/CAE/CAM systems for design, research and manufacture of mechanical engineering articles;

- digital prototyping of products;
- modern NC control of manufacturing equipment;
- design and introduction of technical and organizing systems for quality control in mechanical engineering;
- industrial engineering and design in enterprises and plants working in the area of mechanical engineering.

**TRAINING REQUIREMENTS**

Training in the Master’s degree course takes two semesters and should be completed with thesis defense.

*It provides:*

- In-depth scientific, research and specialized training in design and product engineering of machinery and equipment; software support of manufacture and quality management in the field of mechanical engineering;

- Acquisition of methods for research and applied research in researching and optimization of enterprises dealing with mechanical engineering;
- Acquisition of modern methods for fast prototyping, analyzing of designs and control of manufacturing equipment;
- Opening opportunities for student mobility including international acknowledgement of acquired knowledge and skills.

## **AREAS OF PROFESSIONAL REALIZATION**

Successful course graduates in MET are qualified to work in positions as:

- experts, researchers and managers in companies, centers for development and introduction of contemporary conventional and computer-based technologies;
- experts in the field of development and engineering design of manufacturing equipment and units;
- teachers in vocational secondary schools or technical colleges and universities;
- students in doctoral degree courses.

This qualification reference was endorsed by the Faculty Council with Record № 5 on 23.06.2009

Department Chair /s/

Dean /s/

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## CURRICULUM

Degree course: **MECHANICAL ENGINEERING AND TECHNOLOGIES**

Graduate programs: **TECHNOLOGY AND EQUIPMENT IN MECHANICAL ENGINEERING**

**COMPUTER METHODS AND TECHNOLOGIES IN MECHANICAL ENGINEERING**

Academic degree: **MASTER**

Higher education area: **TECHNICAL SCIENCE**

Professional trend: **5.1 MECHANICAL ENGINEERING**

Professional qualification: **MASTER-ENGINEER**

Form of training: **FULL-TIME**

Duration of training **2 /TWO/ SEMESTERS**

№	SUBJECTS TAUGHT	FORMS OF ASSESSMENT		COURSE-WORK	WORKLOAD IN NUMBER OF ACADEMIC HOURS				WEEKLY DISTRIBUTION	TYPE OF SUBJECT	ECTS CREDITS T/C
		E - EXAMINATION	CA – CONTINUOUS ASSESSMENT		LECT-URES	SEMI-NAR CLASSES.	LABORATORY CLASS-ES.	TOTAL	L + SC + LC		
1	2	3	4	5	6	7	8	9	10	11	12
	<b><i>First Semester</i></b>										
1.	Object Optimization in Mechanical Engineering	E			30	0	30	60	2+0+2	C	5/2.3
2.	Dimensional Analysis and Synthesis in Engineering	E			30	30	0	60	2+2+0	C	5/2.3
3.	WOP Systems for Computer Numerical Control	E			30	0	30	60	2+0+2	C	5/2.3
4.	Design of Tooling Equipment for Injection Molding	E			45	0	30	75	3+0+2	C	6/2.8
5.	Digital Prototyping	E			30	0	45	75	2+0+3	C	7/2.8
6.	Digital Prototyping – project Design of Tooling Equipment for Injection Molding - project		CA							E	2/0
7.	Numerical Methods in Continuum Mechanics		CA		15	0	45	60	1+0+3	O	5/2.3
	<b><i>First semester</i></b>	<b>5 E</b>	<b>1 CA</b>		<b>165</b>	<b>30</b>	<b>135</b>	<b>330</b>	<b>11+2+9</b>		<b>Σ 30</b>

1	2	3	4	5	6	7	8	9	10	11	12
	<b><i>Second Semester</i></b>										
8.1	Manufacturing Technology Design of Mechanical Engineering Companies	E			32	0	32	64	4+0+4	E	5/2.4
8.2	CAM Systems	E			32	0	32	64	4+0+4	E	5/2.4
9.1	Finishing Technologies in Mechanical Engineering	E			32	0	24	56	4+0+3	E	4/2
9.2	Engineering Databases	E			32	0	24	56	4+0+3	E	4/2
10.1.	Technological Methods for Quality Control	E			32	0	24	56	4+0+3	E	4/2
10.2	Optimization of Structures by Finite Element Method	E			32	0	24	56	4+0+3	E	4/2
11.	Quality Management Systems	E			32	0	24	56	4+0+3	O	4/2
12.	Pre-graduation Apprenticeship										2/0
13.	Graduation Thesis Work										15/0
	<b><i>Second semester</i></b>	<b>3E</b>			<b>96</b>	<b>0</b>	<b>80</b>	<b>176</b>	<b>12+0+10</b>		<b>Σ 30</b>
	<b><i>Total for the entire course of study</i></b>	<b>8E</b>	<b>1 CA</b>		<b>261</b>	<b>30</b>	<b>215</b>	<b>506</b>			<b>Σ 60</b>

Graduate program “Technology and Equipment in Mechanical Engineering” includes subjects taught № 8.1; № 9.1 and № 10.1.

Graduate program “Computer methods and technologies in Mechanical Engineering ” includes subjects taught № 8.2; № 9.2 and № 10.2.

***ABBREVIATIONS USED:***

**C** – compulsory subjects

**E** – elective subjects

**O** – optional subjects

SUBJECTS		WORKLOAD	
Type	Number	Hours	%
C	5	330	65
E	4	176	35
Total	9	506	100,0
O	2	116	

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

The curriculum was endorsed by the Faculty Board resolution, Record No 5 dated 23.06.2009.

Department Chair /s/

Dean /s/