PURDUE UNIVERSITY.Department of
Civil and Mechanical
Engineering

Course	ME 432 – Manufacturing Processes		
Type of Course	Elective (Group 1) for ME program		
Catalog Description	This course provides students in Mechanical Engineering program with an opportunity of learning the fundamentals of modern manufacturing processes. The course introduces the fundamentals of different manufacturing processes, and it also introduces the machine tools and systems for manufacturing processes.		
Credits	3		
Contact Hours	3		
Prerequisite Courses	ME 25200 and ME 30300		
Corequisite Courses	None		
Prerequisites by Topics	Plane stress, plane strain, and stress-strain laws. Applications of stress and deformation analysis to members subjected to centric, torsional, flexual, and combined loading. Introduction to theories of failure, buckling, and energy methods, Crystal structure, imperfection in solids, mechanical properties of metals, dislocation and strengthening, failure, phase diagrams and transformations, metal alloys		
Textbook	J. T. Black and Ronald A. Kohser, <i>DeGarmo's Materials and Processes in Manufacturing</i> , current edition.		
Course Objectives	 To gain an understanding and appreciation of the breadth and depth of the field of manufacturing To recognize the strong interrelationships between material properties and manufacturing processes To become familiar with some of the basic casting, forming, metal cutting, welding, and polymer processes To learn and apply the basic terminology associated with these fields To increase your knowledge and broaden your perspective of the manufacturing world in which many of you will contribute your talents and leadership 		
Course Outcomes	A student who successfully fulfills the course requirements will have demonstrated:		

	1. 2. 3. 4. 5. 6.	An ability to describe mechanical properties of materials (1, 2) An ability to choose proper engineering materials for specific applications (1,2) An ability to determine and apply proper fabrication methods of materials (6) An ability to describe types of machining operation (1,2) An ability to describe joining processes including welding, brazing and soldering (1,2) An ability to address real-life issues related to manufacturing processes (4, 5, 6)	
Lecture Topics	1. 2. 3. 5. 6. 7. 8. 9.	Overview of materials Measurement and inspection and testing Processes of casting Fabrication of plastics, ceramics, and composites Metal forming processing Machining processes Joining processes Machine tools and controls Design projects	
Computer Usage	Low		
Laboratory Experience	Medium		
Design Experience	Medium		
Coordinator	Zhuming Bi, Ph.D.		
Date	March 26, 2018		