

# TECHNOLOGY 265: Basic Manufacturing Processes

**2007-08 Catalog Data:** Tech 265 Basic Manufacturing Processes (3 Credits)

**Catalog Description:** Introduction to materials, techniques, and equipment of industrial manufacturing. Emphasis on laboratory demonstration and simulation activities such as machining, welding, casting, and forming operations.

**Prerequisites:** Math 155

**Co-requisites:** None

**Textbook:**

- Modern Materials and Manufacturing Processes, 3rd Edition; Bruce, Dalton, Neely and Kibbe, Pearson/Prentice Hall.

**Instructor:** Albert F. Check Jr.

<b>Learning Objectives</b>	<b>Relational ABET Learning Objectives</b>
Explain the structure and properties of basic engineering materials and their relationship to manufacturing.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. F. An ability to identify, analyze and solve technical problems. G. An ability to communicate effectively in writing. H. An ability to communicate effectively orally.
Describe the fundamental equipment and processes employed in common manufacturing operations.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. C. An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes. F. An ability to identify, analyze and solve technical problems. H. An ability to communicate effectively orally.
Be able to identify process parameters and how they affect the manufacturing processes.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. B. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology.

	<p>C. An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.</p> <p>G. An ability to communicate effectively in writing.</p> <p>H. An ability to communicate effectively orally.</p> <p>J. An ability to understand professional, ethical and social responsibilities.</p> <p>L. A commitment to quality, timeliness, and continuous improvement.</p>
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**Outline of Topics-This is a tentative sequence and may change as needed.**

1. Manufacturing materials and their structure
2. Mechanical, physical and manufacturing properties of materials
3. Structure of metal alloys, heat treatment and strengthening processes
4. Nonmetallic materials
5. Selection and application of materials
6. Casting processes
7. Rolling and forging processes
8. Extrusion and drawing
9. Sheet metal forming
10. Powder metals,
11. Fundamentals of metal cutting and cutting tool materials
12. Machine tools and types of machining processes
13. Joining processes
14. Plastics and composites processing
15. Ceramics and glass
16. Quality Control
17. Automation