

USC Viterbi School of Engineering

Draft 4/17

PPD/ISE 508 Health Care Operations Improvement

Fall 2017 6:40 PM Wed.

Location: OHE 100D

Instructor: David Belson, PhD

Office: GER 216C

Office Hours: Wednesday 5 PM

Contact Info: belson@usc.edu

Teaching Assistant:

Office:

Office Hours:

Contact Info:

IT Help: n/a

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 and Six Sigma methods which are very popular in many industries.

Also, there will be an opportunity to apply your learning at local hospitals. I may be able to make arrangements for such experience off campus, and have in the past, for students taking the course. This experience offer will be entirely optional in terms of the class grade. Also, note that this experience has directly resulted in permanent jobs for many of its past students.

Prerequisite(s): none

Co-Requisite (s): none

Concurrent Enrollment: none

Recommended Preparation:

Familiarity with the use of spreadsheets will be helpful

Course Notes

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

Technological Proficiency and Hardware/Software Required

Familiarity with spreadsheets is needed. Basic statistics will be helpful but not required.

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 such as The Institute for Healthcare Improvement (IHI), and others.

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 and Assessment of Assignments

Various homework assignments and a case study will be assigned based on the readings and text.

Grading Breakdown

Homework Assignments	20%
Quizzes	21%
Final Examination	24%
Case study	25%
Class Participation *	<u>10%</u>
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/	Introduction , overview, general terminology, history of performance improvement		
2 8/	Process flow , diagrams for health care operations analysis, Forecasting methods. Data , using data and data sources, benchmarking.		
3 9/	Lean or so-called Toyota methods (intro), Decision tools.		HW #1 due
4 9/	Quality Improvement, Project management		
5 9/	Quiz 1. Lean Thinking (Toyota Production System), economics		
6 9/	Queuing. Scheduling concepts, capacity management Staffing , tools for nursing and other areas.		HW #2 due
7 10/	More on staffing and scheduling. Lean and Six Sigma		
8 10/	Lean method (more), Lean daily management and sustaining change.		
9 10/	Quiz 2, Materials management. Inventory systems. Supply Chain. Review materials to date.		HW #3 due
10 10/	Materials Management (continued)		
11 11/	Simulation		
12 11/	Quiz 3. Resource allocation		HW #4 due
13 11/	Facility , layout & location. Impact of layout on functions such as surgery and ER.		
11/	Holiday no class		
14 11/	Productivity. Review.		HW #5 due
12/	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 for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *SCampus*, the Student Guidebook, (www.usc.edu/scampus or <http://scampus.usc.edu>) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.