UNIVERSITIES OF WISCONSIN
INDEPENDENT LEARNING
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IL course 901-216: Basic Manufacturing Processes

Course Format: Online

Course Author/s: Jagadeep Thota, Ph.D.

Course credits: 3

Course Level: Introductory

Prerequisites: None

Course Description: This course introduces students to basic machine and hands-on manufacturing processes such as casting, shaping, powder metallurgy, forming, machining and joining operations to shape common materials to desired specifications and functions. This course also details the characteristics of common materials used to fabricate products.

Required Course Materials

- Fundamentals of Modern Manufacturing: Materials, Processes, and Systems, Mikell P. Groover, John Wiley & Sons. ISBN: ZY8-1-119-47521-7 (zyBook)
    - Purchase instructions can be found within the course

Course Learning Objectives

1. Identify the characteristics of common materials used for manufacturing products.
2. Recognize processes used in the fabrication of metal, plastic, ceramic, and composite materials products.
3. Describe the materials, processing steps, fabrication equipment, and typical products of basic manufacturing processes, including casting, metal forming, material removal, and joining.
4. Explore how materials and manufacturing impact the environment.

Course Overview

MODULE #	MODULE TOPIC	EVALUATED ACTIVITIES
1	Manufacturing Overview	Quiz 1
2	Material Properties	Quiz 2, Module 2 Assignment
3	Materials I: Metals	Quiz 3, Quiz 4, Module 3 Assignment
4	Materials II: Nonmetals	Quiz 5, Quiz 6, Quiz 7
5	Metal Casting	Quiz 8, Quiz 9
6	Shaping I: Plastics	Quiz 10, Quiz 11
7	Shaping II: Composites	Quiz 12, Module 7 Assignment

8	Powder Metallurgy	Quiz 13, Quiz 14, Project Proposal
9	Metal Forming	Quiz 15, Quiz 16, Quiz 17
10	Machining	Quiz 18
11	Joining Processes I: Welding	Quiz 19
12	Joining Processes II: Brazing, Soldering, Adhesive Bonding	Quiz 20, Module 12 Assignment
13	Project	Project Report

Evaluation Methods

Your final grade will be based on your performance on the following:

1. Quizzes (74%)
2. Assignments (16%)
3. Project (10%) = Proposal (3%) + Report (7%)

Quizzes (74%)

Each module will have between one to three quizzes. You will demonstrate the knowledge learnt from each module in these quizzes.

Assignments (16%)

There are four interactive assignments spread through the course. The assignments provide practical scenarios to demonstrate your understanding of materials and manufacturing processes.

Project (10%)

In the final project, you will demonstrate your ability to identify material(s) and the manufacturing process applicable to fabricate a general product. A project proposal (3%) identifying the general product needs to be submitted during Module 8, and a final report (7%) needs to be submitted by the end of the course.

Exam Method: There are no exams in this course

Grading Scale

The following grading scale is used to evaluate all course requirements and determine your final grade:

A = 93–100	B = 83–87.9	C = 70–77.9	D = 60–69.9
AB = 88–92.9	BC = 78–82.9		F = Below 60

Pass/Fail Option

Students who enroll in an Independent Learning (IL) course under the pass/fail option will receive a final grade of S in place of a final grade equivalent to an A, AB, B, BC, or C and a final grade of U in place of a final grade equivalent to a D or F.