

TCMG 410X
University of Bridgeport – Technology Management
Survey of Technology
Thursdays - 12:45-3:15PM
August 29 – December 13, 2013
Mandeville Hall, Room 316

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Office Hours: Tuesday 4-6PM, Wednesday 1-3PM,
Thursday 10-12PM by advanced appointment only

Engineers' and technologists' strategic position between the endless frontiers of new knowledge on the one hand, and the equipment proved by success on the other, enables them to act as the most effective revolutionists of our time.

– W. H. G. Armytage, *A Social History of Engineering*, 324

Course Overview

The course provides an introduction into managing engineering and technology projects and surveys the history, current and emerging technologies in the areas of: health/medicine and biotechnology; materials; energy; environment; electronics, computing and the Internet; nanotechnology, transportation; structures; transit; infrastructure; security; manufacturing, systems and processes; and aerospace.

The teaching approach consists of lectures, in-class activities and exercises, case studies, an individual project and class readings. There will be two quizzes.

Course Learning Objectives

The objectives of the course are to:

- Provide the student with a basic broad understanding of a variety of existing and emerging technologies.
- Understand the basics of managing engineering and technology projects
- Provide a hands-on experience for the students to utilize existing technologies and propose innovation.
- Provide and enhance a foundation of knowledge and technological literacy.
- Develop self-confidence in technical, scientific, or technological information.
- Examine the role of society in technology, science and engineering.

Text Books and Readings

Students are REQUIRED to have a copy of the following text and BRING it to every class. No required textbook will be placed on reserve in the library per School of Engineering policy. You must have a copy of the textbook (by Thamhain) for homework assignments and tests. No online versions nor text sharing will be allowed in any open book tests. It is

required that you obtain a copy, new or used. Additional handouts will be downloaded from the course website on Canvas.

1. Thamhain, H. J., *Management of Technology: Managing Effectively in Technology-Intense Organizations*, John Wiley & Sons, Inc., 2005, ISBN-13: 978-0471415510.

The UB book distribution system allows you to order the books online at <http://Bridgeport.textbooktech.com/> or at the UB Bookstore on the main campus.

Reference (Optional)

1. Easton, Thomas, *Taking Sides: Clashing Views in Science, Technology and Society*, McGraw-Hill/Dushkin, 2011, ISBN-13: 978-0078050275.

Course Requirements

1. Class Attendance, Participation, Punctuality:

Timely attendance at each class session is expected. Students are expected to be on-time for class. Class lectures complement, but do not duplicate, textbook information. **Together students and instructor will create a learning organization.** Late arrival and absence will be noted under “attendance” which can affect the student’s grade. A significant portion of your learning will accrue through the constructive and respectful exchange of each other’s ideas and search for alternative solutions. You must be actively engaged in class activities and discussions to develop your objectivity and communication skills.

2. Cheating and Plagiarism: Cheating and plagiarism are absolutely unacceptable in any guise. The first offense will result in a “0” on the homework, exam, term paper or project. The second offense will result in an “F” for the course. Cheating and plagiarizing means using the work of others as your own. Copying homework, using papers or portions of works from the Internet, talking or looking around during exams and allowing others to look at your exam papers or copy your homework, term paper or project are examples of cheating. No electronic devices may be used during tests.

It is the student's responsibility to familiarize himself or herself with and adhere to the standards set forth in the policies on cheating and plagiarism as defined in Chapters 2 and 5 of the Key to UB <http://www.bridgeport.edu/pages/2623.asp> or the appropriate graduate program handbook.

3. Preparation, Deadlines and Late Policy:

Homework is due at the start of class and must be submitted through Canvas. No excuses will be accepted. Don’t wait until the last minute to print out your assignment. **Do not email me late homework assignments. Also be certain that your travel arrangements do NOT conflict with any of your team or individual presentations. Failure to make a presentation will result in an F for that assignment.**

4. Homework: The syllabus identifies both the oral and written homework assignments. Each written assignment should be **typed** and submitted electronically on Canvas. Homework is

important and represents a key component of your grade (25%). Please only submit homework into Canvas. I will not be able to accept homework or assignments emailed to me or hardcopies. Unless otherwise notified, homework is due Thursday's at 12:45 PM. Answers for homework will be posted by Thursday evenings. Please use the following naming convention in submitting your homework and project assignments: **Last Name_FirstInitial_StudentID_HWNumber**. **Be sure to place your name on the each page of your homework.**

You must show all your work (math) step by step. Simply supplying an answer or excluding logical steps will result in points being taken off your grade.

If I receive your homework on time by 12:45 PM on Thursdays, you will receive an "X" under that homework assignment in the Grade Center in Canvas by 11:59 PM on the Friday. The "X" means I received your homework. If you do not see an "X" it means your homework was not received on time. By the following Thursday at 12:45 PM the "X" will convert to a grade (example, A, B-, or 9 out of 10 points). Late homework will not be graded.

2. Individual Project and Presentation:

Each student will prepare a written term paper (14 -16 pages, double space, 12 point font) and present a summary of it during the last class session. The project should involve a unique concept, technology transfer or spinoff of one of the technology areas discussed in class. The written report will be due on the last class of the term. **The paper must contain a** table of content, introduction, objectives, scope, methodology, analysis, conclusions and recommendations/implications/lessons learned, **be well written, typed and page numbered, be supported by research, contain references and be consistent with materials from a graduate program.** Most of the references should be from peer reviewed sources (such as peer-reviewed journals) and NOT general Internet sources (like Wikipedia). Each student is required to summarize the term project in a presentation up to 6 minutes.

All students must submit **in writing** the title of their term paper and an overview/abstract of their topic **September 19, 2013** and an outline/white paper of their term paper by **October 3, 2013**. Both paper and electronic copies must be provided. Plagiarized work will receive an F. Class members will need to submit their individual project into Turn-It-In. Examples of suitable topics could be: demonstrating the economics/feasibility of a green engineering manufacturing environment or a survey of the nanotechnology and anticipated innovations.

Evaluation

Class Attendance, Class Activity Participation, Mini Projects	25 %
2 Quizzes	30 %
Homework	25 %
Individual Project & Presentation	<u>20 %</u>
	100 %

Course Structure

Lecturing is only one of the three approaches used in this course. Knowledge will be acquired through facilitated case discussion and student presentations. Students are expected to engage actively in

preparing for and presenting the case materials. For completing the assignment and project, students may need to do additional research, and look for information and knowledge that is not covered by the textbook and the lectures. It is assumed that a major learning objective for this course is to cultivate students' capability in searching, identifying, evaluation, using, and integrating relevant knowledge that may or may not be provided in the class.

Schedule & Assignments

Date	Topics and Assignments	Reading (must be done before class)
Session #1 Aug. 29, 2013	Review of Syllabus and Expectations What is Technology? What is Science? What is Engineering? Relationships between Technology, Science and Engineering Benefits of Technical Literacy Brief History of Technology Overview of the technology to be discussed in the course Challenges of Managing in High-Technology Class Activity: Take It Apart – How Does It Work? (Students are given common small appliances and toys to disassemble to understand how they work.)	Text: Chapter 1 Handout 1 on Technical Literacy (will be on Canvas)
Session #2 Sept. 5, 2013	Managing in an e-Business World Technology Focus: Grand Challenges Homework Due: 1. Questions 1-1, 1-6	Text: Chapter 2 Handout 2 on Grand Challenges (will be on Canvas)
Session #3 Sept. 12, 2013	Organizing the High-Technology Enterprise Technology Focus: Electronics, Computing and the Internet Homework Due: 1. Questions 2-1, 2-2, 2-3	Text: Chapter 3 Handout 3 on Electronics, Computing and the Internet (will be on Canvas)
Session #4 Sept. 19, 2013	Concurrent Engineering and Integrated Product Development Technology Focus: Social Media Homework Due: 1. Questions 3-3, 3-7 2. Selection of topic for individual project	Text: Chapter 4 Handout 4 on Social Media (will be on Canvas)
Session #5 Sept. 26, 2013	Managing People and Organizations Technology Focus: Manufacturing, Systems and Processes Homework Due: 1. Questions 4-1, 4-4, 4-6	Text: Chapter 5 Handout on Manufacturing, Systems and Processes (will be on Canvas)

Session #6 Oct. 3, 2013	Managing Technology-Based Projects Technology Focus: Energy Homework Due: 1. Questions 5-3, 5-7, 5-10 2. White paper on individual project	Text: Chapter 6 Handout on Energy (will be on Canvas)
Session #7 Oct. 10, 2013	Measuring and Controlling the Work Technology Focus: Health Sciences/Pharmaceutical/ Biotechnology Homework Due: 1. Questions 6-2, 6-7 Quiz	Text: Chapter 7 Handout on Health Sciences/Pharmaceutical/ Biotechnology (will be on Canvas)
Session #8 Oct. 17, 2013	Project Evaluation and Selection Technology Focus: Materials and Nanotechnology Homework Due: 1. Questions: 7-1, 7-7, 7-11 Class Activity – Materials	Text: Chapter 8 Handout on Nanotechnology (will be on Canvas)
Session #9 Oct. 24, 2013	Leading Technology Teams Technology Focus: Transportation Homework Due: 1. Draft of Individual Project 2. Questions 8-1, 8-5 Class Activity – Grand Challenges in Transportation	Text: Chapter 9 Handout on Transportation (will be on Canvas)
Session #10 Oct. 31, 2013	Managing R & D and Innovation Technology Focus: Structures, Traffic and Infrastructure Homework Due: 1. Questions: 9-1, 9-2, 9-3, 9-13 Class Activity – Building A Better Infrastructure Class Activity	Text: Chapter 10 Handout on Structures, Traffic and Infrastructure (will be on Canvas)
Session #11 Nov. 7, 2013	Managing Environmental Quality Technology Focus: Environment/Sustainability Homework Due: 1. Questions 10-1, 10-2, 10-3 Class Activity – Providing Access to Clean Water Easier	Text: Chapter 11 Handout on Environment/Sustainability/Green Manufacturing
Session #12 Nov. 14, 2013	Managing Risks in High Technology Technology Focus: Security Homework Due: 1. Questions 11-1, 11-5, 11-7	Text: Chapter 12 Handout on Security (will be on Canvas)
Session #13 Nov. 21,	Developing New Business and Technology Entrepreneurship Quiz	Text: Chapter 13

2013	Homework Due: 1. Questions 12-1, 12-4	Handout on Aviation/Aerospace (will be on Canvas)
Session #14 Dec. 5, 2013	Consulting in Technology Management Homework Due: 1. Questions 13-1, 13-6	Text: Chapter 14
Session #15	Final Individual Project Presentations	