

**ISEN 416
FACILITIES LOCATION, LAYOUT, AND MATERIAL HANDLING SYSTEMS
FALL 2011**

Instructor	Lab Instructors	Writing Instructor
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ETB 4039	ETB TBA	ETB 3028
Office Hours: TTh 9:00 – 10:00 or by appointment	Office Hours: TBA or by appointment	Office Hours: TTh 10:00-12:00 or by appointment

SCHEDULE:

Lectures:	TR 2:20PM -3:35PM	ETB 1037
Labs:	Section 901 M 3:00pm-5:25pm	ETB 1006
	Section 902 W 3:00pm-5:25pm	ETB 1006

Course materials will be posted on **eLearning**. Please check regularly.

COURSE OBJECTIVES:

Develop an understanding of the principles of facilities location, layout, and material handling systems and to practice designing facilities. The course will emphasize modeling, design, and analysis techniques. It will try to provide a balance of exposure to available methodologies in facilities location, layout, and material handling with a practical emphasis on issues that are difficult to capture in quantitative models but are important to consider. The course has four educational objectives for students:

- Learn formulations, models, and analytical procedures for the study of facilities layout planning
- Learn fundamental principles of material handling
- Design layouts incorporating product, process, and personnel requirements
- Improve writing, presentation and team work skills.

ABET OUTCOMES:

As a design course that encompasses skills from many of your previous courses, this course addresses many of the ABET student outcomes defined for our program. In particular, ISEN 416 specially addresses outcomes A, C, D, E, G, I, and K as defined in the ISEN ABET materials (http://ise.tamu.edu/general/Outcomes_Summary.htm).

REQUIRED TEXT:

Facilities Planning, 4rd edition, J.A. Tompkins *et al.*, John Wiley & Sons, Inc., New York, 2010.

REFERENCES:

Facility Layout and Location: An Analytical Approach, 2nd ed., Francis, McGinnis, and White, Prentice Hall, Englewood Cliffs, New Jersey, 1992.

Facilities Design, S. Heragu, PWS Publishing, Boston, 1997.

Manufacturing Facilities: Location, Planning, and Design, 2nd ed., D.R. Sule, PWS, Boston, 1994.

PRE-REQUISITES AND CO-REQUISITES :

ISEN 315 (Pre), ISEN 316 (Co) "1.13 Prerequisites: It is the responsibility of the student to be sure that course prerequisites are met. All prerequisites must be listed in the appropriate catalog or schedule of classes. A student may register for a course for which he or she has not met the prerequisites only with the consent of the head of the department in which the course is offered. Failure to meet course prerequisites could result in a student being dropped from the class." {Excerpt from TAMU Student Rules}

GRADING:

ISEN 416 has been designated a *writing intensive* course. A significant portion of your grade will be based upon written products. You will receive a separate writing grade based upon quality of writing, which will comprise 25% of your final grade, with the remaining technical skill-based portion of your grade comprising 75% of the final grade. Thus,

$$\text{Final Grade} = (\text{Writing Average (out of 100)}) \cdot (0.25) + (\text{Technical Average (out of 100)}) \cdot (0.75)$$

The letter grade distribution for the final grade will be as follows:

A ≥ 90%; 90% > **B** ≥ 80%; 80% > **C** ≥ 70%; 70% > **D** ≥ 60%; **F** < 60%

Writing Portion

As a "W" course, ISEN 416 melds industrial engineering with writing through practical application of engineering concepts in homework assignments and labs and through the synthesis of that technical work into written reports. Students will write introductions, executive summaries, and final reports for each case study. Reports will be evaluated for both technical correctness and the overall quality of the writing. Writing instruction will focus primarily on improving the effectiveness of each student's communication. Grammar, spelling, and punctuation will be addressed, but they will not be the primary focus of instruction unless they impact communication or credibility.

Written work will be evaluated and graded separately. Because this is a university approved W course, **you cannot pass the course if you do not pass the writing portion**. As the course progresses and you begin to work in groups, you will still have individual writing requirements. The grade awarded a group project is **not** automatically any student's grade. Individual grades will be decided based on peer input using the Self and Peer Evaluation form that will be provided. And, the completed form itself will be graded as a writing assignment.

Writing instruction will take place during your lab period and will start immediately. Be on time. You are responsible for any instruction you miss because of tardiness and if you miss a graded event, you will not be allowed to make it up without a university excused absence.

The work associated with the W component consists of at least two case studies, supporting writing assignments, writing-based homework assignments, and a few quizzes or in-class exercises. Writing-specific assignments will be distributed at the start of each lab period and are separate from the other lab assignments. Writing assignments are due at the start of the next lab period unless a different due date is announced. Assignments submitted after the due date will receive a zero unless the student has a university excused absence.

Submit all writing assignments two ways: printed copy on the due date and through Turnitin.com on the eLearning website before the deadline.

Points for the writing component are as follows:

Assignment Type	Writing Grade %
Writing Assignments	30
Peer Evaluations	10
Quizzes and in-class exercises	10
Case Studies	50

Technical Portion

Homework will be assigned periodically. Note that not all homework will be graded. One or more problems may be randomly selected and graded. Additionally, in-class and/or in-lab pop quizzes may be given based on the reading and homework assignments.

Any out-of-class assignments will be collected at the beginning of the class period they are due. **No late assignments will be accepted.**

Points for the technical component are as follows:

Name	Technical Grade %	Date
Exam 1	15	October 4, Tuesday
Exam 2	15	November 3, Thursday
Exam 3	15	December 12, Monday 1:00-3:00 pm.
Homework and quizzes	10	Various – TBA
Layout Assignment	5	Sept 12 (Sec 901) Sept 14 (Sec 902)
Location Assignment	5	Sept 26 (Sec 901) Sept 28 (Sec 902)
Case 1 Report	10	October 17 (Sec 901) October 19 (Sec 902)
Case 2 Report	20	December 5 12:00 pm
Case 2 Presentation	5	December 1 (Sec 901) December 2 (Sec 902)

NOTES:

eLearning

Course materials will be posted on the eLearning site. These materials will include handouts, assignments, announcements, grades, and other materials as appropriate. Any assignments or announcements made through eLearning will be as valid as if made during class. Please check it regularly.

Attendance

Attendance at the lab sessions is required. During lab sessions, you will be working individually and also as part of a team on case studies. Attendance will be checked and included as part of your grade. Please refer to latest *Texas A&M University Student Rules* for information on university excused absences.

Handouts

The handouts used in this course are copyrighted. By “handouts,” I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, web pages, and additional problem sets. Because these materials are copyrighted, you, as a registered class member, may print one copy for your personal use in this class, but you do not have the right to print, copy, and/or distribute the handouts, unless I expressly grant permission.

University Writing Center

The University Writing Center (UWC), located in Evans Library 1.214 on the 2d floor, offers help to writers at any stage of the writing process including brainstorming, researching, drafting, documenting, revising, and more; no writing concern is too large or too small. These consultations are highly recommended but are not required. While the UWC consultants will not proofread or edit your papers, they will help you improve your proofreading and editing skills. If you visit the UWC, take a copy of your writing assignment, a hard copy of your draft or any notes you may have, as well as any material you need help with. To find out more about UWC services or to schedule an appointment, call 458-1455, visit the web page at <http://writingcenter.tamu.edu>, or stop by in person.

Academic Integrity

“An Aggie does not lie, cheat, or steal or tolerate those who do.” It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty. (For the Honor Council rules and procedures, <http://aggiehonor.tamu.edu>)

The Americans with Disabilities Act (ADA)

The ADA is a federal antidiscrimination 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 believe you have a disability requiring an accommodation, please contact the Department of Student Life, Service for Students with Disabilities in Cain Hall, Rm. B118, or call 845-1637. (For additional information visit <http://disability.tamu.edu>.)

TENTATIVE COURSE OUTLINE

WEEKS 1-5

Introduction to Facilities Planning	Chapter 1, 11, 12
Fundamental Concepts of Manufacturing	Chapter 8
Facilities Layout	
Overview	
Basic Layout Types	Chapter 6
Information Gathering	Chapter 2
Flow and Activity Relationships	Chapter 3
Relationship Diagramming	Chapter 6
Layout Procedures	Chapters 6, 10
Space Requirements	Chapter 3, 9
Schedule Design	Chapter 2
Personnel Requirements	Chapter 4
Office Planning	Chapters 4, 6, 10
Computer-Aided Layout	Chapter 6, 10

EXAM 1 (October 4)

WEEKS 6-9

Materials Handling Systems	
Overview/Basic Concepts	Chapter 5
Conveyor Models	Chapter 10
Storage and Warehousing	
Warehouse Space and Layout Planning	Chapter 7
Warehouse Layout Models	Chapter 10
Storage Models	Chapter 10
Automated Storage and Retrieval Systems	Chapter 10
Order Picking	Chapters 7 and 10

EXAM 2 (November 3)

WEEKS 10-14

Facilities Location	
Single-Facility Location Problems	Chapter 10
Location-Allocation Problems	Chapter 10
Network Location Problems	Chapter 10
Location of a Linear Facility	Chapter 10
Linear Assignment Problem	Chapter 10
Discrete Plant Location Problem	Chapter 10

EXAM 3 (December 12)