



**Mansoura University
Faculty of Engineering**

Production and Mechanical Design Engineering Department

**Postgraduate Program Specifications
Master: Mechanical Design**



Production and Mechanical Design Engineering Department
Postgraduate Program Specifications
M.Sc.: Mechanical Design

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1 Basic Information

Department Offering the Program: **Production and Mechanical Design Engineering**

Program Title: **Mechanical Design**

Field of Program: **Mechanical Design**

Program Type: **Master**

Date of Curriculum Approval: **1984**

Language: English

Program Systems: Courses (One Year) + Thesis

Program Courses' Duration: 40 Weeks

Number of Courses: at least four courses + Technical English Language

Total Hours: depend on number of courses assigned

Credit Hours: Partial System, at least 200 hrs (50 hrs/Course)

Coordinator: Prof. Dr. Hassan Ali Mohamed Soltan

Internal Evaluator:

External Evaluator:

2. Professional Information

2.1 Program Vision, Mission and Aims

2.1.1 Program Vision

The program restrains a wide range of design practices that hold enough capability and flexibility to design products and mechanical systems.

2.1.2 Program Mission

The program provides the graduates with all tools to introduce creative designs with low cost, and high manufacturability and quality in addition to analyze the problems of mechanical systems and their maintenance requirements.

2.1.3 Program Aims

The program has several explicit and implicit aims. The main program aims, as correlated to its attributes (Table 1), are

1. Introduce enhanced designs for mechanical systems.
2. Select materials for mechanical applications.
3. Maintain the mechanical systems.

2.2. Attributes

The graduate of the master program must be able to

1. Master the basics and methodologies of scientific research with versatile use of its variable tools.
2. Apply the analytical approach and its use in the field of specialization.
3. Apply the specialized knowledge integrated with specialized engineering concepts related to the professional practice.
4. Show awareness of the ongoing problems and modern visions in the area of specialization.
5. Identify and solve engineering problems.



6. Master some professional skills and use of appropriate technological means to serve the professional practice.
7. Communicate and lead team works effectively.
8. Take good decisions in different professional aspects.
9. Employ available resources efficiently.
10. Adopt awareness of the detrimental impact of the engineer role on society and environment under the global and regional variables.
11. Display professional responsibilities and ethical, societal and cultural concerns.
12. Recognize the need to develop and engage in continuous learning.

Table 1. Aims/Attributes matrix.

At. Ai.	01	02	03	04	05	06	07	08	09	10	11	12
1												
2												
3												

Attribute 5 is the most correlated and critical.

2.3. ILOS

2.3.1. (a) Knowledge and Understanding

With the completion of the master program, the graduate will have knowledge and understanding in

1. Theories, concepts and specialized knowledge of the learning area and also sciences appropriate to the professional practice.
2. Mutual influence between professional practice and its impacts on the environment.
3. Scientific developments in the field of specialization.
4. Moral and legal ethics of the professional practice in the area of specialization.
5. The concepts and principles of quality of the professional practice in the area of specialization.
6. The basics and ethics of scientific research.

2.3.2. (b) Intellectual Skills

With the completion of the master program, the graduate will be able to

1. Analyze and evaluate of information in the field of specialization and make full use of such information to solve problems.
2. Solve specific problems on the basis of limited and contradictory information.
3. Demonstrate a high level of competence in the coordination of different sources of knowledge to solve professional problems.
4. Carry out a research study and/or writing a scientific methodology study on research problem.
5. Assess and analyze risks of the professional practice in the field of specialization.
6. Plan to improve performance in the field of specialization
7. Make career decisions in different professional aspects.



2.3.3. (c) Professional and Practical Skills

With the completion of the master program, the graduate will be able to

1. Apply modern and principle professional skills in the area of specialization.
2. Write and evaluate technical reports.
3. Adopt assessment methods and tools existing in the area of specialization.

2.3.4. (d) General and Transferable Skills

With the completion of the post graduate diploma program, the graduate will be able to

1. Communicate effectively in different aspects.
2. Demonstrate efficient IT capabilities in such a way that serves in the development of the professional practice.
3. Adopt self-assessment and specify his needs of personal learning.
4. Use different resources for information and knowledge.
5. Establish rules and indicators for assessing the performance of others.
6. Collaborate effectively within multidisciplinary team and lead teams in different professional contexts.
7. Demonstrate a high level of competence in the time management.
8. Continuous self-education.

2.4. Curriculum Contents

2.4.1. Program Contents

No.	Course	Code	Lecture
1	Mechanical Vibration	PRE4781	2hrs/week
2	Nonlinear Vibration	PRE4782	2hrs/week
3	System Dynamics	PRE4783	2hrs/week
4	Mechanics of Elasticity and Plasticity	PRE4784	2hrs/week
5	Theory and Applications of Automatic Control	PRE4785	2hrs/week
6	Tribology	PRE4786	2hrs/week
7	Numerical Stress Analysis	PRE4787	2hrs/week
8	Experimental Stress Analysis	PRE4788	2hrs/week
9	Mechanical Analysis and Constructions	PRE4789	2hrs/week
10	Design of Mechanical Systems	PRE4790	2hrs/week
11	Machine Tool Design	PRE4791	2hrs/week
12	Optimum Design of Mechanical Units	PRE4792	2hrs/week
13	Material Technology (1)	PRE4793	2hrs/week
14	Material Technology (2)	PRE4794	2hrs/week
15	Computer Applications	PRE4795	2hrs/week
16	Research Seminar	PRE4796	2hrs/week

2.4.2. Teaching and Learning Methods

No.	Teaching Method
1	Lectures
2	Discussion meetings
3	Textbooks and periodical search

Date of Program Specifications' Approval: 7/1/2015

Coordinator: **Prof. Dr. Hassan Ali Soltan**

Department Head: **Prof. Dr. Hassan Ali Soltan**



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2.4.3. Student Assessment

No.	Assessment Method	Weight	Weeks	ILOs
1	Final Examination	100%	42	a, b, c, d
2	Thesis	Pass	-	-

2.4.4. Program Matrix

No.	Course	Code	Aims	ILOS			
				Knowledge & Understanding	Intellectual Skills	Professional & Practical Skills	General & Transferable Skills
1	Mechanical Vibration	PRE4781	1,3	01,03	01,03	01,03	02,08
2	Nonlinear Vibration	PRE4782	1	01,03	01,03	01,03	02,08
3	System Dynamics	PRE4783	1	01,03	01,03	01,03	02,08
4	Mechanics of Elasticity and Plasticity	PRE4784	1	01,05	02,03	01	04
5	Theory and Applications of Automatic Control	PRE4785	1	01,03	01,03	01,03	02,08
6	Tribology	PRE4786	1,3	01,05	01,02,03	01,03	04,07,08
7	Numerical Stress Analysis	PRE4787	1	01,03	01,02,03	01	04,08
8	Experimental Stress Analysis	PRE4788	1	01,03,05	01,02	01	02,08
9	Mechanical Analysis and Constructions	PRE4789	1,2	01,03,05	01,02,03	01,03	02,04
10	Design of Mechanical Systems	PRE4790	1,3	01,03	01,03	01,03	02,04
11	Machine Tool Design	PRE4791	1,3	01,03,05	01,02,03	01,03	02,04
12	Optimum Design of Mechanical Units	PRE4792	1	01,03	01,03	01,03	02,04
13	Material Technology (1)	PRE4793	1,2	01,03,05	01,02	01,03	04,07
14	Material Technology (2)	PRE4794	1,2	01,03,05	01,02	01,03	04,07
15	Computer Applications	PRE4795	1	01,03,05	01,02,03	01,03	02,04
16	Research Seminar	PRE4796	1	01,04,06	04,06	01,02	02,04

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Appendixes

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