

**USC Viterbi School of  
Engineering**

**8/2020  
Syllabus  
DRAFT**

**PPD/ISE 508 Health Care Operations Improvement**

**Units: 3 31508D 048 31708D 034 31743D 073**

**Fall 2020 6:40 to 9:20 PM Wed.**

**Location: Online (Zoom)**

**Instructor: David Belson, PhD**

**Office: GER 242**

**Office Hours: tbd**

**Contact Info: belson@usc.edu**

**Teaching Assistant: to be defined**

**Office:**

**Office Hours: Contact Info:**

**Readings and Supplementary Materials**

The primary source: Health Care Operations Management By: James R. Langabeer II; Jeffrey Helton

Publisher: Jones & Bartlett Learning Edition: 3<sup>rd</sup> Print ISBN: 9781284194142, 1284194140

Also, relevant readings may include:

- Analytics and Decision Support in Health Care Operations Management (Jossey-Bass Public Health) 3rd Edition by Yasar A. Ozcan. Womack, James P., Arthur P. Byrne, Orest J. Fiume, Gary S. Kaplan, and John Toussaint. "Going lean in health care." Cambridge, MA: Institute for Healthcare Improvement (2005).
- 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.
- DeRosier, Joseph, et al. "Using health care failure mode and effect analysis™: the VA National Center for Patient Safety's prospective risk analysis system." The Joint Commission journal on quality improvement 28.5 (2002): 248-267.
- Gawande, Atul. "Why doctors hate their computers." The New Yorker (2018).

**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. 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, 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, UCLA and others. Recent projects have been for the Veterans Administration and the California Healthcare Foundation. He previously was employed in management at IBM, Ernst & Young (EY) and Universal Studios.

**Grading Breakdown**

Homework Assignments and projects	40%
Quizzes	25%
Final Examination	25%

Class Participation  
Total

10%  
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 discussion forum. Some relevant material may be presented online and recorded but initially created at other than normal class time. At this time the exact procedures for online and in classroom access are evolving.

### Course Schedule: A Weekly Breakdown

(May be revised as the semester progresses)

Week	Topics *	Text chapters *	Assignment due
1 8/26	<b>Introduction</b> , overview, general terminology, history of performance improvement, course plan	1, 2	
2 9/2	<b>Lean methods</b> (intro), <b>Six Sigma</b> , <b>Process flow</b> , diagrams for health care operations,	7, Reading	
3 9/9	<b>Decision tools</b> . <b>Forecasting</b> methods. <b>Data</b> , using data sources, benchmarking.	6, 8, Reading	
4 9/16	<b>Project management</b> , <b>Systems Engineering</b> , managing change	10 Reading	HW #1 due
5 9/23	<b>Productivity</b> , <b>Work Measurement</b> , Reengineering of healthcare work, real time location tracking	9 Reading	
6 9/30	<b>Facility, layout &amp; location</b> . Impact of layout on functions such as surgery and ER. <b>Quiz 1</b> .	Reading	
7 10/7	<b>Queuing</b> . <b>Quality Improvement</b> , becoming a high reliability organization, FMEA and Root Cause Analysis	Reading	
8 10/14	<b>Staffing</b> , tools for nursing and other areas. Review content to date. <b>Patient Safety Statistics</b>	Reading	HW #2 due
9 10/21	<b>Scheduling and staffing</b> , human factors, Lean methods (more) <b>Benchmarking Quiz 2</b>	14	
10 10/28	<b>Materials management</b> . Inventory systems. Supply Chain management, automation	15, 16, 17	
11 11/4	<b>Simulation modeling</b> , IT use, Electronic Medical Records Guest speaker	13 Readings	HW #3 due
12 11/11	<b>Resource allocation</b> optimization models, and performance improvement	11, 12	
13 11/18	<b>Resource allocation</b> , overall review, Pharmacy <b>Quiz 3</b>	18 Readings	
11/25	Holiday, no class		
14	<b>Final Exam</b> location TBD 7 to 9 PM		HW #5 due

\* Read text assignment prior to class, chapters are from the book or otherwise assigned. Additional readings will be assigned and provided. Guest lecturers will be used as an additional speaker at selected sessions.

### **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 by DEN on the day they are due. Off campus assignments must be submitted as specified in the DEN guidelines. 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](http://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](http://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](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. [engemannshc.usc.edu/rsvp](http://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](http://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](http://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](http://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](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. [studentaffairs.usc.edu/sssa](http://studentaffairs.usc.edu/sssa)

*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](http://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](http://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](http://dps.usc.edu)