

PHILADELPHIA UNIVERSITY
FACULTY OF ENGINEERING
Department of Mechatronics Engineering

Course Title: Engineering Material & Manufacturing Technology(640251)
Prerequisite: Engineering Mechanics2(640232)
Text Book: Manufacturing processes for engineering materials , by Serope Kalpakjian, 4th Edition, Printice Hall, 2003
Providing Dept.: Mechatronics Dept.
Level:3 **Credit Hours:** 3

Course Goals:

To Teach the students basics of material properties, material science, and manufacturing technology

Time Schedule:

Duration: 16 Weeks

Lectures: 3 hours / week

Tutorial:

Laboratories:

Objectives:

At completing this module the student should be able to:

- understand the basic concepts of material properties
- Understanding the basic concepts of material science .
- Understanding the basic concepts of manufacturing technology

Course Contents

	<u>Weeks</u>
1-Introduction	1
2-Fundamental of mechanical behavior of material	2
3-Structutre and manufacturing properties of metal	2
4-Phase diagrams and heat treatment	2
5-Casting processes	2
6-Bulk deformation processes (forging, drawing, rolling, extrusion,.....)	2
7-Sheet metal forming processes (blanking, piercing ,.....)	2
8-Metal removal processes (Turning, drilling, milling, shaping, broaching,)	3

Mode of Assessment

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| 1. First exam: | (20%) |
| 2. Second exam: | (20%) |
| 3. Reports, H. works, and/or Projects | (10%) |
| 4. Final exam: | (50%) |

References

Manufacturing processes and materials for engineers, Lawrence E., Printice Hall, 3rd edition