**ENGT 100 – Manufacturing Processes**

**Master Syllabus**

**Course:** ENGT 100 – Manufacturing Processes **Course Credits:** 3-0-3

**Course Prerequisite:** None **ICCB Code: PCS # 1.2150612**

**Mode of Delivery: Traditional and Hybrid IAI #:** (MTM 913)

**Instructor: John Daum Dev/Rev Date: 04/16/13**

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**Projected Date of Initial Offering: Fall 2013**

**Course Description:**

**ENGT 100** **– Manufacturing Processes** provides a basic understanding of how the modern industrial business creates value and profitability through the successful integration of people and technical manufacturing processes to satisfy customer demand. Manufacturing Processes explores the practical inter-relationships between customer requirements, business decision making, quality, materials, product design, and industrial production processes to produce a profitable product. Topics include the latest technologies in processing raw materials, metal working, machining, assembly, and automated manufacturing concepts including robotics and CNC technology. Industrial processes also include those commonly utilized in grain processing. Manufacturing business topics include concepts of profitability, productivity, JIT, Lean Manufacturing, and Total Quality Management. The course content is delivered using lectures, videos, plant visits, and lab demonstrations.

This course is designed to meet the requirements of the Manufacturing Skill Standards Council (MSSC) and prepares the student for the Module 3: Manufacturing Processes & Production Exam for the Certified Production Technician (CPT) certification.

(IAI: MTM 913 Manufacturing Processes)

 Applicable toward graduation where program structure permits:

* Certificate or Degree – All certificates, AAS, ALS
* Group Requirement - Not applicable
* Area of Concentration – Not applicable

**Required Text(s):**

High-Performance Manufacturing, by MSSC, Glencoe/MacGraw-Hill., ISBN 0-07-861487-2 (2006)

**Additional Course Information:** The following tools are required:

Calculator

USB flash drive

Safety Glasses

Shop coat (optional

**Course Objectives/Outcomes:** The student will obtain the following skills and attitudes by completion of this course.

|  |  |
| --- | --- |
| **Course Outcomes:** | **RCC Cross-Disciplinary Outcomes:** |
| Identify customer needs and product requirements | 2 |
| Determine resources available for the production process | 3 |
| Set up and verify equipment for the production process | 4 |
| Set team production goals, make job assignments and coordinate work flow | 4 |
| Communicate production and material requirements and product specifications | 1 |
| Perform, monitor and document the process to make the product | 1 |
| Document product and process compliance with customer requirements | 1 |
| Prepare final product for shipping or distribution | 3 |
| Apply the manufacturing business concepts of profitability, productivity, JIT, Lean Manufacturing, quality assurance to the industrial process. | 3 |
| Identify industry acronyms and terminology. | 3 |
| Identify the technical attributes of general fabrication, welding, machining, casting and molding. | 3 |
| Identify assembly, packaging, and shipping processes. | 3 |
| Describe the role of automated manufacturing concepts including robotics and CNC technology in the industrial process. | 1 |
| Identify “Design for Manufacturability” attributes. | 1 |
| Describe the basic processes used by local grain processing industries. | 1 |
|  | 1, 2, 3 |
| Prepared to take the MSSC Module 3: Manufacturing Processes & Production Exam for the Certified Production Technician (CPT) certification.  | 1, 2, 3 |

***Cross-Disciplinary Outcomes Legend:***

1. *The degree-seeking student will be able to communicate effectively (read, write, speak and listen).*
2. *The degree-seeking student will think critically and creatively.*
3. *The degree-seeking student will manage technology and evaluate information in various research and applied contexts.*
4. *The degree-seeking student will act professionally and responsibly.*

**Topical Outline:**

|  |  |
| --- | --- |
| Week 1 | The business of industry |
| Week 2 | Production Basics |
| Week 3 | Production Materials |
| Week 4 | Production Processes |
| Week 5 | Tools and Equipment Operation |
| Week 6 | Production Planning and Work Flow |
| Week 7 | Machining  |
| Week 8 | Metal Working and fabrication |
| Week 9 | Fabrication |
| Week 10 | Assembly |
| Week 11 | Automation and Robotics |
| Week 12 | Inventory and Quality control |
| Week 13 | Material Handling and Packaging |
| Week 14 | Teamwork and Communication Skills |
| Week 15 | Design for manufacturability |
| Week 16 | Projects Due |

**Methods of Evaluation:**

**Grading:** Research Projects 30% A = 90 - 100

 Tests and quizzes 30% B = 80 - 89

 Final 20% C = 70 – 79

 Presentations and reports 10% F = 69 or below

 Class participation and teamwork 10%

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