



IE 471– Plan for Industrial Systems Design I,
Course Syllabus: Fall 2020

INSTRUCTOR INFORMATION

Instructor: Dr. M. Yaqub, Ph.D., D.Eng., M.B.A.

Department of Engineering & Technology

Office Location: Charles J. Austin Engineering & Technology Building
Room 220

Office Hours - Online:

T 1:00pm – 3:30pm

TH 1:00Pm – 3:30pm

University Email Address:

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COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) , Optional

The Team Handbook, 3rd

Peter R. Scholtes, Brian L. Joiner, Barbara Streibel, Oriel Incorporated

ISBN 1-884731-266-0

February 2003

COURSE REFERENCE TEXT/MATERIALS

FACILITY LAYOUT AND LOCATION: An Analytical Approach, R.L. Francis and J.A. White, Prentice-Hall, 1974

METHODS, STANDARDS, AND WORK DESIGN, 11th edition, Benjamin Niebel and Andris Freivalds, McGraw-Hill Higher Education, ISBN 0-070246824-6

INTRODUCTION TO STATISTICAL QUALITY CONTROL, 4th edition, Douglas C. Montgomery, John Wiley & Sons, Inc. ISBN 0-471-31648-2

OPERATIONS RESEARCH Applications and Algorithms, 3rd edition, Wayne L. Winston, Duxbury Press, ISBN 0-534-520200 includes software package.

PROJECT MANAGEMENT, THE MANAGERIAL PROCESS, FOURTH EDITION,

Clifford F. Gray, Erik W. Larson

ISBN 978-0-07-352515@2008

ENGINEERING COST ESTIMATING, 3rd edition, Phillip F. Oswald, Prentice Hall, 1992,

ISBN 0-13-276627-2

Course Description

This course is a precursor for IE 495. Each student will enroll the following spring in IE 495 and as member of a team. The objective of the course is for each team to prepare a proposal (technical and management sections) to outline the approach and methodology roadmap that the team plans to follow in working with industry sponsors on industrial engineering process improvement activities. The proposed improvement activity will be the systems design project planned for the following spring semester in IE 495 Industrial Systems Design. The proposal prepared during this class is intended to present: the background for The problem, statement and description of the problem, the approach, the methodology and analytical support of the team's plans for the execution of the project. Prerequisites: IE 312 or IE 313, Senior Classification, IE Majors only, Course must be scheduled in the fall semester prior to the student's IE 495 enrollment in the final spring semester and Instructor's consent.

Student Learning Outcomes

Upon satisfactory completion of the course, the student will:

1. Apply the engineering design process and application of quantitative tools as a foundation for demonstrating the proposed approach is a valid approach for the team's industrial design project.
2. Be able to develop the physical requirements for the proposed design project.
3. Be able to prepare a schedule of the proposed requirements in the approach.
4. Be able to propose a model system design requirement for project process and relate a proposed model component to implemental system level components.
5. Be able to layout, prepare and present the proposed system operations in a presentation with visual aids describing the system, final project proposal.

TECHNOLOGY REQUIREMENTS

The following technologies will be required for this class.

- A scientific calculator.
- Microsoft Project Software
- Microsoft Word, Excel, PowerPoint.
- LINGO software
- Arena Simulation Software
- Minitab Software

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

COURSE REQUIREMENTS

Instructional Methods

Student teams will be responsible for finding and developing an industrial design project with an industry sponsor. The faculty will support this effort, but it is the students' responsibility. The teams will prepare a proposal (technical and management sections) to outline the team's approach and methodology in meeting the sponsor's project requirements. These proposed activities will be the initial project plan for the execution of industrial design project for the following spring semester in IE 495, Industrial Systems Design. The proposal prepared during this course will serve as the major deliverable for IE 471 course.

Prerequisite:

The student must have the following: Senior Classification, IE Majors Only, IE 471 course must be scheduled in the fall semester prior to the student's enrollment in IE 495 during the final spring semester, and consent of instructor.

Course Overview/Outline:

The proposed improvement activity will be the systems design project planned for the following spring semester IE 495 Industrial Systems Design. The proposal prepared during this class is intended to present: the background for the problem, statement and description of the problem, the approach, the methodology and analytical support of the team's plans for the execution of the project. The proposal will include a project network schedule with the project work breakdown structure (WBS) and program plan including a quantitative cost estimate per WBS task. The proposal will include all project deliverables with due dates. The proposal will outline the project organization with roles and responsibilities of each team member. These roles and responsibilities will be designated as tasks within the overall team project.

There will be two course deliverables for each team. These team-capacity deliverables are 1. Team's Project Proposal 2. Presentation of Proposal. In an individual capacity, each student will be expected to participate in the Team Dynamics and Life Learning experience. The project subject is typical type of problems that an industrial engineer would encounter during their career. The project team approach is very similar to the approach problems are addressed industry. That is, each team member brings to the team their individual expertise or knowledge that is needed. Their individual contributions may include tasks areas outside their specialty, but these tasks are required to be completed by the team. In this course, the course professor/industrial sponsors will act in advisory roles. In this IE 471 course and the following IE495 course, the professor will not have the answers but he is available for advice and assistance.

Course Evaluation

The final course grade will be based on the following factors. Proposal for a Class Project: Students are expected to participate in the locating an industry sponsor and defining the requirements of the project. Then, the teams perform the analysis, concept, planning and the preparation efforts (including: conceptualize, analysis to support the approach, planning, defining the resources for the project and writing/illustrating the proposal for the class project. Each student will be expected to participate in the proposal efforts. Each student will be assigned to a team for the project. Each team will be assigned an engineering problem. The team will be expected to submit a complete proposal for the team designated project.

Activities Assessments

Evaluation Factors	Values
1. Overall Evaluation of Proposal	20%
2. Analysis to support the proposal approach to meeting the objectives	20%
3. Conceptual approach to the project	20%
4. Assignments (lifelong learning and engineering ethics)	20%
5. Individual student contribution to the team project (Professor, Industry Sponsors, other team members' inputs)	20%
Total	100%

Grading Scale:

- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- Fail < 60%

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

STUDENT EXPECTATIONS

- Students are expected to make a legitimate attempt to pass the course, as judged by the instructor. Students who do not make a legitimate attempt to pass the course will be assigned a final grade of "F" for the course and will not be allowed to attend any more class meetings. Any violations of the following student expectations, as judged by the instructor, will result in letter grade reductions to course work grades and/or to the final course grade of the offending student.
- Students are expected to have complete knowledge of and to be fully compliant with the Code of Student Conduct in the current Student Guidebook at <http://www.tamuc.edu/studentlife/guidebook.htm>

ACADEMIC DISHONESTY

Efforts made by any student to achieve dishonestly will not be tolerated. Course work that students submit to the instructor is to be their own. Students may discuss course work and other course material with the instructor and/or fellow students (except during tests), but it is inappropriate to have another student do their course work (course assignment, examination, or presentation) or provide them with any portion of it. If the instructor determines a student has performed dishonestly on course work, then that student will be assigned a grade of "0" for that specific course work. If the instructor determines a student has committed a second act of academic dishonesty, then that student will be assigned a final grade of "F" for the course and will not be allowed to attend any more class meetings.

University Specific Procedures:

Students with Disabilities:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library, Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

StudentDisabilityServices@tamuc.edu

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE/CALENDAR

COURSE MILESTONES SCHEDULE:

Weeks 1	Identify an Industry Sponsor
Weeks 2	Life Long Learning Assignment
Weeks 3	Form a team
Weeks 4	Capstone Project Scope and Guidelines
Week 5	Project Scope and Articulated Detailed Problem Statement
Weeks 6 & 7	Team meets with Industry Sponsor
Weeks 8 & 9	Detailed Project Plan for each team including Work Break Down Structure, Costs, Gant Charts, CPM/ PERT networks, and Detailed R&R Matrix
October 29, 2020	Detailed Project Technical Requirements, Methodology and Analytical Support
November 19, 2020	Complete Project Proposal Report Due
December 08, 2020	Final Proposal Presentation Due