

**NORTHEASTERN TECHNICAL COLLEGE
COURSE OUTLINE**

COURSE:	PREFIX NO.	EFFECTIVE DATE	NEXT REVIEW DATE		
MTT	241	SPRING 2006	SPRING 2007		
TITLE:		CREDITS	CONTACTS		
JIGS AND FIXTURES I		2	CLASS	LAB	TOTAL
			0	6	2

PREREQUISITES: EGT 111 and MTT 124

DESCRIPTION: LEVEL I: This course includes the theory necessary to design working prints of simple jigs and fixtures.

LEVEL II: The student will design a jig or fixture.

LEVEL III: The student will make a working jig or fixture, and produce piece parts that will meet the print specifications.

TEXTBOOK (S) OR ALTERNATIVE: Jig & Fixture Design, 4th Edition, Edward G. Hoffman

MATERIALS (specifying those to be purchased by student):

Safety Glasses

COLLATERAL READING: Machinery's Handbook 27th Edition
Resources in School Library

CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):

Attendance: The student must attend 90% of classes.

Tardies: Three tardies will constitute one absence.

Academic Dishonesty: Students are expected to do their own work. Please refer to the NETC Student Code and Grievance Procedure for a definition of academic dishonesty and an outline of disciplinary action that may result therefrom.

Attire: Dress must be appropriate for machine shop operations. No shorts or sandals.

Student ID: It is mandatory that every student wear his or her student ID at all times. The instructor will dismiss students without ID from class. The student may get his/her ID and return to class before the midpoint of the class. If the student cannot get his/her ID and return to class by the midpoint, the instructor will record the absence.

DISABILITIES STATEMENT:

Students with disabilities are encouraged to contact the Vice President for Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life.

The Vice President for Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See College Catalog)

RESOURCES (A-V, persons, tools/equipment) :

Lab Tools and Equipment
Shop Jigs and Fixtures

COURSE TOPICAL OUTLINE (List topics and sub-topics of course) and Calendar or approximate length of time devoted to topic.

1. Jig & fixture definitions, purpose, and axioms
2. Nesting principles and techniques
3. The 6 degrees of freedom
4. The 3-2-1 principle
5. Locators:
 - Machined pods
 - Rest buttons
 - Adjustable locators
 - Jack pins
 - Round locating pin
 - Diamond locators
 - Conical locators
 - V-locators
6. Hinged components and bushings
7. Locking devices
8. Clamps and clamping principles
9. Fool-proofing of jigs and fixtures
10. Rules for designing jigs and fixtures
11. Build working jig or fixture.

OBJECTIVES OF COURSE:

1. The student should be able to define the terms, jig and fixture and give illustrations of each.
2. The student should know the necessity of repetitive nesting and the techniques used to accomplish repetitive nesting.
3. The student should know and be able to explain the 6 degrees of freedom, which must be controlled or confined by a jig or fixture.

OBJECTIVES OF COURSE: (Continued)

4. The student should be able to show how to confine a workpiece through all 6 degrees of freedom and explain his reasons.
5. The student should know and be able to explain and apply the 3-2-1 principle used to control a workpiece in a jig or fixture.
6. The student should know the methods and techniques used to locate and change workpieces in jigs and fixtures.
7. The student should know and be able to explain the types of bushings used in jigs.
8. The student should know the methods and techniques used to provide bushing in jigs.
9. The student should know and be able to explain the methods and techniques used to provide fool-proof jigs and fixtures.
10. The student should design a jig or fixture and make working drawings of his design. Designs must be approved by the instructor.
11. The student will build a working jig or fixture to print specifications. Jig or fixture should produce parts within part tolerances.

INSTRUCTIONAL METHODS TO COMPLETE OBJECTIVES:

Classroom Lectures
Homework Assignments
Lab work

EVALUATIVE METHODS TO APPRAISE OBJECTIVES:

Drawing, Tools and Piece Parts..... 50%
Tests..... 20%
Other Assignments..... 10%
Observation of care of equipment..... 10%
Observation of work habits..... 10%

GRADING:

100 - 93 = A
92 - 85 = B
84 - 77 = C
76 - 69 = D
68 -BELOW = F