

ENGI/BUSI 3520
Integrating Business and Engineering Theories with Practice
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Office Hours: MW 4 – 5 p.m.
Class Time: MW 5 – 6.15 p.m.
COB 021

I. Course Content/ Objectives/ Educational outcomes:

As American companies come to rely more and more on engineering and technology to make the economy grow, it becomes critical for future business leaders to have a good understanding of engineering and technical issues that impact businesses and for engineering leaders to have a good understanding of business and ethical issues. Employers and top executives in companies want their managers and engineers to be above average problem solvers, decision makers, and team players. With the turn of the new century, employers and executives are wanting prospective employees to build decision-making skills that will enable them to handle the complex and interrelated issues that affect the performance and sustainability of the companies in the 21st century. For example the United States National Aeronautics and Space Administration (NASA) is working to boost decision-making skills of flight crews. Discovery that decision errors are second only to procedural errors in being the direct cause of flight-crew involved accidents; patterns of differences between good and bad crews; pilots' perception of risk make the need for such a course critical.

The outcome of this course would be:

- (a) Engineering students learn about importance of business issues,
- (b) Business students learn about importance of engineering issues,
- (c) Increased knowledge about the complex organization structures, engineering and business problems faced by real-world companies, and training to solve some of these problems, and
- (d) opportunities for students to use information technologies, presentations, site visits, and invited lectures thereby enhancing their learning experiences.

Credit Hours: 3 SCH

Prerequisites: BUSI 3510 or ENGR 3510

Co-requisite: None

Target: This is a required course for undergraduate students who are admitted to the Business- Engineering-Technology program and are pursuing the minor in Business-Engineering-Technology.

II. Tentative Schedule and Outline of Course Content:

P.K. Raju and C.S. Sankar, "Integrating Business and Engineering Theories with Practice"

Methodology: Lectures, field visits, homework, and case studies will be used in order to achieve the educational outcomes. A case is a record of an issue that has been faced by engineers or managers, together with surrounding facts, opinions, and prejudices upon which decisions depend. These cases are presented to students for considered analyses, open discussion, and final discussion as to the type of action, to be taken. After the students have arrived at solution, their decisions, results, or proposals are compared to the solution that was actually adopted by the company that had the problem. Technical and management competency materials are included with each study so that the students have access to relevant material needed to understand and analyze the case studies.

AUCNET USA case topics:

Entrepreneurship, Telecommunications technologies, Market versus technology change.

Lorn Textiles case topics:

Safety, Standards, Legal versus business and engineering decisions.

STS 51-L case topics:

Ethics, Engineering design, Space technologies, Engineering versus management decisions.

Powertel case topics:

Wireless technologies, Capacity constraints, Marketing versus engineering decisions.

Schedule of Classes

Jan. 8: Introduction

Jan. 13-22: AUCNET USA case study (lecture, homework, field visit)

Test on prior knowledge

Lecture: Strategic planning, Telecommunications, Entrepreneurship

Homework #1: To be assigned.

Field visit: Tour of internet facility at COB

Invited lecture: Dr. Wagener (Evaluating technology alternatives)

Group formation and Assignment: Assignment of roles to groups

AUCNET USA case study assignment provided

Jan. 29: Writeup from group due; has to be uploaded to WebCT

Class discussion of case study; Use information from your homework and teamwork writeup in conducting the class discussion

Feb. 3: Feedback; What was done by the company?

Feb. 5: Test #1

Feb. 10-17: Lorn Textiles case study
Lecture: Standards, Safety, Textile machinery, Machinery operation & maintenance
Possible invited lecture: Lawyer
Homework #2: To be assigned
Group formation and Assignment: Assignment of roles to groups

Feb. 17-19: Group presentation

Feb. 24 – Invited Lecture: Dr. Suh, MIT

Feb. 26 - Feedback

Mar. 3 – Test #2

Mar. 3-12: STS 51-L case study (lecture, homework, field visit)

Lecture: Engineering design, Ethics, Decision making

Possible invited lectures: Mr. Odom: Dr. Armenakis

Homework #3: To be assigned

Group formation and Assignment: Assignment of roles to groups

STS 51-L assignment

Mar. 17-19: Group write-up and presentations

Mar. 31 – Feedback; What happened?

Apr. 2: Test #3

Apr. 7-16: Powertel case study (lecture, field visit)

Lecture: Wireless technologies, capacity constraints, marketing

Possible field visit: Tour of a cell site near Auburn

Possible invited lecture: Mr. Gwin, Vice President, Powertel

Homework #4: To be assigned

Inclusion of IT in presentations: Include digital photos/ video in presentations

Powertel case study assignment

Apr. 21-23: Group case presentations

Apr. 28: Feedback; What happened?

Apr. 30: Test #4

III. Grading and Evaluation Procedures

Course requirements: The course is based on mastering competency materials and analyzing the case studies. Students work individually and in groups. Please produce the required quality of work given the number of points assigned for write-up, discussion, and presentations.

Grading (1000 points):

Teamwork:		
Aucnet case study:		150
Write-up	125	
Discussion	25	
Lorn case study:		100
Presentation	100	
STS 51-L case study:		150
Write-up	75	
Presentation	75	
Powertel case study:		100
Presentation	100	
Individual:		
Tests (4)		300
Individual Exercises;		
Attendance; class participation;		
Homework		200

IV. Case Study Discussion:

Case study discussions will be graded based on teamwork, quality of presentation, use of information technologies, quality of analysis, and attention to details. The criteria for evaluation will be similar to the form provided below. **Changes to this form might be made depending on the case study that is being analyzed.**

Case Write-up/ Presentation Evaluation Form

Case Study:

Date:

Presenting Team Members:

Ratings (circle the appropriate numbers)

Place comments after each rating

CONTENT of Write-up or Presentation	Poor	Below Average	Average	Above Average	Superior
1. Problem Statement and identification of criteria	1	2	3	4	5
2. Thoroughness, accuracy, and depth of analysis of technical factors	1	2	3	4	5
3. Thoroughness, accuracy, and depth of analysis of non-technical factors	1	2	3	4	5
4. Identification and evaluation of alternatives	1	2	3	4	5
5. Quality, quantity, feasibility, and relevance of recommendations	1	2	3	4	5
6. Justification and support for recommendations	1	2	3	4	5
7. Innovative/Interest generated	1	2	3	4	5
8. Connection to theory	1	2	3	4	5
 DELIVERY of Write-Up and/or Presentation					
1. Organization of presentation	1	2	3	4	5
2. Professionalism of presentation	1	2	3	4	5
3. Use of visuals and color	1	2	3	4	5
4. Communication skills of team	1	2	3	4	5
6. Handling of questions	1	2	3	4	5
 OVERALL EVALUATION:	 1	 2	 3	 4	 5

V. Special Accommodations for Students with Disabilities:

Students with special accommodations should make an appointment to discuss the accommodation memo during my office hours as soon as possible. If schedule office

hours conflict with classes, please, arrange an alternate appointment time. If you do not have accommodations memo, but need special accommodations, please contact the Program for Students with Disabilities, 1244 Haley Center, 334-844-5943 (Voice T/O).

VI. Academic Honesty

All portions of the Auburn University Honesty Code (TITLE XII) found in the TIGER CUB will apply in this class.

VII. Attendance at TWCTM Sponsored Meetings

Please attend the following TWCTM sponsored meetings.

January 11, 2003

8:30 AM - 1:00 PM Professional Presence Seminar by Ms. Nancy Cleveland.
Subject: Business Etiquette and Protocol. Continental Breakfast available at 8:30 AM. Seminar begins at 9:00 AM. Lunch served Noon-1:00 PM.

February 22, 2003

8:30 AM - 1:00 PM Professional Presence Seminar by Ms. Nancy Cleveland.
Subject: Visual Impact. Continental breakfast available at 8:30 AM. Seminar begins at 9:00 AM. Lunch served Noon-1:00 PM.

April 18-20, 2003

Leadership and Teaming Skills Development Training Retreats at 4-H Camp, Columbiana, AL

Leave 4:00 PM Friday April 18 and Return at 3:00 PM Sunday April 20.