Model No.12

Course Specifications: Theory of Metal Cutting

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: MDP321 **Course Title:** Theory of Metal Cutting
Specialization: Mechanical Production Engineering **Course Type:** Compulsory **Study Year:** Third Year

Teaching Hours: Lecture: 4 Tutorial/Practical : 3 Total: 7

2- Course Aim

For students undertaking this course, the aims are to:

1- Understand the principles of metal cutting theory for several machining processes.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to demonstrate the knowledge and understanding of:

a- 1 – Turning, shaping, milling operations and drilling operations (A2).
a- 2 - Tool geometry concepts, elements of machining (A13).
a- 3 - Types Chip, tool materials and tool life and Cutting fluids. (A18)

b- Intellectual Skills

At the end of this course, the students will be able to:

b- 1 - Compute the machining time of turning operations.(B7)
b- 2 – Compute the machining time and drilling milling and shaping operations. (B7)
b- 3 - Evaluate the tool life and overall machining time of product .(B15)

c- Professional Skills

On completing this course, the students are expected to be able to:

c- 1 - Compute overall machining time and process sequences.(C1)
c- 2 - Select the tool materials , Cutting fluids.(C2)

d- General Skills

At the end of this course, the students will be able to:

d- 1 - Collaborate effectively within multidisciplinary team .(D1)
d- 2 - Lead and motivate individuals.(D5)

4- Course Contents

No.	Topics
1	Introduction
2	Turning operations
3	Machining time calculation for turning operations
4	milling and shaping operations
5	Machining time calculation for milling and shaping operations
6	Drilling operations
7	Machining time calculations for drilling operations
8	Tool geometry concepts
9	Tool materials
10	Machining variables
11	Chip types
12	Tool materials, selection and secondary time
13	Tool life
14	Cutting fluids

5- Teaching and Learning Methods

5.1 Lectures
5.2 Tutorial
5.3 Class activity
5.4 Case study
5.5 Seminar/workshop

6- Teaching and Learning Methods of Disables

- Nothing.

7- Student Assessment

a- Student Assessment Methods

1. Five Assignments to assess knowledge and intellectual skills.
2. Two Quizzes to assess knowledge, intellectual and professional skills.
3. Midterm exam to assess knowledge, intellectual, professional and general skills.
4. Oral exam to assess knowledge and intellectual skills
5. Final exam to assess knowledge, intellectual, professional and general skills.

b- Assessment Schedule

NO.	Assessment	Week
1	Assignments	3, 5 , 7 ,10, 11
2	Quiz	4, 9
3	Midterm exam	8
4	Oral exam	14
5	Final exam	15

c- Weighting of Assessments

Assessment	Weight (%)
Midterm Examination	12
Final Term Examination	58
Oral Examination	17
Practical Examination	0
Semester Work	8
Other Types of Assessment	5
Total	**100**

8- List of References

a- Course Notes: Course notes prepared by instructor.

b- Recommended Books

1. Metal Machining: Theory and Applications (2000), ISBN: 034069159X

Course Coordinator: Prof. Dr. Ibrahim mosa Ibrahim

Head of Department: Prof. Dr. Osama Ezzat Abdelatif

Model No.11A

Course Specifications: theory of metal cutting

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	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Introduction	1	a1		c1	
2	Turning operations	2		b1		d1
3	Machining time calculation for turning operations	3			c1	
4	Horizontal milling operations	4	a1			D1
5	Machining time calculation for horizontal milling operations	5		b2		
6	Drilling operations	6			c2	
7	Machining time calculations for drilling operations	7	a2			d2
8	Tool geometry concepts	8		b3		
9	Tool geometry concepts	9	a2		c2	
10	Elements of machining	10		b1		d2
11	Chip	11	a3		c1	
12	Tool materials	12		b2		d1
13	Tool life	13			c1	
14	Cutting fluids	14	a3	b3		d2

Course Coordinator: Prof. Dr. Ibrahim mosa Ibrahim

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Matrix of Course Aims and ILO's

Course Title: theory of metal cutting

Course Code: MDP321

Teaching Hours: Lecture: 4 Tutorial/Practical: 3 Total: 7

Major or minor element of program: Major

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

Department offering the program: Mechanical Engineering Department

Department offering the course: Mechanical Engineering Department

Academic year / level: 2014-2015 Third Year / Second semester

Date of specifications approval: 2014

Course aims	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
Understand the principles of metal cutting theory for several machining processes.	a1, a2, a3	b1, b2, b3	c1, c2	d1, d2

Course Coordinator: Prof. Dr. Ibrahim mosa Ibrahim

Head of Department: Prof. Dr. Osama Ezzat Abdelatif