首都经济贸易大学 CAPITAL UNIVERSITY OF ECONOMICS AND BUSINESS

Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

Semester and Year	2019 Fall (September 2, 2019— January 3, 2020)
Course Name	Introduction to Operations Research
Course Code	MAT 333
Course Type	☐General Education (Required) ☐ General Education (Elective) ☐Professional Course (Required) ☐ Professional Course (Elective) ☑Basic Disciplinary Course
Course Credits	3
Course Hours	51
Prerequisites	MAT111, MAT112, MAT221, MAT231
Instructor	Jianming Huang(Jake Huang)
Contact Information	Office: C217 Tele: (010)83951082 Email: huangjianming@cueb.edu.cn
Office Hour	T&W: 15:30-17:30 TH: 10:00-12:00
Learning Center	W: 18:00-20:00 TH: 15:30-17:30
Grade/Section	2017IT/Y01, 2017CFA /Y02
Course Time/Place	Y01 T: 8:00-9:50/5#111 F: 9:00-9:50/5#111 Y02 T: 10:00-12:00/5#208 F: 8:00-8:50/5#208

Textbook

David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Kipp Martin. *An Introduction to Management Science,12th Edition.* China Machine Press, ISBN: 978-7-111-29035-3

Course Description

Operations research (OR) is concerned with optimal decision making in, and modeling of, deterministic and probabilistic system that originate from real life. It is useful to structure the real life situation into a mathematical model, abstracting the essential elements so that a solution relevant to the decision maker's objective can be sought, and developing a solution, including the mathematical theory that yields on optimal value of the system measure of desirability. This course will cover the deterministic models in OR and the mathematical foundation of the solution techniques for OR models will be emphasized.

Student Learning Objectives

On completion of this course, the student will be able to develop linear programming and integer programming formulations for engineering and economic systems, determine optimal solutions to a variety of mathematical programming problems, and present managerial recommendations based on optimal solutions and sensitivity analysis.

References

- Introduction to Operations Research (9th edition) by Hillier, F.S. and Lieberman, G.J. ISBN: 7302122431

Some websites

- http://en.wikipedia.org/wiki/Operations_research
- http://nptel.iitm.ac.in/video.php?courseId=1110

Teaching Methods

This course consists of lectures, discussions and individual presentations. Students must be prepared to finish some small questions and small quiz during the class. After each chapter there will be some mini presentations which should be held by individuals.

Grade Criterion:

Component	Weight	Description
Final Exam	20%	A cumulative final examination will be given based on all of the contents of the class. A minimum of 25% of the exam (5 of the 20%) will consist of questions utilizing the application of critical thinking.
Mid-Term Exam	20%	A cumulative midterm examination will be given based on all of the contents of the first half of the class. A minimum of 25% of the exam (5 of the 20%) will consist of questions utilizing the application of critical thinking.
Homework and exercises	10%	Homework problems will be assigned throughout the term, including but not limited to: terminologies, practice exercises, and project assignments.
Quizzes, tests	10%	There will be two quizzes during the semester. The purpose of the quizzes is to ensure that students keep up with the contents.
Presentation	20%	Students should finish a semester project and make presentation based on the project. Each student should present and the score will be given based on the topic, preparation and PPT and performance.
Participation	10%	Individuals will be asked to participate individually in a question and answer 10 times during the semester. Students are required to meet with their teachers every other week. Their performances should be counted in their participation.
Attendance	10%	Refer to attendance policy listed below
Total	100%	

Detailed Grade Calculation

In the semester, the grades of attendance, participation, homework assignments, and quizzes account for 60 percent of a student's final grade, and the midterm exam and final exam both account for 20 percent of the final grade. 40 percent of the final grade comes before midterm and 60 percent after midterm, as shown in the following table:

	Before midterm	After midterm
Attendance	5%	5%
Participation	5%	5%
Homework/assignment	5%	10%
Quiz	5%	5%
Midterm exam	20%	
Final exam		20%
Presentation		15%
Total	40%	60%

Grading Policy

A+ 100-97 A 96-93 A- 92–90 B+ 89-87 B 86-83 B- 82–80

C+ 79–75 C 74-70 C- 69–67 D+ 66–63 D 62-60 F 59-0

Exam Schedule

Midterm: Oct.28 – Nov. 1, 2019

Final Exam: Jan.1-Jan.10, 2020

Homework

Students should finish their homework (except for group projects) by themselves. **Copying from others will be treated as cheating. Students' homework scored will be lowered.** Students should hand in all assignments promptly and on time. Late assignment will be accepted at the discretion of the instructor (i.e., when the student was ill or had an excused absence). Assignment turned in late without proof of illness or had an excused absence will be reduced in score by 50%.

Assignment should be printed out. Anything that cannot be read will be marked wrong. Printing requirements are as followed: single space between lines, double space between paragraphs, font size is 12 (maximum). Grammar error can reduce 20% of your score.

Attendance

Being late for 15 minutes will result in unexcused absence. Each unexcused absence will result in 10% reduction of attendance grade. Five hours of unexcused absences will result in the lowering of grade by one

level, i.e. A to A-. 1/3 of total class hours of absences under any circumstances forces a withdrawal from the course and get a grade of "F". An excused absence must be discussed directly with the teacher. An incomplete grade (I) will be considered in case of medical or family emergencies.

Participation

Students should participate in classes actively**.** Half of participation grade is determined by their presentation in class. They are encouraged to ask questions relevant to the subject and express their own opinions. Every student should respect the ideas, opinions, and questions of their classmates. Students should also use office hour to ask questions or talk with the instructor for good communication and effective learning. Any misbehavior and non-class related activities in class will result in the lowering of the participation grade, including ringing beepers and cell phones. Student better frequent visit their instructors and chat in English everyday. All above behaviors will be solely evaluated by the instructor for scoring.

Self-Study and Reading Ability Practice

Instructor will give out the chapters or the reference books to read and use class hours to have discussion; students should be able to show a proactive attitude and ability for self-study and reading. Knowledge and oral English will be elements of homework or presentation score.

Topical Course Outline

Week Index	Topics
Week 1	**Chapter 1** Introduction to Operations Research
Week 2	**Chapter 2** Introduction to Linear Programming and Graphical Approach
Week 3	**Chapter 3** Sensitivity Analysis
Week 4	**Chapter 5** Simplex Method I
Week 5	**National Holiday**
Week 6	**Chapter 5** Simplex Method II
Week 7	**Chapter 6** Part I: Simplex-based Sensitivity Analysis
Week 8	**Chapter 6** Part II**:** Duality
Week 9	**Quiz and Midterm**

Week 10	**Chapter 7** Transportation, Assignment and Transshipment Problems
Week 11	**Chapter 8** Integer Programming **Chapter 9** Network
Week 12	**Chapter 10** Project Scheduling
Week 13	**Chapter 11** Inventory models
Week 14	**Chapter 12** Queuing Theory
Week 15	**Chapter 14** Decision Analysis
Week 16	**Presentation**
Week 17	**Presentation**
Week 18	**Review and Quiz**
Week 19	**Final**

Note: Quizzes and examinations will also cover self-study contents.

Office Hours

The instructor's office hour is shown in the front of the office door. Students are required to use the instructor's office hour to ask questions or talk with the instructor once at least per week for good communication and effective learning, which is recorded in the students' participation. The time can be scheduled by instructors or students, or both.

Withdrawal Policy

Students can drop the class in the first week of the semester without leaving any marks to the final grade. Students can withdraw from any class before Dec.15, 2016 and get a W for withdrawal. However anyone with 12 absences automatically receives an F.

Cheating and Plagiarism

Cheating is not tolerated. Any student caught cheating on a quiz; test or exam will be given a mark of zero (0) for the particular work. At the beginning of the semester the definition of plagiarism will be carefully explained. When any thoughts or writings of another person are used, they must be clearly identified (usually one uses quotation marks) and the source notes.

Important Dates

Fall Semester, 2019 **August 30, 2019— January 10, 2020**

Aug.30	Registration
Sep.2	Classes Begin
Sep.7-20	Freshmen's Military Training
Sep.13	Mid-Autumn Festival (tentative)
Sep.23	Classes Begin（Freshmen）
Oct.1	National Day Holiday (tentative)
Oct.28- Nov.1	Midterm Test
Jan.1, 2020	New Year's Day Holiday (tentative)
Jan.1-10	Final Exam Period
Jan.13	Winter Vacation Begins

Note: *This syllabus is tentative and may be changed or modified throughout the semester. All students will be notified and a new syllabus will be given.*

Instructor: Prof. Jake Huang **Department Head：Prof. Jingning Li**