

Syllabus
Engineering Technology
University of North Texas
Course Title: Product Design and
Development
Course Prefix and Course Number:
MSET 5030
Semester: Spring 2004

The Engineering Technology Department, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request to the instructor prior to the fourth day.

SAFETY CATAGORY: 1

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COURSE NUMBER, TITLE, CREDIT HOURS:

MSET 5030, Product Design and Development, 3.0

PREREQUISITES: None

GENERAL DESCRIPTION:

A formal development of the process of designing a product, including ideas generation, engineering development, modeling and analysis, and project planning and management.

JUSTIFICATION:

This is a required graduate course for all graduate students of Engineering Technology.

COURSE GOALS/OBJECTIVES

1. Develop a generic understanding of the product development process.
2. Apply product development templates in a variety of circumstances.
3. Refine the students ability to think creatively and to specify the result of that creativity technically.
4. Relate the interest of the customer and the requirements of the various stakeholders in the firm to a feasible, salable product.
5. Use industrial design principles appropriately in product development.
6. Advocate effectively for the successful development process in economic as well as technical terms.
7. Manage resources including time, finance, tools, materials and process to assure success for a product development project.

LEARNING OUTCOMES (Course Objectives Supported)

At the end of this course, students will be able to:

- a. Distinguish the major categories of product development (1,2).
- b. Recommend appropriate processes for development of a given product (1,2).
- c. Deploy appropriate success metrics for a development project (3).
- d. Correlate customer needs and technical product specification (4).
- e. Advocate, from a technical perspective, a development project from initial conceptualization through development and review (5, 6).
- f. Develop good alternatives from among a sufficient number to optimize the probability of product success (5, 6).
- g. Address concerns of the various parties-in-interest to the product development process (4).
- h. Fabricate and test an effective prototype (6).
- i. Manage a development project flexibly and economically (7).

COMPUTER USAGE:

Use computer resources to support the initiation, evaluation and presentation of a semester project.

ORAL COMMUNICATION USAGE:

Semester project is required including formal presentation.

WRITTEN COMMUNICATION USAGE:

Project plan and final report required.

LIBRARY USAGE:

Semester project will require appropriate library research with bibliographic citation.

REQUIRED TEXTBOOKS:

G. Dieter, Engineering Design, 3TH Edition, McGraw-Hill, Inc, ISBN 0-07-366136-8

SUPPLEMENTAL TEXTS AND MATERIALS:

1. Ulrich, K.T. and Eppinger, S.D., (2000), Product Design and Development, Second Edition, Irwin McGraw-Hill, Inc. ISBN 0-07-229647-X.
2. Angus, R.B., Gundersen, N.R., Cullinane, T.P., Planning, Performing, and Controlling Projects, 3Th Edition, Prentice Hall, ISBN 0-13-041670-3

TEACHING METHODS:

1. Lectures (Professor and quests)
2. Demonstrations and Workshops
3. Films and guest speakers
4. Outside reading
5. Development project

GRADING ELEMENTS AND WEIGHTS:

Project	30%
Technical Paper	20%
Exam #1	15%
Exam #2	15%
Final Exam	20%

University of North Texas
Engineering Technology
7/20/2004

Letter grades:	A	>90%
	B	80%-89%
	C	70%-79%
	D	60%-69%
	F	<60%

The Final Examination period May 5 is reserved for the final exam.

GRADING POLICIES:

Full class participation is required. Should a student need to skip a class, prior arrangements needs to be made with me. No late homework will be accepted.

CLASS POLICIES:

1. All rules relating to academic dishonesty will be enforced in accordance with University policies.
2. State common law and federal copyright laws protect my lectures. They are my own original expression and I record them at the same time that I deliver them in order to secure protection. Whereas you are authorized to take notes in class thereby creating a derivative work from my lecture, the authorization extends only to making one set of notes for your own personal use and no other use. You are not authorized to record my lectures, to provide your notes to anyone else or to make any commercial use of them without express prior permission from me.
3. This syllabus is subject to change at any time during the semester with changes to be announced in class.
4. Students should schedule at least one hour per lecture hour for study outside class. Students should schedule at least one hour per laboratory hour for outside work to prepare for the laboratory, use of open laboratory hours, and to complete the required laboratory documentation.
5. Grades are based in part on the student's ability to communicate. Good written English is expected in all course work and is a factor in laboratory report grades. The student's ability to orally communicate the results of laboratory exercises and class assignments is also monitored.
6. Each student should retain graded lecture notes, pop quizzes, homework, tests, software-generated files, and laboratory reports to document errors in recorded grades.

University of North Texas
Engineering Technology

7/20/2004

7. Requests for review of graded work must be submitted during the lecture in which such work is returned to the students. The request should be accompanied by a written justification of the request including any supporting data.
8. The UNT Catalog procedures on cheating and plagiarism will be vigorously enforced. It is the duty of each student to protect their work so it is not available to others for submission as their efforts. This is especially true of files that are generated on the computer. Students that knowingly allow others to use their work are partners in this unethical behavior.
9. There is no limit on the use of calculators for lecture, labs, pop quizzes, formal tests, or final examination.
10. Challenges to the course grade must be presented within 60 days of receipt of grade notices mailed by the university. This will insure that instructor's records are still available to allow a review of the assigned grade. You should first discuss your complaint with the instructor. If you wish to carry it further, contact the Program Coordinator by calling (940) 565-2022. To further pursue your complaint, contact the Department Chair at (940) 565-2022, but ONLY after first discussing your concern with the previous two individuals.
11. If appropriate, Material Safety Data Sheets (MSDS) are maintained on file in the department for your review. Access to these documents may be provided by the:
 - instructor of this course,
 - Program Coordinator, or
 - Department Secretary.Seek initial access through the instructor or Coordinator rather than the secretary.
12. Cheating on quizzes, examinations and laboratory assignments, and plagiarism on various papers and reports are types of disciplinary misconduct for which penalties are assessed under the UNT Code of Student Conduct and Discipline. Major responsibility for implementing the University's policy on scholastic dishonesty rests with the faculty. Be advised that the instructor of this course supports and fully implements this policy. The following actions will be taken when evidence of such misconduct is observed. The student will be presented with the evidence of misconduct and given an opportunity to explain same. Based on the outcome of this private conference, the matter will be either dropped or the student will be given a grade of "F" in the course and be referred to the Dean of Students for further counseling and/or disciplinary action.
13. An I (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.

University of North Texas
Engineering Technology
7/20/2004

COURSE OUTLINE:

<u>Date</u>	<u>Description</u>	<u>Text</u>
Jan 13	Introduction/ The Product Design Process	Ch.1
Jan 20	Need Identification and Problem definition	Ch.2
Jan 27	Team Behavior and Tools	Ch.3
Feb 3	Concept Generation/ Embodiment design	Ch. 4 & 6
Feb 10	Modeling and Simulation	Ch.7
Feb 17	Presentation on Modeling	
Feb 24	Materials Selection and Materials in Design	Ch.8
Mar 2	Exam #1	
Mar 9	Materials Selection and Materials in Design	Ch.8
Mar 16	Spring Break Holiday	
Mar 23	Materials Processing and Design	Ch.9
Mar 30	Risk Reliability and Safety	Ch.11
Apr 6	Exam #2	
Apr 13	Economic Decision Making	Ch.13
Apr 20	Legal and Ethical Issues in Design	Ch.15
Apr 27	Detail Design and Communicating the Design	Ch.16 & 17
May 4	Final Exam	