1. **COURSE TITLE\*:** Manufacturing Materials and Processes
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: ENDS 2261**
3. **PREREQUISITE(S)\*:** PHYS1117 and MATH1120 **COREQUISITE(S)\*:**
4. **COURSE TIME/LOCATION: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*: 3 LECTURE HOURS\*: 2**

 **LABORATORY HOURS\*: 1 (2 contact hours) OBSERVATION HOURS\*: 0**

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

This course will acquaint the technician with the nature, properties, performance, characteristics, manufacturing processes, and practical uses of various engineering materials. Materials such as ferrous and nonferrous metals as well as polymers, ceramics, and composites will be covered. Both primary and secondary processes will be covered in this course.

1. **LEARNING OUTCOMES\*:**
2. The student will develop basic knowledge of types, applications, and manufacturing techniques of standard materials used in industry today.
3. Understand the processes and characteristics of metallic materials used in manufacturing.
4. Understand the processes and characteristics of plastic materials used in manufacturing.
5. Understand the processes and characteristics of ceramic materials used in manufacturing.
6. Understand the processes and characteristics of composite materials used in manufacturing.
7. **ADOPTED TEXT(S)\*:**

Manufacturing Processes Materials, Productivity, and Lean Strategies

3rd Edition,

DuVall, J. B. and Hillis, D. R.

Goodheart-Wilcox, 2012.

ISBN 978-1-60525-569-9

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

Microsoft Office, Scientific calculator, Scale and Protractor, Graphing paper (1/4" squares)

A 3-pin paper binder (or Canvas at instructor’s discretion) for keeping correct solution of assigned problems.

Paper for solution of problems pre-printed with outline will be provided.

Student will need an auxiliary storage device, flash drive or network

home-drive.

1. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 900 – 1000

 B: 800 – 899

 C: 700 – 799

 D: 600 – 699

 F: 0 – 599

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

|  |  |  |
| --- | --- | --- |
| *Category* | ***EXAMPLE ONLY****Total Points* | *% of Grade* |
| Assignments  | 100 | 10% |
| Labs | 100 | 10% |
| Tests (4) | 400 | 40% |
| Final Research Paper/Presentation | 150 | 15% |
| Midterm Paper or Exam | 100 | 10% |
| Comp. Final Exam | 150 | 15% |
| Total | 1000 | 100% |

1. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

Course methodology may include but not limited to lectures, problem solving, independent and/or group projects, in-class and home assignments, papers, reports, presentations and tests. Problem solving will use both graphical and mathematical methods.

**14. Sample COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

|  |  |  |  |
| --- | --- | --- | --- |
| **Module** | **Week #** | **Material** | **Learning Objectives** |
| **1** | **1** | Chapter 1 Introduction to Manufacturing Chapter 2 Material and Process Classification  | **1** |
|  | **2** | Chapter 8 Behavior and Characteristics of Manufacturing Materials**Test 1** | **1** |
|  | **3** | Chapter 9 Characteristics of Metallic Materials | **1, 2** |
|  | **4** | Chapter 14 Processes Used to Form Metallic Materials | **1, 2** |
|  | **5** | Chapter 19 Processes Used to Separate Metallic Materials | **1, 2** |
| **2** | **6** | Chapter 24 Processes Used to Fabricate Metallic MaterialsChapter 29 Processes Used to Condition Metallic MaterialsChapter 34 Processes Used to Finish Metallic Materials | **1, 2** |
|  | **7a** | Metallic Material Lab, **Test 2** | **1, 2** |
|  | **7b** | Chapter 10 Characteristics of Plastic Materials | **1, 3** |
|  | **8** | Chapter 15 Processes Used to Form Plastic MaterialsChapter 20 Processes Used to Separate Plastic Materials**Research Exam or Paper Due** | **1, 3** |
| **3** | **9** | Chapter 25 Processes Used to Fabricate Plastic MaterialsChapter 29 Processes Used to Condition Plastic MaterialsChapter 34 Processes Used to Finish Plastic Materials | **1, 3** |
|  | **10a** | Plastic Material Lab**Test 3** | **1, 3** |
|  | **10b** | Chapter 12 Characteristics of Ceramic Materials | **1, 4** |
|  | **11** | Chapter 17 Processes Used to Form Ceramic MaterialsChapter 22 Processes Used to Separate Ceramic Materials | **1, 4** |
| **4** | **12** | Chapter 27 Processes Used to Fabricate Ceramic MaterialsChapter 32 Processes Used to Condition Ceramic MaterialsChapter 37 Processes Used to Finish Ceramic Materials | **1, 4** |
|  | **13a** | Ceramic Material Lab**Test 4** | **1, 4** |
|  | **13b** | Chapter 13 Characteristics of Composite Materials | **1, 5** |
| **5** | **14** | Chapter 18 Processes Used to Form Composite MaterialsChapter 23 Processes Used to Separate Composite Materials | **1, 5** |
|  | **15** | Chapter 28 Processes Used to Fabricate Composite MaterialsChapter 33 Processes Used to Condition Composite MaterialsChapter 38 Processes Used to Finish Composite MaterialsComposite Material Lab | **1, 5** |
| **Finals** | **16** | **Comprehensive Final Exam, Final Presentation** | **1, 2, 3, 4, 5** |

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

* + All assignments and tests must be turned in on time.
	+ Students may work on their own time to complete the assignments.
	+ Some group work is encouraged on exercises and assignments.
	+ Assignments must be in 3-ring binder to pass the course.
	+ Examinations will include written and graphical components.
	+ For credit, all assignments will be completed as scheduled.
	+ No test may be taken late without prior approval of instructor.
	+ No make-up tests. Read your student handbook.
	+ Microsoft Word is the only acceptable software for papers.

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students with disabilities may contact the Disability Services Office, Central Campus, at 800-628-7722 or 937-393-3431.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.