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

**USC** Viterbi School of Engineering

Fall 2016 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:** to be defined

**Office:**

**Office Hours:**

**Contact Info:**

**IT Help:**n/a

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**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 sources. In recent years there has been a great increase in interest from the industry and a substantial increase in 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, for 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, Providence Health Care, 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 elsewhere and have in the past, for students taking the course off campus. 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 Blackboard (or whatever online system is made available) as well as announced in class.

**Technological Proficiency and Hardware/Software Required**

None required.

**Required Readings and Supplementary Materials**

The primary source will be **r**eadings as well asmuch ofHealth care operations management : a systems perspective, Second Edition, James Langabeer & Jeffrey Helton. Additional readings will be provided from Quantitative Methods in Health Care Management, Second Edition, by Yasar Ozcan, 2009. Healthcare Operations Management, Second Edition, 2012, Daniel B. McLaughlin, John R. Olson as well as readings and cases from 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%

Midterm Examination 20%

Final Examination 25%

Case study 25%

Class Participation \* 10%

Total 100%

There will be multiple brief homework assignments & students will be able to exclude the grade on one assignment if they wish. 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)

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| **Week** | **Topic** | **Text covered this week** \* | **Assignment due** |
| 1  8/24 | **Introduction**, overview, general terminology, history of performance improvement |  |  |
| 2  8/31 | **Process flow,** diagrams for health care operations analysis, **Forecasting** methods. **Data**, using data and data sources, benchmarking. | Ch 1 & 2 |  |
| 3  9/ 6 | **Lean or so-called Toyota methods** (intro), **Decision** tools. | Ch 5 (part) & 7 | HW #1 due |
| 4  9/ 14 | **Quality Improvement**, **Project management** | Ch 4, 8 |  |
| 5  9/ 21 | Lean Thinking (Toyota Production System), economics | Ch 10, |  |
| 6  9/ 28 | Queuing. **Scheduling** concepts, capacity management **Staffing**, tools for nursing and other areas. | Ch 5 (part), | HW #2 due |
| 7  10/ 5 | More on staffing and scheduling.  **Lean and Six Sigma** |  |  |
| 8  10/ 12 | **Lean method** (more) |  |  |
| 9  10/ 19 | **Materials management**. Inventory systems. Supply Chain. Review materials to date. | Ch 11, | HW #3 due |
| 10  10/ 26 | **Midterm exam** |  |  |
| 11  11/ 2 | **Materials Management (continued)** | Ch 11, 12, 13 |  |
| 12  11/ 9 | **Simulation** (continue), **Resource allocation,** Lean daily management and sustaining change. |  | HW #4 due |
| 13  11/ 16 | **Facility**, layout & location. Impact of layout on functions such as surgery and ER. |  |  |
| 11/ 23 | Holiday no class |  |  |
| 14  11/ 30 | **Productivity.** **Review.** | Ch 6 & 16 | HW #5 due |
| 12/7 | 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](mailto: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](http://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.