

Syllabus ISE 410 Spring 2020, revised 1/22/21

Instructor:	Geza Bottlik bottlik@usc.edu
Office Hours:	Monday 9:00 A.M. – 11:00 A.M. or by appointment (all online with Zoom)
TA:	Jack Lulich, lulich@usc.edu
TA Office Hours	Mondays 5:00 P.M. – 7:00 P.M.
Class time/place:	Mon/Wed 12:00 P.M –1:20 P.M. online with Zoom invitation

Web Page: [http:// www.gezabottlik.com](http://www.gezabottlik.com) - Lecture notes, assignments, solutions, grades.
<https://blackboard.usc.edu> - for uploading assignments

Prerequisites:

ISE 330. You must have this prerequisite to enroll in this class. You will be expected to apply methods from this course.

Test Schedule:

Midterm 1:	Monday, March 01, 2021	12:00 P.M –1:20 P.M.
Midterm 2:	Wednesday, March 31, 2021	12:00 P.M –1:20 P.M.
Midterm 3:	Wednesday, April 14, 2021	12:00 P.M –1:20 P.M.
Final:	Friday, May 7, 2021	11:00 A.M. – 1:00 P.M.

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

1. Excel, Excel VBA, and Solver to solve problems associated with the class.
2. Perform forecasting, inventory control, planning, scheduling and quantitative and stochastic methods in managing operations
3. Simulate outcomes of various strategies in planning, forecasting and inventory control
4. The main features of Enterprise Resource Planning
5. Optimization to inventory and planning problems

The midterms and final will be based on problems homework, quizzes and the discussions in class. **All tests and quizzes are open book and open notes. A laptop or desktop is required.** Students are expected to **apply** what they should have learned up to that point to analyzing situations, identifying the problems and applying the appropriate techniques to solve them or interpreting computer solutions.

Assignments:

Readings, problems and software exercises will be included in each week's assignment. These are assigned on Monday and are due on the following **Tuesday at midnight on the assignment manager on Blackboard.** The assignment manager assigns a file name. The grader will return the assignments electronically only if there are any points taken off. Reading assignments are due when the material will be covered in class. It is imperative that you **prepare for class** -- you will find it extremely difficult to follow the discussion if you have not read the material.

I will **not accept** late homework, unless **prior** arrangements have been made (e.g. out of town funeral). Homework is to be a **digital Word (or Excel) 2010 or later printable file.** **If a file is supplied with homework, you must use it.** Do not type results into

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spreadsheets – use formulas. No photos of your work – scan if necessary. If it is a team assignment, the team members' names, assignment number, the date and any other team that you worked with must be in the **header**. Use a consistent template and format the output for a professional appearance. The assignment manager assigns the file name – use very short names like 410-1 and your initials. A sample will be available on the web site. **There can only be one file per homework. (no zip files!).**

The assignments should be as professional in appearance as if you were preparing reports at work or for publication. Clearly label the problem number and your conclusions for each problem, followed by the supporting calculations. **The problems must be in the order assigned. Out of sequence problems will receive no credit.**

Assignments will be either individual or team. If two teams discuss or collaborate on a homework, they must indicate that on their assignments. Each team must turn in a separate homework. Generated data and essay questions must be unique to each team. Team assignments should have all team members' names on them, but only if they worked on it.

It's OK to work on individual homework together, but finish it by yourself and indicate whom you worked with. For individual homework each student must turn in a separate homework. Do not give your files to others, and do not use others' files. Do not copy solutions from people you have worked with or from anyone else. Generated data and essay questions must be unique to each student. If you use solutions from prior semesters, indicate that. **If the answer is given in a book, don't just copy it, explain how you got it**

Attendance Requirements during on line courses

You must attend synchronously if the class time falls between 7 A.M. and 10 P.M. in your time zone. You may be excused from watching synchronously for a valid reason, obtained before class. If you do attend asynchronously, you need to send me an email after having watched, so that I know that you have attended and can be given credit.

When attending synchronously, have your camera on, so we can all see each other. If this is a problem, please email me to discuss it.

Objectives and Content

This course covers planning and scheduling systems. While the emphasis is on implementing effective production planning and scheduling systems, the material is equally applicable to service systems. While a prior knowledge of operations research, probability and statistics, and engineering economy is assumed, each of these will be reviewed briefly as the need arises. The focus is on mathematical models for solving problems arising in planning and scheduling.

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It is up to you to become familiar with and learn the mechanics of the material in the text. I am here to explain things you don't understand, to add things that are not in the supplied notes or the additional materials, and to evaluate whether you can apply the material to real problems.

The lecture and class discussions are a supplement to what is contained in the notes. It is NOT intended to be a duplication of what is contained in the notes or the additional materials.

I am looking forward to an intellectually stimulating and rewarding semester with you.

Grading:

Homework	~13%	13 points	1.3 pts each (- 0.5 if not submitted)
Midterm Exam 1	~15%	15 points	
Midterm Exam 2	~15%	15 points	
Midterm Exam 3	~15%	15 points	
Final Exam	~23%	23 points	
Participation (Attendance, <u>discussion</u> , preparedness for class)	~5%	4.8 points	0.3 pt. each, 0.15 on quiz days
Quizzes	~14%	14.4 points	1.6 pt. each

The grade for the course will only be based on the required work listed above and cannot be improved with additional work. Note that the usual average difference between adjacent grade values is less than 0.5%.

Quizzes:

We will have about 9 quizzes during the semester. These are short, usually with one or two problems or about 10 True and False or fill in the blank. **We will start on 02/03.** There are no make up quizzes so be sure to show up for them.

Material will be provided during the semester

Recommended Reference:

Manufacturing Planning and Control – Jacobs, Berry, Whybark and Vollman, McGraw-Hill 2011, ISBN 978-0-07-337782-7

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Approximate Course Outline:

Session	Date	Material	Homework No. due in week on Monday	Quiz Generally once a week
1	01/20	Introduction, Costing		
2	01/25	Tools – Excel, VBA, Solver		
3	01/27	Forecasting, Chapter 3	No. 1	
4	02/01	Forecasting, Regression		QU1
5	02/03	Forecasting, Seasonality	No. 2	
6	02/08	Inventory, Economic order quantity		QU2
7	02/10	Inventory, Order points	No. 3	
8	02/17	Inventory, Safety stock		
9	02/22	Inventory, Lot sizing		QU3
10	02/24	Review	No. 4	
11	03/01	Midterm 1		
12	03/03	Enterprise Resource Planning (ERP) Chapters 4 thru 6		
13	03/08	Enterprise Resource Planning (ERP) Chapters 4 thru 6	No. 5	QU4
14	03/10	Enterprise Resource Planning (ERP) Chapters 4 thru 6		
15	03/15	ERP - Capacity	No. 6	QU5
16	03/17	ERP - Capacity		
17	03/22	Scheduling Chapter 8		QU6
18	03/24	Scheduling, Performance and Gantt charts	No.7	
19	03/29	Review		QU7
20	03/31	Midterm 2		
21	04/05	Scheduling, Performance and Gantt charts		
22	04/07	Scheduling, Single machine	No. 8	
23	04/12	Scheduling, Flow shops, job shops		QU8
24	04/14	Midterm 3		
25	04/19	Scheduling, Heuristics		
26	04/21	Scheduling, Heuristics	No. 9	
27	04/26	Scheduling, Simulations, Advanced Production Systems		QU9
28	04/28	Review	No. 10	
	05/07	Final		

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ALWAYS BE SURE TO GIVE THE SOURCE OF ALL YOUR INFORMATION. ANYTHING TAKEN VERBATIM FROM SOMEONE ELSE MUST BE IN QUOTATION MARKS AND REFERENCED. THIS INCLUDES PARTIAL SENTENCES.

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This is intended to be an interactive class and your participation should increase as the semester progresses. Attendance at **all** classes for the **whole** class is expected of everyone. Frequent absences will result in a reduction in grade. Punctuality is expected. If for some reason you only attend asynchronously, let me know by email that you did.

NEATNESS, SPELLING, AND GRAMMAR COUNT. THEY ARE AN EXPRESSION OF YOUR COMMITMENT TO DO A GOOD JOB. USE THE TOOLS IN WORD AND EXCEL!

Last, but most important: 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” <https://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, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call

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

<https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

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Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

The Office of Disability Services and Programs

Provides certification for students with disabilities and helps arrange relevant accommodations. <http://dsp.usc.edu>

Student Support and Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible,
<http://emergency.usc.edu>

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.

Provides overall safety to USC community. <http://dps.usc.edu>