California State University, East Bay

School of Business and Economics

BAN 630: Optimization Methods for Analytics

Summer Semester 2020

Instructor: Dr. Jia Guo

## GENERAL INFORMATION

***Office:*** VBT 442

***Office number:***  510-885-3307

***Office hours:*** Thursday: 9:00 am – 11:00 am

(Remark: please send me email to make an appointment so that I can set up the Zoom meeting. If this time slot is not working for you, we can also schedule one-on-one Zoom meeting in another time.)

***Email:*** [jia.guo@csueastbay.edu](mailto:jia.guo@csueastbay.edu)

## IMPORTANT INFORMATION

The course is an online course. All instructions including the course syllabus, video files with lecture materials and software presentation, and other course-related materials are located in the Blackboard course website.

## Course pre-requisites:

Consent of instructor.

## LEARNING OUTCOMES

Upon completion of this course, students will be able to:

* Apply key concepts and methodologies of optimization.
* Develop extensive skills in formulating and analyzing optimization models for solving business problems.
* Apply various tools/software to solve optimization models.
* Interpret results and develop recommendations that support business decision making.

## ALIGNMENT with program learning outcomes

This course is aligned with the following MSBA Program PLOs:

* PLO 2: Build expertise in quantitative methods and tools for business analytics.
* PLO 4: Develop effective written communication skills in conveying project ideas, activities, and findings.

## TECHNICAL COMPETENCIES AND SOFTWARE REQUIREMENTS

Students need to have technical competence and be well familiar with the following software:

* Microsoft Office applications including Word, Excel, and PowerPoint.

### Recommended Microsoft Office 2019 or 2016 for PC-based computers.

* Basic familiarity with Excel spreadsheet calculations and functions is *critically important for understanding the course materials*. To improve your basic Excel skills, please see one of the online Excel tutorials, for example, <https://www.youtube.com/watch?v=8lXerL3DHRw>or<https://www.youtube.com/watch?v=xUM-GvJwTrw>.
* Google Chrome, Mozilla Firefox, Internet Explorer, or other similar browsers to be able to access the Blackboard online course and use its materials.
* Adobe Reader to view .pdf files.

## TEXTBOOK

## Winston, W.L. and Albright, S.C. Practical Management Science, 6th Edition, 2019, Cengage Learning. ISBN: 9781337406659.

## Grading Policies

**The final course grade will be calculated as follows:**

Seven “In-class” Exercises 140 pts (20 pts/each).

Four Excel Cases (Individual homework Assignments) 120 pts (30 pts/each).

Midterm Exam 120 pts

Final Exam 120 pts

**Points to letter grade conversion is given below**

* "A"--470 points and up
* "A-"--450-469 points
* "B+"--430-449 points
* "B"--400-429 points
* "B-"--385-399 points
* "C+"--370-384 points
* "C"--350-369 points
* "C-"--335-349 points
* "D+"--320-334 points
* "D"--300-319 points
* "F"--below 300 points.

**Remark:**

Please pay attention to all the deadlines, which are strictly enforced. There is no makeup of any kind unless there is valid and acceptable proof that you cannot study during the entire period of the missed assignment.

## Course Requirements

* Each student is expected to study the textbook and weekly lecture materials in the website’s Course Materials; submit required in-class exercises/case assignments no later than the due dates.
* By enrolling in this class each student agrees to uphold the standards of academic integrity described in the university catalog at: [http://www20.csueastbay.edu/academic/academic- policies/academic-dishonesty.html.](http://www20.csueastbay.edu/academic/academic-policies/academic-dishonesty.html)

## “In-class” Exercises:

* Each week’s lecture materials will contain one exercise, which is due in the following Sunday. See tentative schedule for the list of due dates.
* These “In-class” exercises are designed to make sure that all of the students follow the course schedule and study weekly lecture materials.

## Midterm and Final Exams:

* The materials included in each exam are given in the course schedule.
* Final exam is comprehensive & it will also contain materials covered in the midterm exam.
* **Make-up exams** will be given only in circumstances beyond the control of the student, such as medical emergencies.

## Excel Case Assignments

* The objectives of assignments are to: (a) solve small case studies, and (b) identify the applications of the quantitative jargons/techniques that are seen in real world.
* The details of the assignments and grading details will be discussed in class.
* There will be penalty for the late submissions; the severity of the penalty is proportional to the length of delay.
* A soft copy of the assignment must be submitted via Blackboard on the day it is DUE
* Tentative due dates of the assignments are listed in the tentative schedule in the next page.

## TENTATIVE COURSE SCHEDULE

|  |  |  |
| --- | --- | --- |
| **Number of weeks** | **List of topics** | **Due** |
| Week 1 | **Topic 1:** Introduction to Optimization  Textbook Chapter: 1, 2. | Exercise 1: 11:59 pm, June 07 |
| Week 2 | **Topic 2:** ; Introduction to Linear Programming Models; Linear Programming Models.  Textbook Chapter: 3, 4. | Exercise 2: 11:59 pm, June 14  **Excel Case 1: 11:59 pm, June 14** |
| Week 3 | **Topic 3:** Optimization Models with Integer Variables  Textbook Chapter: 6 | Exercise 3: 11:59 pm, June 21 |
| Week 4 | **Topic 4:** Nonlinear Optimization Models  Textbook Chapter: 7 | Exercise 4: 11:59 pm, June 28  **Excel Case 2: 11:59 pm, June 28** |
| Week 5  (July 2) | **Topic 5:** Decision Making under Uncertainty  Textbook Chapter: 9  Collaborate Session for Q&A (via Zoom, 06:00 pm July 02)  **Midterm Exam (Covers topics 1 - 4)**  **Take home, July 03-05** | Exercise 5: 11:59 pm, July 05 |
| Week 6  (July 9) | **Topic 6:** Introduction to Simulation Models  Textbook Chapter: 10, 11 | Exercise 6: 11:59 pm, July 12  **Excel Case 3: 11:59 pm, July 12** |
| Week 7  (July 16) | **Topic 7:** Principles and Applications of Queuing Models  Textbook Chapter: 12 | Exercise 7: 11:59 pm, July 19  **Excel Case 4: 11:59 pm, July 19** |
| Week 8  (July 23) | Topic: Final Review.  Collaborate Session for Q&A (via Zoom, 06:00 pm July 23) |  |
| Final Exam Week | **Final Exam (Comprehensive)**  **Take home, July 29 – 30** |  |

## Important University Policies

**Student Conduct**

## The University is committed to maintaining a safe and healthy living and learning environment for students, faculty, and staff. Each member of the campus community should choose behaviors that contribute toward this end (<http://www.csueastbay.edu/studentconduct/student-conduct.html>).

**Accommodations for Students with Disabilities:**

If you have a documented disability and wish to discuss academic accommodations, or if you would need assistance in the event of an emergency evacuation, please contact me as soon as possible. Students with disabilities needing accommodation should either speak with me or SDRC.

**Emergency Information**

California State University, East Bay is committed to being a safe and caring community. Your appropriate response in the event of an emergency can help save lives. Information on what to do in an emergency situation (earthquake, electrical outage, fire, extreme heat, severe storm, hazardous materials, terrorist attack) may be found at: <http://www.aba.csueastbay.edu/EHS/emergency_mgnt.htm> Please be familiar with these procedures. Information on this page is updated as required. Please review the information on a regular basis.