**The Hashemite University-College of Engineering**

**Department of Industrial Engineering**

**Manufacturing Processes II-Winter 2013**

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**Instructor:** Dr. M. Ajarrah

**Office Hours:** Monday 2:00-4:00 pm and Tuesday 2:00-3:00 pm

**Text Book:**

1. *Mikell P. Groover, Fundementals of Modern Manufacturing, NY, John and Wiley.*

**References**

1. *Ranganath B., Metal Cutting and Tool Design, 1993.*
2. *Manufacturing Processes for Engineering Materials, Serope Kalpakjian, Third edition or later, Addison-Wesley publishing company.*

**COURSE CONTENTS**

1. Material-Removal Processes: Cutting
* Definition of metal cutting process
* Metal cutting operation and its classification
* Metal cutting’s models
* Chip formation
* Mechanics of metal cutting
* Cutting-tool materials
* Cutting forces
* Tool material
* Tool geometry
* Cutting fluids and applications
1. Material – Removal Processes: Abrasive, Chemical, Electrical,

 and High – Energy Beams.

* Abrasives
* Mechanics of grinding
* Grinding operations and mechanics
1. Non-chip Metal Removal Processes
* Electrical Processes
* Electrochemical Machining
* Mechanical Processes
* Thermal Processes
1. Welding
* Overview of welding technology
* The weld joint
* Physics of welding
1. Welding Processes
* Arc welding
* Resistance welding
* Solid-state welding

**Evaluation:**

Midterm Exam 20 %

Project 30 %

Final Exam 50 %