

New Course Form

MET 110 Manufacturing Fundamentals 3

Originator: Kenny Keith **Status:** Approved **Date Created:** 01/24/2013

Department: MET: Mechatronics **Submitted:** 02/05/2013 **Completed:** 02/27/2013

To ACETS:

Course Prefix: MET

Course Number: 110

Course Title: Manufacturing Fundamentals

Cross-listing: No

**Cross-listing
information:**

**Semester for
Implementation:** Fall

**Year of
Implementation:** 2013

Course Type: Required Transfer Vocational

Credit Hours: 3

Transfer Course: BAS-articulation discussions are underway.

Course Catalog Description: This course provides the student with an overview of the various types of

manufacturing that takes place in the discrete, hybrid and continuous sectors and of the jobs that must be performed within manufacturing and energy production.

Rationale: The successful AAS degree student will have many options when entering the workplace or continuing to higher education. This course provides information early in the student's academic career to assist him or her in making decisions about industries and jobs for which the educational experience will prepare the student. It also provides basic skills and knowledge that any technical employee in manufacturing will need to be successful in the workplace.

**Total Lecture
Contact Hours** 2
per Week:

**Total Lab
Contact Hours** 3
per Week:

**Total Contact
Hours:** 75

Load Factor: 4.1

Requisites: Yes

Prerequisites: Satisfactory Placement scores in Reading, Writing and Math.

Co-requisites:

Mode of Instructional Delivery: (1) Traditional classroom instruction (3) Hybrid: internet with live lab (5) Laboratory

If "other" mode of instruction, specify:

Library Resources: N/A

Assessment of Student Learning - Methods: (1) Written Examinations (5) Demonstration of Skills

IF "other" assessment, specify:

Recommend Course Enrollment: 15

Credit by Examination: No

Literacy/ Critical Inquiry Component: N/A

Ethnic/ Gender Awareness: N/A

Sustainability: No

Sustainability (explanation):

COURSE TOPICS:

1. Safe operation of hand and power tools
2. Introduction to techniques and resources that manufactures use
3. Blue Print Reading
4. CADD drawing
5. Measurement and Quality Assurance

COURSE OUTCOMES:

1. Describe the role of manufacturing in the community and in the world economy
2. Describe the necessity for profit, how manufacturers make a profit and how that profit is affected by various internal and external influences
3. Describe how automation affects manufacturing and how capital investment is evaluated
4. Explain why some manufacturing has moved overseas as compared to other manufacturing that has remained in the USA.
5. Describe the importance of life-long learning
6. Describe the characteristics of discrete, hybrid and continuous manufacturing industries
7. Identify specific manufacturing companies within discrete, hybrid and continuous manufacturing industries

8. Identify the cost drivers within different segments of discrete, hybrid and continuous manufacturing industries
9. Describe the similarities and differences in equipment and automation within discrete, hybrid and continuous manufacturing industries
10. Describe the hierarchy of automation systems that may be used in manufacturing
11. Describe the purpose and function of automation systems that may be used in manufacturing
12. Describe the types of jobs available, the working conditions, the job expectations, the educational requirements, the expected compensation, and the career growth opportunities for different manufacturing companies
13. Describe the programs that manufacturers apply to improve performance such as Lean, Just in Time (JIT), Statistical Process Control (SPC), Total Predictive Maintenance (TPM), and Overall Equipment Effectiveness (OEE).
14. Define mechatronics
15. Describe the impact of mechatronics in manufacturing
16. Identify organizations, especially those with student membership, and periodicals that deal with the various aspects of manufacturing
17. Describe the purpose of the different type of engineering drawings that are used within manufacturing
18. Demonstrate the ability to read basic building layouts, process flows, mechanical, electrical, and piping drawings
19. Demonstrate the ability to use a computerized drafting system to make a simple drawing
20. Demonstrate the ability to make basic and precision measurements with tools including a temperature probe, machinist's rule, tape measure, dial caliper, micrometer, gage block, and indicator
21. Convert units between fractions and decimals and between US customary units and SI metric units
22. Describe accuracy, resolution and tolerance
23. Collect measurement data
24. Enter measurement data using a computer and data acquisition software
25. Describe the function and application of statistical quality control
26. Create and analyze histograms and X bar R charts
27. Describe brainstorming techniques, cause and effect diagrams and Pareto Diagrams using both manual and computerized techniques
28. Apply brainstorming techniques, cause and effect diagrams and Pareto Diagrams using both manual and computerized techniques
29. Describe the principles of dimensioning and tolerancing including location, orientation and form tolerances
30. Apply the principles of dimensioning and tolerancing including location, orientation and form tolerances.

Proposer: Kenny Keith