

## Master Course Syllabus

**Department:** Engineering Technology **Course Prefix/Number:** IT 303

**Official Course Title:** Industrial Materials

Master Syllabus Approved by Department on: 02 / 01 / 08  
month date year

I. **Catalog Description:** A study of the structure, properties, processing, and application of metallic, polymeric, ceramic, and composite materials utilized in manufacturing. Emphasis is placed on material properties and processing methods that affect material selection in the design and manufacturing process.

II. **Prerequisites:** None

III. **Expanded Course Description:** This course is intended for junior and senior level students as an introduction to the structure, properties, and applications of materials used in manufacturing. It is intended to supplement and enhance the information provided in the materials processing courses. This course is writing intensive and cannot be successfully completed without passing the writing portion of the course.

IV. **Knowledge Outcomes:** Students are expected to be able to:

1. describe the nature of the broad field of engineering materials technology and the contributions of materials science and engineering to materials developments, processing, and manufacturing;
2. describe the microstructure and macrostructure of solid-state materials plus bonding forces within materials;
3. discuss the relationships between processing and structure of materials;
4. using cooling curves as an aid, recall the effects of solidification in pure metals, alloys, and nonmetals;
5. explain reasons for the degradation and failure of materials and the role of failure analysis, factors of safety, post-process thermal treatments, and corrosion protection;
6. analyze phase diagrams and photomicrographs to determine thermal processes, basic structures, and properties of ferrous and nonferrous metals;
7. explain the effect on grain size and metal properties as a result of strain hardening and various thermal processing;
8. complete written discussions of associated topics and a case study.

V. Unless otherwise stipulated in this master syllabus by the department, the following items are subject to faculty discretion as described in each faculty member's individual course outline/syllabus:

- a) Course Requirements? (grading/evaluation procedures; class attendance policy; term papers, projects, field assignments; examinations; class participation, etc.)

A minimum of 50% of the course grade will be determined by written assignments including discussions of assigned topics and a case study.

b) Required Text(s)?

b) Bibliography?

- VI. Academic Honesty: Cheating, plagiarism (submitting another person's materials or ideas as one's own), or doing work for another person who will receive academic credit are all-impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.
- VII. Students With Disabilities Policy: It is the policy of Tarleton State University to comply with the Americans with Disabilities Act (ADA) and other federal, state, and local laws relative to the provision of disability services. Students with disabilities attending Tarleton State University may contact the Office of Student Disability Services at (254) 968-9400 to request appropriate accommodation. Furthermore, formal accommodation requests cannot be made until the student has been officially admitted to Tarleton State University.

Department Head Signature/Date:

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Signature

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Date