

ENGR 4603 Engineering Integration

Department: Mathematics, Physics and Engineering

Credit Hours: 3

Required or Elective (circle one)

Current Catalog Description:

Design projects in the last year of the curriculum used to integrate the educational experience. Includes reference to business concepts, mathematics, science, engineering and humanities. Emphasizes team work and holistic approach to problem solving. Prerequisites: Within 30 hours of graduation, completion of core curriculum, completion of advanced mathematics courses, completion of ENGR 2213, 2223 and at least six hours of upper division engineering courses. Lab fee \$15

Course Schedule:

2 lecture hr/ wk, 2 lab hr/week

Textbook(s):

No Textbook

Coordinator:

Dr. Falih Ahmad

office: Hydrology Building 112

email: ahmad@tarleton.edu

phone: 245-968-1894

Course Web Page: Not established at this time

Prerequisites by Topic:

Within one year of graduation, completion of at least 30 hours of engineering courses with a C or better. Completion of:

MATH 306 — Differential Equations with a C or better.

MATH 333 — Calculus III with a C or better.

Course Grading:

Class grade will be based on the following:

Total average of the three projects and client satisfaction 85%

Project participation and team work 15%

Program Outcome and Course Learning Goals Map:

The Program Outcomes for Engineering Physics are:

* A-L omitted here to meet 2-page requirement, but included on syllabus distributed to students *

Course Learning Goals:

Upon completion of this course with a C or better, students will:

1. Engineering problem solving within the requirements of realistic industry requirements
2. Be able to display competency and apply their skills in design, materials/manufacturing, electronics, circuits, controls, physics, mathematics and computer science
3. Demonstrate the ability to work in a team environment
4. Demonstrate leadership and management skills
5. Professional interaction and presentation in an engineering industry environment
6. Be able to search and interpret pertinent data from literature
7. Be able to use state-of-the-art lab and testing equipment
8. Be introduced to the economic, environmental and social issues in material science and engineering
9. Through industry, exposed students to real life factory, engineering, manufacturing and management environments

Topics Covered:

Topic	Course Goal	Program Outcomes	# Lec/Lab (approx.)
Engineering Problem Solving	1	a-l	10
Interacting with Industry as a Client	3,4,5,9	a-l	3
Engineering Ethics, Environmental and Social Responsibility	8,9	f,h,j	2
Professional Understanding of the Needs of the Industry	1-9	a-l	3
Working in a Team Environment and Team Management	3,4	d,f,g,hi,j	6
Data Interpretation and Presentation; Tables & Graphs			
Processing of engineering information, Test Data, Cost Data and the Use Of-State-Of-The-Art Equipment and Computer Software Analysis/Modeling	1,2,6,8,9	a,b,c,e,k,l	4
Engineering Fundamentals			
Engineering deductions, analysis and design, CAD and Computer Science	1,2,6,7,8,9	a,b,c,d,e,f,h,i,j,k,l	10
Manufacturing Engineering and Fabrication Processes			
Materials selection, manufacturing, testing, prototyping and cost analysis	1,2,6,7,8,9	a-l	4
On-Hands Activities – Developing, Testing and Evaluating Proposed Solutions to Meet the Clients Requirements	1-9	a-l	10
Verbal and Written Reports	1-9	a-l	6

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.

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 Disability Services at (254) 968-9478 to request appropriate accommodation. Furthermore, formal accommodation requests cannot be made until the student has been officially admitted to Tarleton State University.

Contribution of Course to Meeting the Professional Requirement:

Engineering Topics: 100%

Prepared by: Michael Hibbs

Date: May 23, 2005

Reviewed by: Denise Martinez

Date: June 6, 2005

Reviewed by: Falih Ahmad

Date: January 20, 2008

Review Notes: 01/20/08 – updated the current catalog description, coordinator name and list of the prerequisites – FHA; approved as a writing intensive course.