



ISE 375-L: Facilities Design
Units: 3 – Spring 2023

Lecture: Mon. & Wednesday, 2:00 pm- 3:20 pm
Location: KAP 145

Lab sessions: Wednesday, 4:00 pm - 4:50 pm
Location: SAL 109

Instructor: Dr. Shalini Gupta
Office: GER 207
Office Hours: Online via zoom
Friday- 12 pm – 1 pm
Contact Info: shalinig@usc.edu

Teaching Assistant: TBD
Office: TBD
Office Hours: TBD
Contact Info: [TBD](#)

Course Description

Design of facilities for operations and distribution. Product, process flow, computerized layout planning, and facility location techniques that lead to making good decisions for facility layouts.

Learning Objectives

Upon completion of this course, the student is expected to have demonstrated his/her ability to know and properly use:

1. Understanding how product, process, and schedule impact the locating and designing different types of facilities.
2. Understanding how product flow, space and activities relationships impact facility design
3. Understand concepts for techniques of layout approaches used for facility design.
4. Understand how facility design for operations like warehouses, manufacturing, and commercial facilities.
5. Become proficient in evaluating, selecting, preparing, and presenting a facility design.

Pre-Requisites

ISE 460. You must have this pre-requisite to enroll in this class. You will be expected to apply methods from this course in your homework and projects.

Course Notes

blackboard.usc.edu

Required Book

Tompkins, Jim et. al. Facilities Planning 4th edition. John Wiley & Sons, Inc. New York. 2003. (ISBN 0-471-38937-4)

Facilities Design 4th Edition, Kindle Edition by Sunderesh S. Heragu

Supplementary Materials

Facility Layout and Location (An Analytical Approach) Richard L Francis and John A. White

Facilities Planning: Principles, Technology, Guidelines Jeffrey E. Clark ©2008. Pearson Prentice Hall. ISBN: 978-0-13-114936-6

Total Facilities Management Brian Atkin and Adrian Brooks 3rd Edition. ©2009. Blackwell Publishing. ISBN: 978-1-4051-8659-9

Supply Chain Management, Sunil Chopra and Peter Meindl, Prentice Hall

Description and Assessment of Assignments

Course Material: All assigned sections of the texts, plus topics discussed in lecture by the instructor.

Exams: Each exam will cover the material presented up to and including the preceding assignments. Points will be assigned to each section of the exam. No retakes will be allowed. No make-up exam will be given. The exams will not be comprehensive. All answers should be clearly and fully justified. If the steps are not clear, points will be deducted even if the final answer is correct. Any person caught cheating on an examination will be referred to judicial affairs.

Project: The composition of project team will be arranged based on the final enrollment of the class. Each team, consisting of up to three members, will

conduct an in-depth research project on the assigned topic. Additional details and instructions will be made available during the course. Each team must adhere to the following schedule of key milestones and submittals. Work is to be submitted via email unless students are otherwise instructed. Student teams will submit a comprehensive report at the end of the semester. The project is designed to exercise the skills which you develop over the course of the semester. Additional details will be provided during the course.

Homework: Homework problems will address concepts and calculations related to topics covered in the previous week's classes. Some problems will be short, quick calculations; others will be more extensive; involving multiple checks and analyses. The specific assignment will be posted on Blackboard. Due dates (typically one week later) will be provided on the assignment. Late homework will not be accepted. No exceptions except institution-established emergency reasons; credit for such late homework is with the discretion of the instructor. Everybody has to write his/her own solution independently and make sure to fully understand it. Exchanging solutions, consulting with people other than class members, finding solutions on the web or elsewhere, etc. are not allowed. Violations result in losing the credit for the entire homework set in addition to a significant percentage of the overall course grade, all with the discretion of the instructor. All answers should be clearly and fully justified. If the steps are not clear, points will be deducted even if the final answer is correct.

Laboratory: ISE 375L includes a strong element of exposure to software in facility layouts. Students learn professional-level software. AutoCAD and Solid works will be used for product design and layout design.

Surprise Quizzes: Surprise Quizzes will be given. The score will be used to determine the semester points for the quizzes. Any person caught cheating on an examination or quiz will receive a zero score for that examination or quiz.

Grading Breakdown

Exams (1 and 2)	20 % Each
Exam (3)	30 %
Project	20 %
Assignments & In-class Practice (Surprise Quizzes)	10 %
Total	100%

Grading Scale (Example)

Course final grades will be determined using the following scale

A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

Grading Timeline

7 – 8 Days

Student's Responsibilities

- Students are expected to be respectful of other people's opinions and to express their own views in a calm and reasonable way. Disruptive behavior will not be tolerated.
- Students are expected to be attentive, in class on time and participate in active learning. Attendance will be taken in every lecture.
- The use of laptops, phones or similar devices during class is not allowed.
- Please Do Not bring food or drinks to the class (Water in plastic bottles is ok)
- All exams and surprise quizzes are open – book, and open notes. Laptops, i pads, and cell phones are NOT allowed during the exams.
- Students are expected to be familiar with the Academic Code of Conduct.

To quote from a USC guidebook: "Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior, and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn, and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and

resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.”

Academic Integrity

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behavior related to the obtention of academic gain or the avoidance of evaluative exercises committed by a student is an academic offense under the Academic Code of Conduct and may lead to severe penalties up to and including suspension and expulsion. As examples only, you are not permitted to:

- Falsify data or research results
- Sharing assignments
- Benefit from others' work
- Unfair advantage
- External assistance
- Possession of solutions
- Copy from anywhere without indicating where it came from
- Let another student copy your work and then submit it as his/her own
- Hand in the same assignment in more than one class
- Have unauthorized material/ collaboration or devices in an exam.
- Copy from someone's else exam/assignments
- Communicate with another student during an exam
- Acquire exam or assignment answers or questions
- Write an exam for someone else or have someone write an exam for you
- Submit false documents such as medical notes or student records

You are subject to the Academic Code of Conduct.

Preliminary schedule with examinations and due dates:

Week	Date	Topic	Text Chapters
1	9 Jan.	Course Administration & Introduction	
	11 Jan.	Product, Process and Schedule Design	Ch- 2 (T+H)
2	16 Jan.	Martin Luther King Day, university holiday	
	18 Jan.	Product, Process and Schedule Design	Ch- 2 (T+H)
3	23 Jan	Product, Process and Schedule Design	
	25 Jan.	Flow, Space, and Activity Relationships	Ch- 3 (T+H)
4	30 Jan.	Binary Algorithm and additional Algorithms	Ch- 6 H +Suppl.
	1 Feb.	Binary Algorithm and additional Algorithms	Ch- 6 H +Suppl.
5	6 Feb.	Binary Algorithm and additional Algorithms	Ch- 6 H +Suppl.
	8 Feb.	Layout Design Algorithms Part - 1	Ch- 4 H +Ch- 6 T
6	13 Feb.	Layout Design Algorithms Part -2	Ch- 5 H +Ch- 6 T
	15 Feb.	Examination I	
7	20 Feb.	Presidents' Day, university holiday	
	22 Feb.	Layout Design Algorithms Part -3	Ch- 6 T+ Supp.
8	27 Feb.	Layout Design Algorithms Part -4	Ch- 6 T+ Supp.
	1 March	Layout Design Algorithms Part -5	Ch- 6 T+ Supp.
9	6 March	Machine Layout Models	Ch- 10 H +Ch-10T+ Suppl.
	8 March	Machine Layout Models	Ch- 10 H +Ch-10T+ Suppl.
10	13 March	Spring Recess	
	15 March	Spring Recess	
11	20 March	Warehouse Layout Models	Ch- 10 H +Ch-10T+ Suppl.
	22 March	Examination II	
12	27 March	Network Location Problems	Ch-10 T
	29 March	Network Location Problems	Ch-10 T
13	3 April	Single Facility Location Problems	Ch- 9 H +Ch-10T
	5 April	Minimax Layout and Location Problems	Ch- 9 H +Ch-10T
14	10 April	Location Allocation Models	Ch- 12 H +Ch-10T +Suppl.
	12 April	Location Allocation Models	Ch- 12 H +Ch-10T +Suppl.
15	17 April	Evaluating and selecting the facilities plan	Suppl.
	19 April	Evaluating and selecting the facilities plan	Suppl.
	24 April	Project Presentations	
	26 April	Project Presentations	
	8 May	Final Exam : 2pm – 4 pm (PST)	

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298
equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

uscsa.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.