



## Course Specifications: Workshop Technology PDE042



### 1. Basic Information

<b>Program Title</b>	Biomedical Engineering
<b>Department offering the Program</b>	Biomedical Engineering
<b>Department Responsible for the Course</b>	Production and Mechanical Design Engineering
<b>Course Code</b>	PDE042
<b>Year/ Level</b>	Level 000
<b>Specialization</b>	Minor
<b>Requirements</b>	
<b>Authorization data of course specification</b>	

<b>Teaching Hours</b>	Lectures	Tutorial	Practical
	2	0	3

### 2. Course Aims

No.	Aim
1	Use the knowledge of physical properties of materials in the production process.
2	Operate with manufacturing techniques, skills, systems, and appropriate production engineering tools, necessary for manufacturing.

### 3. Intended Learning Outcomes (ILOs)

#### a. Knowledge and Understanding:

No.	Knowledge and Understanding
A4	Define concepts about materials types and casting processes.
A6	Apply quality assurance codes in workshop technology.

#### b. Intellectual Skills

No.	Intellectual Skills
B2	Select appropriate solutions for production processes problems related to forming processes.
B7	Solve the biomedical engineering design problems related to the exterior frame of the biomedical instruments.
B9	Judge production engineering decisions considering balanced costs in different types and methods of cutting processes (turning, planning, milling, drilling & grinding)
B12	Create novel approaches when dealing with advanced design methods such as Forming processes.

#### c. Professional Skills

No.	Professional Skills
C5	Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design production processes for biomedical systems.
C9	Demonstrate basic organizational and project management and process design skills to select the best production method to produce a good product.

#### d. General Skills

No.	General Skills
D8	Acquire entrepreneurial skills to best select production methods to produce quality and safety products.

### 4. Course Contents

No.	Topics	Weeks
1	Introducing engineering material & Ferrous & Nonferrous & Furnaces for steel & cast iron.	1-3
2	Casting processes	4-6
3	Forming processes (forging, rolling, extrusion, drawing & bending), welding	7,9-10
4	Cutting processes (turning, planning, milling, drilling & grinding)	11-13
5	Measuring tools, quality and safety	14

### 5. Teaching and Learning Methods

No.	Teaching Method
1	Lectures
2	Discussion Sessions



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3	Practical
4	Research Assignment
5	Field Visits

### 6. Teaching and Learning Methods for Disable Students

No.	Teaching Method	Reason
1	Extra training	To help finishing the assignments

### 7. Student Evaluation

#### 7.1 Student Evaluation Methods

No.	Evaluation Method	ILOs
1	Mid Term Examination	A4, A6,B7
2	Practical Examination	B2, B9,B12
3	Semester work	A4, A6, B2, C5, C9, D8
4	Final Term Examination	A4, A6, B2

#### 7.2 Evaluation Schedule

No.	Evaluation Method	Weeks
1	Mid Term Examination	8
2	Practical Examination	13
3	Semester work	Every week
4	Final Term Examination	15

#### 7.3 Weighting of Evaluations

No.	Evaluation Method	Weights
1	Mid Term Examination	20%
2	Practical Examination	10%
3	Semester work	20%
4	Final Term Examination	50%
Total		100%

### 8. List of References

No.	Reference List
1	Hans Kurt Toenshoff, Berend Denkena, " Basics of Cutting and Abrasive Processes ", Lecture Notes in Production Engineering, Springer Berlin Heidelberg, 2013.
2	John L. Semmlow, " Manufacturing: Design, Production, Automation, and Integration", Manufacturing Engineering and Materials Processing, CRC Press, Marcel Dekker, 2003.
3	Jingshan Li, Semyon M. Meerkov, " Production Systems Engineering ", Springer, 2008.

### 9. Facilities Required for Teaching and Learning

No.	Facility
1	Lecture Classroom
2	Sound System
3	White Board
4	Data Show System
5	Wireless Internet

### 10. Matrix of Knowledge and Skills of the Course

No.	Topic	Aims	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
1	Introducing engineering material & Ferrous & Nonferrous & Furnaces for steel & cast iron.	1	A4, A6	B7		
2	Casting processes	1	A4	B2, B9	C5, C9	D8



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3	Forming processes (forging, rolling, extrusion, drawing & bending), welding	1,2	A4, A6	B2, B9, B12	C5, C9	D8
4	Cutting processes (turning, planning, milling, drilling & grinding)	1,2	A4, A6	B2, B9	C5, C9	D8
5	Measuring tools, quality and safety	2	A4, A6		C5, C9	D8

**Course Coordinator: Prof. Dr.**

**Head of Department: Assoc. Prof. Hossam Eldeen Moustafa**

**Date of Approval:**