



BENHA UNIVERSITY



FACULTY OF ENGINEERING AT SHOUBRA

COURSE SPECIFICATIONS (2014-2015)

Model No.12

Course Specifications: Maintenance Planning

University: Benha University

Faculty: Faculty of Engineering at Shoubra

Department offering the program: Mechanical Engineering Department

Department offering the course: Mechanical Engineering Department

1- Course Data

Course Code: MDP461

Course Title: Maintenance Planning

Specialization: production Mechanical Engineering department

Course Type: Elective

Study Year: Fourth Year

Teaching Hours: Lecture: 3

Tutorial: 2

Practical: 0

Total: 5

2- Course Aim

For students undertaking this course, the aims are to:

- 1- account for commonly used maintenance philosophies and strategies
- 2- describe how the maintenance could be planned
- 3- apply theories and methods within maintenance planning
- 4- understand the importance of maintenance from technical and economic perspectives

3- Intended Learning Outcomes of Course (ILO's)

- a. Knowledge and Understanding Skills:** On completing this course, students will be able to demonstrate the knowledge and understanding of:
 - a.1) Terminologies used in maintenance planning and maintenance approaches. (A1)
 - a.2) The basic principles of Various maintenance approaches. (A4)
 - a.3) The operating principles of reliability-centered maintenance (RCM), total productive maintenance (TPM), and total quality maintenance (TQM). (A7)
 - a.4) Steps to approach problem solution (A5)
 - a.5) The effect of varying the key parameters on the maintenance planning. (A11)

- b. Intellectual Skills:** At the end of this course, the students will be able to:
 - b.1) Assess the differences between the corrective maintenance and preventive maintenance. (B5)
 - b.2) Compare between the different types Maintenance resources. (B6)
 - b.3) Evaluate and appraise designs, processes and products, and propose improvements using Various maintenance approaches (B15).
 - b.4) Select appropriate manufacturing method considering design requirements of economic Maintenance (B16).
 - b.5) Analyze the performance of the condition-based maintenance. (B9)

- c. Practical and Professional Skills:** On completing this course, the students are expected to be able to:
 - c.1) Sketch schematic diagrams for maintenance planning and Production reliability. (C9)
 - c.2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services using Various maintenance approaches (C2).
 - c.3) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the maintenance planning such as TORA system and develop required



COURSE SPECIFICATIONS (2014-2015)

computer programs (C6).

c.4) Use basic workshop equipment safely (C15).

c.5) Prepare and present technical reports. (C11)

d. General and Transferable Skills: At the end of this course, the students will be able to:

d- 1) Effectively manage tasks, time, and resources (D6).

d- 2) Search for information and engage in life-long self-learning maintenance planning (D7).

d- 3) Refer to relevant literatures (D9).

4- Course Contents

Week no.	Topics
1	Introduction to maintenance planning
2	Production reliability
3	Various maintenance approaches
4	corrective maintenance
5	preventive maintenance
6	condition-based maintenance
7	reliability-centred maintenance (RCM)
8	total productive maintenance (TPM)
9	total quality maintenance (TQMain)
10	Maintenance resources
11	The economic importance of maintenance

5- Teaching and Learning Methods

5.1- Lectures

5.2- Class activity

5.3- Case study

5.4- Assignments / Homework

6- Teaching and Learning Methods of Disables

- Nothing

7- Student Assessment

a- Student Assessment Methods

1. Four assignments to assess knowledge and intellectual skills.
2. Two quiz to assess knowledge, intellectual and professional skills.
3. Mid-term exam to assess knowledge, intellectual, professional and general skills.
4. Final exam to assess knowledge, intellectual, professional and general skills.

b- Assessment Schedule

NO.	Assessment	Week
1	Assignments	3, 5, 9, and 12
2	Quizzes	4, and 11
3	Mid-term exam	8
4	Final exam	15



BENHA UNIVERSITY



FACULTY OF ENGINEERING AT SHOUBRA

COURSE SPECIFICATIONS (2014-2015)

c- Weighting of Assessments

Assessment	Weight (%)
Mid-Term Examination	18 %
Final-Term Examination	64%
Practical Examination	05 %
Semester work	08 %
Other types of assessment	05 %
Total	100

8- List of References

a- Recommended Books

1. Course notes prepared by instructor and power point presentations.
2. Maintenance Planning and Scheduling Handbook, By Richard D. Palmer, Publisher: McGraw-Hill Professional, ISBN-10 / ASIN: 0070482640, ISBN-13 / EAN: 9780070482647
3. Crespo Márquez, A., The Maintenance Management Framework, London: Springer, 2007.

Course Coordinator: Dr. Bilal Abdel Karim Salem

Head of Department: Prof. Dr. Osama Ezzat Abdelatif



BENHA UNIVERSITY



FACULTY OF ENGINEERING AT SHOUBRA

COURSE SPECIFICATIONS (2014-2015)

Model No.11A

Course Specifications: Maintenance Planning

University: Benha University

Faculty: Faculty of Engineering at Shoubra

Department offering the program: Mechanical Engineering Department

Department offering the course: Mechanical Engineering Department

Matrix of Knowledge and Skills of the Course

no.	Topics	Week no.	Knowledge and Understanding Skills	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
1	Introduction to maintenance planning	1	a1	b2		d3
2	Production reliability	2,3	a4,a5	b1,b3	c3	
3	Various maintenance approaches	4		b2	c4	d1
4	corrective maintenance	5	a5	b4	c1	
5	preventive maintenance	6		b1	c5	
6	condition-based maintenance	7	a5			
7	reliability-centered maintenance (RCM)	9		b1	c1	
8	total productive maintenance (TPM)	10	a3	b4		
9	total quality maintenance (TQMain)	11			c2	d2
10	Maintenance resources	12,13	a3,a4	b2,b3	c3	d1
11	The economic importance of maintenance	14	a4	b2	c4	

Course Coordinator: Dr. Bilal Abdel Karim Salem

Head of Department: Prof. Dr. Osama Ezzat Abdelatif



BENHA UNIVERSITY



FACULTY OF ENGINEERING AT SHOUBRA

COURSE SPECIFICATIONS (2014-2015)

Matrix of Course Aims and ILO's

Course Title: Maintenance Planning

Course Code: MDP461

Teaching Hours: Lecture: 3 Tutorial: 2 Total: 5

Major or minor element of program: Minor

Program on which the course is given: B.Sc. Mechanical production Engineering

Department offering the program: Mechanical Engineering Department

Academic year / level: 2014-2015 Fourth Year / First Semester

Date of specifications approval: 2014

Course aims	Basic Knowledge	Intellectual Skills	professional Skills	General Skills
1- account for commonly used maintenance philosophies and strategies	a1	b2	c3	d1
2- describe how the maintenance could be planned	a2,a3	b1	c2	d2
3- apply theories and methods within maintenance planning	a4,a5	b3,b4	c1,c4	d3
4- understand the importance of maintenance from technical and economic perspectives	a1	b5	c5	d2

Course Coordinator: Dr. Bilal Abdel Karim Salem

Head of Department: Prof. Dr. Osama Ezzat Abdelatif