Bergen Community College
Division of Math, Science and Technology
Department of Industrial & Design Technology

Course Syllabus
MFG-226 Methods, Fixture Design, and Estimating

Semester and year:
Course Number:
Meeting Times and Locations:

Instructor:
Office Location:
Phone:
Office Hours:
Email Address:

COURSE DESCRIPTION:

MFG- 226 Methods, Fixture Design, and Estimating will explore and develop the skills necessary to mentally visualize how to effectively and economically make precision-machined parts. Students will learn how to select materials, type of process, type of equipment, sequence of operations, fixtures, tools, etc. Methods development and documentation will be demonstrated and practiced. Jig & fixture types and design criteria will be reviewed.
2 lecture, 2 labs, 3 credits
Prerequisites: MFG 229 Materials Processing & Fabrication Techniques and DFT-210 CAD 1
or MFG-119 Manufacturing Design I
Co-requisites: None

STUDENT LEARNING OBJECTIVES:

As a result of meeting the requirements in this course, students will be able to:	Student performance on these objectives will be measured by:
1. Identify a method per customer part drawings and specifications that uses diverse materials and processes.	Graded Exam.
2. Estimate from a given operations sheet, the cost to manufacture and suggest potential opportunities for cost reduction.	Graded Exam.
3. Design a custom work holding fixture, given an operations sheet and a parts drawing.	Graded hands-on lab project.
4. Develop a "hands-on" project through the steps of visualization, method documentation, cost estimation, design of fixtures and generation of a part.	Graded hands-on lab project.

COURSE CONTENT:

CHAPTER	TOPIC
1.	Methods
2.	Tooling and gauging considerations
3.	In-process Manufacturing Tolerancing
4.	Multi-part fixtures
5.	Work holding devices and considerations
6.	Estimating
7.	Cycle time and how to estimate it
8.	Designing part quality into the method
9-15.	Jigs & Fixtures
17.	Welding
18.	Standard verses custom tooling and fixtures
20, 21.	Quick changeover and quality

TEXTBOOK: JT. Black, Ronald A. Kohser, DeGarmo's Materials & Processes in Manufacturing, Latest edition, John Wiley & Sons, Inc. ISBN: 978-0-470-92467-9

EVALUATION:

A. Project Assignments	35%
B. Examinations	35%
B. Final Examination.	20%
C. Class Participation	10%
TOTAL	100%

SPECIAL NOTES: **A final grade cannot be assigned for the course until all projects and examinations for the course have been completed.**

All machining courses will include instruction on safe operation of equipment, handling and storage of materials.

Make-up examinations will be administered in accordance with the instructor's and division's policy.

FACULTY ABSENCE PROCEDURE: Please note well.

A daily listing will appear in the glass case located in the main hall A bldg. which will indicate all classes which are cancelled. Students can consult this case before going to class. If students find a class cancelled which has not been listed, they should report this to the divisional dean's office (A325) or to the evening/Saturday office (L113).

CALENDAR:

Class Meeting	Date	Topic	Chapter
1.	_____	Purpose of Tool Design	1
2.	_____	Types & Functions of Jigs & Fixtures	2
3.	_____	Supporting & Locating Principles	3
4.	_____	Clamping & Workholding Principles	4
5.	_____	Basic Construction Principles	5
6.	_____	Design Economics	6
7.	_____	Design Development	7
8.	_____	Design of Jigs & Fixtures	9 thru 14
9.	_____	Power Workholding	15
10.	_____	Modular Workholding **Project Assignment**	16
11.	_____	Welding & Inspection Tooling	17
12.	_____	Low-Cost Jigs & Fixture **Project Construction Continues**	18
13.	_____	Tools, Materials & Setup Reduction	20,21
14.	_____	Open Lab	
15	_____	Project Submission & Critique	

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