

USC Viterbi School of
Engineering

7/12/2022

Syllabus

Subject to change
during the semester

PPD/ISE 508 Health Care Operations Improvement

Units: 3 31508D 048 & 31708D 034 Lecture 6:40-9:20pm Wednesday
Location: OHE 120

Instructor: David Belson, PhD
Office: Online, on request GER 204
Office Hours: Online, on request
Contact Info: belson@usc.edu

Teaching Assistant: tbd
Office Hours: Contact Info:

Readings and Supplementary Materials

The primary textbook: Healthcare Operations Management, **Fourth Edition**, Daniel B. McLaughlin John R. Olson Luv Sharma ISBN: 978-1-64055-307-1

Also, relevant readings may include:

- "Analytics and Decision Support in Health Care Operations Management" Third Edition by Yazar Ozcan
Publisher : Jossey-Bass
- Benneyan, James C. "An introduction to using computer simulation in healthcare: patient wait case study."
Journal of the Society for Health Systems 5.3 (1997): 1-15.
- Gawande, Atul. "Why doctors hate their computers." The New Yorker (2018).
- And others

Overview: The course provides skills to analyze current operations and to identify the appropriate tools to improve various systems such as surgery, emergency department and clinics. The skills are useful for managers, consultants, clinical providers and others. Performance excellence ideas such as flowcharting, optimization, data gathering, data analysis, simulation and others tools will be covered. The so-called Lean method will be a basic approach. Predictive simulation models and realtime location tracking are technologies covered. Health care settings beyond the hospital, such as outpatient clinics, will be included as well as the role of IT and the impact of the Electronic Medical Record on performance.

Instructor: David Belson, PhD, Program Director [USC Healthcare Systems Engineering Program](#) In addition to teaching healthcare related classes in the Epstein Department of Industrial and Systems engineering he works on research projects for the California Hospital Association, Keck Hospital, VHA, Cedars Sinai Hospital and others. Hospital improvement projects have been for over 100 hospitals and the California Healthcare Foundation. He previously was employed in management at IBM, Ernst & Young (EY) and Universal Studios. He is a distinguished Fullbright Research Scholar and taught in Serbia, Finland and Italy. He works with rural hospitals for CHA and the State of California.

Grading Breakdown

Homework Assignments (best 4 of 5)	25%
Projects and case studies	22%
Quizzes (3)	25%
Final Examination	20%
Class Participation	<u>8%</u>
Total	100%

There will be multiple brief homework assignments & students will be able to exclude the grade on one homework assignment if they wish. There will be three relatively brief midterm quizzes. Please do not request changes to exam dates as they are fixed. Class participation includes interaction with the instructor, TA and other students (e.g. team work) as well as the classroom and online discussion forums. Some relevant material may be presented asynchronously online and recorded or initially created at other than normal class time. At this time the exact procedures for online and in classroom access are defined by USC.

Course Schedule: A Weekly Breakdown (May be revised as the semester progresses)

Week	Topics *	Text chapters *	Assignment due
1 8/24	Introduction , healthcare overview, terminology, history of performance improvement, course plan	Ch 1 & 2	
2 8/31	Lean methods, Process flow diagrams for health care operations	Ch 5 Reading	
3 9/7	Tools for decision making , Sampling, Forecasting methods. benchmarking.	Ch 7 Reading	HW #1 due
4 9/14	Project management	Ch 6 Reading	
5 9/21	Work Measurement , Reengineering of work. Quiz 1. #	Reading	
6 9/28	Queuing and Simulation modeling	Ch 11 Reading	HW #2 due
7 10/5	Staffing , tools for nursing and other areas Facility layout & location methods. RTLS #	Ch 10 & 12 Reading	
8 10/12	Data , using data sources, Review content to date. Patient Safety Control charts #	Ch 8 Reading	
9 10/19	Scheduling and staffing , human factors, Quality Improvement FMEA and Root Cause Analysis Quiz 2 #	Ch 9	HW #3 due
10 10/26	Materials management. Inventory systems. Supply Chains	Ch 3 & 4	
11 11/2	Information Systems #		
12 11/9	Resource allocation Supply chain #	Ch 5 & 13	HW #4 due
13 11/16	Operations improvement methods, Quiz 3	Readings	
11/23	Holiday, no class		
14 11/30	Overall review, optional presentations	Ch 15 & 16 Readings	
12/7	Final Exam Presentations and reports due by this date		HW #5 due

Guest speaker

* Read text assignment prior to class, chapters are from the textbook book or otherwise assigned. Additional readings will be assigned and provided. Guest lecturers will be used at selected sessions. In previous sessions we have had medical doctors, engineers, IT, researchers and senior hospital executives as guest speakers.

Assignment Submission Policy

Assignments are due at the beginning of class. Homework assignments will be announced in class. Off-campus students must submit their assignments in time to be received on the day they are due. Assignments should be turned in on time – by the starting time of the class for which it was due. All work is expected to have an easily readable and professional appearance. All examinations are open notes and open book.

Materials, if submitted digitally, should include a filename with the student's name and identification of the item. Such as: "ISE508 HW #2 R Smith" Homework should be clear and show how answers were determined.

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, <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. 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. 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. 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: sarc.usc.edu

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. 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. 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. 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. 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. 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. emergency.usc.edu

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

Provides overall safety to USC community. dps.usc.edu