SCUPI
Sichuan University - Pittsburgh Institute

IE 1081 – Operations Research
Fall 2019 – Sections 2
Course Syllabus

Instructor
Dr. Surya D. Liman (email: surya.liman@scupi.cn)
Office: 4-220
Office Hours: Tuesdays & Wednesdays – 3:00 PM to 5:00 PM

Teaching Assistants
Section 2: Ms. Moon Zhang (email: 2016141522060@stu.scu.edu.cn)
Office:
Office Hours:

Lecture
Section 2: Wednesdays, 9:10 AM - 11:55 AM; Room: Zone 4 - 201

Course Description
Operations research helps in solving problems in different environments that needs decisions. Topics include linear programming, simplex method, duality theory, assignment and transportation problems, network flow problems, linear integer programming, and nonlinear programming. Analytic techniques will be used to solve problems facing business managers in decision environments. 3 credit hours.

Course Pre-Requisites
MATH 0240, MATH 0280, IE 1070.

Course Objectives
1. To acquaint students with analytical/OR modeling techniques, and modeling & solution software that can be used to support various optimal decision making,
2. To give students experience in building models, deriving solutions and analyzing results through some case studies and assigned homework exercises.

Applicable ABET Outcomes
1. An ability to apply knowledge of mathematics, science and engineering
2. An ability to analyze and interpret data
3. An ability to identify, formulate and solve engineering problems
4. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Textbook
Hillier, F.S. and Lieberman, G.J. (2015, 10th Edition), *Introduction to Operations Research*, McGraw-Hill Education, New York, New York, USA.

Assessments

Homework assignments, projects, and exam questions related specifically to the objectives above.

Attendance:	10 %
Homework:	20 %
Mid-Semester Examination:	30 %
Final Examination:	40 %
	100 %

Score	Letter Grade
90.00 – 100.00	A
85.00 – 89.99	A–
80.00 – 84.99	B+
76.00 – 79.99	B
73.00 – 75.99	B–
70.00 – 72.99	C+
66.00 – 69.99	C
63.00 – 65.99	C–
61.00 – 62.99	D+
60.00 – 60.99	D
0.00 – 59.99	F

Attendance

There are 17 165-minute lecture weeks in the semester. Attendance will be taken for each lecture week. Each student is allowed **two absences**. Each absence, after the second absence, will result in a **1% deduction** from the attendance grade. After the **twelfth** absence, the student will **not** be allowed to take the final exam. Late arrivals of more than 15 minutes will be considered as absences.

Homework and Other Assignments

Homework problems and other assignments will be assigned periodically and are due as stated. Late submission **will not** be accepted. Submissions must be done on **A4 papers** and **stapled** together at the top left-hand corner. Students' names and ID numbers must be listed on the first page at the top right-hand corner.

Exams

There will two exams (one Mid-Semester and one Final), all are CLOSED BOOK, CLOSED NOTES, CLOSED COMPUTER. Students can bring **one** A4 page note and it must be **hand-written** on **one side** of the paper only. It cannot be a photocopy. If you must miss an exam, you should make alternative arrangements with the instructor before the exam is given. If you miss an exam without prior notification, you will receive a score of "zero" for that exam except under extenuating circumstances.

Make-Up Exams

Students who have not taken either the mid-semester exam or the final exam are not eligible to take the make-up exam. Make-up exams can only be taken by students who have attained between 50.00 % and 59.99 % (out of 100 %) of the total score. Only 75 % of the make-up exam grade can be used to **replace** the final exam grade. Students taking make-up exams can only attain at most a "**D**" grade.

Avoiding Plagiarism

1. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
2. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.

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Tentative Course Schedule

Week	Day	Dates	Topics	Chapter
1	Wed	Sep 4	Course Introduction and Review of Syllabus Introduction to Operations Research Introduction to Linear Programming	1 2 3
2	Wed	Sep 11	Problem Formulation – Objective Functions and Constraints Transforming from Words to Standard Forms Graphical Solutions	3 3 3
3	Wed	Sep 18	Review of Linear Algebra – Vectors Review of Linear Algebra – Matrices	
4	Wed	Sep 25	Simplex Methods	4
5	Wed	Oct 2	National Week Holiday	
6	Wed	Oct 9	Big-M Method Two-Phase Method	4
7	Wed	Oct 16	Dual Problems Dual-Primal Relationships	6
8	Wed	Oct 23	Sensitivity Analysis	6
9	Wed	Oct 30	Mid-Semester Exam Review	
			Mid-Semester Exam (TBD)	
10	Wed	Nov 6	Dual Simplex Methods	8
11	Wed	Nov 13	Generalized Simplex Methods	5
12	Wed	Nov 20	Post-Optimality Analysis	
13	Wed	Nov 27	Transportation Problems	9
14	Wed	Dec 4	Assignment Problems	9
15	Wed	Dec 11	Network Flow Problems	10
16	Wed	Dec 18	Linear Integer Programming	12
17	Wed	Dec 25	Final Exam Review	
18		Dec 30	Final Exam Week	
19		Jan 6	Final Exam Week	