

Pittsburg State University
Department of Engineering Technology
Manufacturing ET Program

(Course Intended for Partial Fulfillment of the Pitt State Pathway Curriculum)

COURSE TITLE: MFGET 263 Manufacturing Methods I

COURSE SCHEDULE: **100% Face-To-Face Lecture** – MW - 1:00PM – 1:50PM Room S102
100% Face-To-Face Lab 2:00PM – 3:40PM Rooms S125 & All MFG

INSTRUCTOR: Dr. Russell Rosmait
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I. COURSE DESCRIPTION: MFGET 263 (2 hours lecture). Fundamental engineering manufacturing methods, practices, processes dealing with metals, plastics, composites, electronics and automation. Basic measuring tools and assembly practices. Corequisite: Concurrent enrollment in MFGET 268 Manufacturing Methods I Laboratory required.

II. REQUIRED TEXT AND MATERIALS

Manufacturing, Engineering & Technology, 7th Edition, by Serope Kalpakjian and Steven R. Schmid. ISBN 0-13-148965-8. © 2017 Pearson Education, Inc., Upper Saddle River, NJ.
Additional Material References: Machinery Handbook, Industry periodicals, Video presentations and various manufacturing web sites.

III. COURSE OBJECTIVES AND OUTCOMES:

Instructor Objectives The Objectives of this course are to:

1. Disseminate the fundamental concepts associated with manufacturing and technology, and its development over time as a global system of trade and civil advancement.
2. Provide students an opportunity to observe the use of a wide variety of Manufacturing processes through laboratory activities, research and hands on experiences.
3. Develop an awareness of the physical laws associated with manufacturing processes and how they interact with human systems for the benefit of society and life in general.
4. Disseminate to students the importance of process selection as how it relates to the cost of manufacturing, the environment and society.
5. Introduce the students to fundamental concepts of material selection, testing, and their importance in scientific discovery and decision making.
6. Introduce lab assignment that foster group team work and problem solving.

Student Outcomes - As a result of lectures, written assignments, lab demonstration and reading assignments the successful student will be able to:

1. Disseminate the general operational principles of a global manufacturing system with its many tools, human interactions and societal concerns.
2. Research the processes, operations, and impact of manufacturing and automation on the manufacturing enterprise and technical societies.
3. Perform scientific calculations for the selection of material and applications to identify their properties and characteristics.
4. Demonstrate through testing the important interrelationships between materials and process selection and how they influence total product cost to manufacturing, the environment and society.

IV. PITT STATE PATHWAY

MISSION STATEMENT - *The Pitt State Pathway curriculum serves as the heart of the university education by fostering interdisciplinary competencies that typify the educated person. It is designed to facilitate the development of key proficiencies including communication and information literacy. The Pitt State Pathway curriculum provides a transformational experience that challenges students to think creatively and critically, and to immerse themselves in the productive examination of humans in their global setting. By encouraging the development of skills that promote life-long learning, the Pitt State Pathway fosters a sense of personal responsibility, an appreciation of diversity, and an understanding of interconnectedness in our truly global society.*

ESSENTIAL STUDIES ELEMENT - Human Systems within a Global Context: *Humans have developed complex systems that structure interaction. It is important to understand how and why these systems developed, change through time, vary by location, and are interconnected at all levels (local/regional/global), and the implications of that interconnectedness. Competency in this element means:*

- *Analyzing the structure, development, and change of human economic, political, social and/or cultural systems over time;*
- *Analyzing the individual's role and responsibility to society at all levels;*
- *Evaluating how human systems are interconnected at all levels.*

Learning Outcome: Students will explore global systems conscientiously

COMPANION ELEMENT - Scientific Inquiry: *The scientific method is the systematic approach to understanding the world around us. Through experimentation and hypothesis testing, students will apply analytical skills and appropriate methods of scientific inquiry (i.e. qualitative and quantitative) to solve a variety of research questions. Competency in this element means:*

- *Composing appropriate research questions and hypotheses, drawing from experts, reliable sources, or previously collected data;*
- *Collecting, synthesizing, and analyzing data from multiple sources;*
- *Drawing logical conclusions, assessing for gaps or weaknesses, and addressing potential consequences and implications;*
- *Communicating results using appropriate delivery methods or formats.*

Learning Outcome: Students will analyze data logically.

METHOD OF ASSESSMENT –

- **ESSENTIAL STUDIES ELEMENT - Human Systems within a Global Context:** To assess the students' level of learning (Benchmark), the students will understand human organizational systems using a variety of disciplinary and interdisciplinary perspectives. Specifically, students will research national and international trade organizations and explain (written assignment) their important role in global industry. This assessment also will include a quiz comprised of a series of multiple choice questions about manufacturing and its worldwide impact.
- **COMPANION ELEMENT - Scientific Inquiry:** To assess the students' level of learning (Benchmark), students will understand industry standardized scientific testing methods for material hardness and strength, and apply those procedures to test samples in the Co-requisite laboratory (MFGET 268). (Mechanical Testing worksheet and laboratory)

V. EVALUATION AND GRADING -

1. There will be 3 exams and a final exam given throughout the semester.
2. The 3 exams are 40% of your grade. The final exam is 25%.
3. Research assignments and film reviews make of 35% of the grade
4. Students who have accumulated a final percentage total as shown in the scale below will receive the respective grade for the course:
100%---90%=A; 89%----80%=B; 79%----70%=C; 69%----60%=D; 59%-----0=F

VI. TENTATIVE SCHEDULE OF ACTIVITIES

WEEKLY OR DAILY	CLASS CONTENT	LECTURE/LAB ACTIVITY	ASSIGNMENTS
1	Intro to Manufacturing		
2	Metals, Materials and Selection	Safety activity	Lab Activity/Quiz
3	Metals, Materials and Selection	Physical properties of Material	Lab Activity/Report
4	MFG QC Systems/Eng Metrology	Measurement	Lab Activity/Quiz
5	Welding & Joining Processes	Welding Lab Activity	Lecture Exam
6	Materials Testing & Properties	Material Mechanical Test Lab	Lab Activity/Report
7	Metal Casting Processes	Green Sand Molding experience	Lab Activity/Report
8	Metal Casting Processes	Other casting processes	Lab Activity/Quiz
9	Prototyping	Demo	Lec Exam/Lab Quiz
10	Assembly Lines / Machine Tools	Machine Prod Lab Activity	Lab Activity
11	Turning Processes	Machine Prod Lab Activity	Lab Activity
13	Milling Processes	Machine Prod Lab Activity	Lab Activity/Quiz
14	CNC Machining Centers	CNC Demo	Lec Exam/Lab Quiz
15	Plastic Processing	Machine Demo	Lab Activity
16	Final Exam	Exam	

VII. PSU SYLLABUS SUPPLEMENT: Pittsburg State University encourages students to take full advantage of campus resources. Information about the campus resources and other information, notifications, and policies (academic integrity, dead week, etc.) students should be aware of, can be found through the syllabus supplement. The supplement is updated for each semester and includes information for students about campus resources, notifications, expectations, grades, etc. This supplement in its entirety can be found at:

<http://www.pittstate.edu/office/registrar/syllabus-supplement.dot>

VIII. GENERAL SAFETY RULES:

1. Accept the “zero accident” philosophy.
2. Approved safety glasses are to be worn when working in the lab work area and these approved safety glasses must be worn in all KTC labs.
3. All clothing worn for labs must be in accordance with general work and safety practices. Do not wear clothing that could get caught in machinery or otherwise cause an accident (such as dragging or baggy trousers, torn or loose long sleeves, loose neck jewelry and rings). Shirts with sleeves are to be worn at all times and must cover the shoulders and torso. Tank tops and football type net shirts are not acceptable. Pants must be full length (no cut-offs or shorts). Shoes or boots must be of sturdy leather, thick-soled and cover the ankle. Dress shoes, athletic shoes or sandals are not acceptable.
4. Use tools, equipment, and personal protective equipment the way they were designed.
5. Inspect tools and equipment prior to use. Do not use damaged or unsafe tools and equipment. Damaged tools and equipment shall be removed from service until fully repaired or replaced.
6. Only perform tasks for which you have been trained.
7. Correct or report all unsafe conditions immediately to a course instructor.
8. Everyone has the right to refuse to perform work which is believed to be unsafe. Explain your concerns to a course instructor.
9. Good housekeeping requires the attention and cooperation of all involved. Pick up tools, store materials properly, and pick up trash daily.