

**USC Viterbi School of
Engineering**

**8/9/2018
Draft Syllabus**

PPD/ISE 508 Health Care Operations Improvement

**Units: 3
Fall 2017 6:40 to 9:20 PM Wed.
Location: OHE 100 D**

**Instructor: David Belson, PhD
Office: GER 242
Office Hours: Wednesday 5 PM
Contact Info: belson@usc.edu**

**Teaching Assistant:
Office:
Office Hours:
Contact Info:**

Course Description

This course is designed for students interested in the healthcare industry, the world's largest, and how to improve its operational performance. A wide variety of tools will be presented, which are useful in industries other than health care as well, using a variety of resources. The course will present several popular approaches to process improvement relevant to hospitals, clinics and other healthcare organizations, such as the so-called Lean Method. Guest speakers from industry will add to the material. In recent years there has been a great increase in interest about how to improve performance from the industry and a substantial increase in related employment.

This course is appropriate for graduate students or upper division undergraduates from engineering, PPD, business, global health or clinical fields.

Learning Objectives

The objective of this course is to give students an understanding of how to meaningfully improve the functioning of a service, health care in particular. I try to give both an understanding of methods as well as a perspective from a practical standpoint. Also, necessary background about the healthcare industry will be provided. I work in the healthcare industry a great deal and will relate the material to its practical use. Also, in addition to myself, I'll make use of guest lecturers to give a current picture. Past guests have been from IBM, Los Angeles County, IT developers, Kaiser, Cedars-Sinai Hospital the Veteran's Administration and others.

I've given this class for several years but plan to change and update it this year. There will be an emphasis on the Lean, Six Sigma and Systems methods which are very popular in many industries.

Projects: There will be an opportunity to apply your learning at local hospitals. I will make arrangements for such experiences off campus, and have in the past, for students taking the course. This experience has directly resulted in permanent jobs for many of its past students. The projects, done as a small team, will be optional in terms of the class grade. As an alternative to a real-world project, students can do a case study which will require a similar level of work.

Prerequisite(s): none

Co-Requisite(s): none

Concurrent Enrollment: none

Recommended Preparation: Familiarity with the use of spreadsheets will be helpful

Technological Proficiency and Hardware/Software Required

Assignments will be posted online on D2L (or whatever USC online system is made available) as well as announced and explained in class.

Required Readings and Supplementary Materials

The primary source will be Analytics and Decision Support in Health Care Operations Management (Jossey-Bass Public Health) 3rd Edition by Yasar A. Ozcan as well as additional readings will be provided from such as Health care operations management : a systems perspective, Second Edition, James Langabeer & Jeffrey Helton as well as other readings and cases from various sources.

The course provides skills to analyze current operations and to identify the appropriate tools to improve various functional areas such as surgery, emergency department and clinics which are useful for managers, consultants, clinical providers and others. Process improvement methods such as lean thinking, six sigma, flowcharting and others tools will be covered. Health care settings beyond the hospital, such as outpatient clinics & doctor's offices, will be included.

Description of Assignments

Homework assignments will be assigned based on the lectures, readings and text. There will be a practical project available for students to work on at a local hospital. As an alternative, a case study will be available requiring a similar amount of work and grade credit as the real-world project.

Grading Breakdown

Homework Assignments	21%
Quizzes	21%
Final Examination	25%
Case study or project	25%
Class Participation *	8%
Total	100%

There will be multiple brief homework assignments & students will be able to exclude the grade on one assignment if they wish. There will be three relatively brief midterm quizzes. Please do not request changes to exam dates as they are fixed.

* DEN students will not be measured on class performance but proportionately on the total of other activities. If DEN students wish to be considered for evaluation based on class participation, they should so notify the instructor.

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.

Course Schedule: A Weekly Breakdown

(May be revised as the semester progresses)

Week	Topic	Text covered this week *	Assignment due
1 8/22	Introduction , overview, general terminology, history of performance improvement, course plan, projects		
2 8/29	Process flow , diagrams for health care operations data analysis, Forecasting methods. Data , using data and data sources, benchmarking. Healthcare Systems Engineering	Ch 1, 2	
3 9/5	Lean or so-called Toyota methods (intro), Decision tools.	Ch 3, Reading	HW #1 due
4 9/12	Project management	Ch 13	
5 9/19	Reengineering work, Productivity , Work Measurement	Ch 6 & 9	
6 9/26	Quiz 1. Facility, layout & location. Impact of layout on functions such as surgery and ER.	Ch 4 & 5	HW #2 due
7 10/3	Queuing. Quality Improvement, Project management, quality, work measurement (more)	Ch 14	
8 10/10	Lean method (more), Review content to date.		
9 10/17	Quiz 2, Scheduling concepts, capacity management Staffing , tools for nursing and other areas.	CH 7, 8	HW #3 due
10 10/24	Simulation Scheduling, Guest speaker	Ch 15	
11 10/31	Materials management. Inventory systems. Supply Chain Quality Improvement ,.	Ch 11, 12	
12 11/7	Resource allocation	Ch 10	HW #4 due
13 11/14	Quiz 3 , Facility, more.	Ch 9, Reading	
11/21	Holiday no class		
14 11/28	Presentations, Review.		HW #5 due
12/5	Final Exam location TBD 7 to 9 PM		Final exam

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

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