

IEOR E4412: Quality Control and Management: A Practical Application of Managing Patient Flow in Complex Health Systems to Ensure Quality

Spring 2016

3 credits

Classroom Location: Morningside Campus (exact location TBD)

Lab Location: New York Presbyterian – Columbia University Medical Center (168th St. and Broadway) *This course has a mandatory laboratory session.*

Prerequisites: none

Instructors

Karina Davidson, PhD, MSc

Co-Instructors

Irene Louh, MD, PhD

Lauren Wasson, MD, MPH

Course Description

The American healthcare system is both complicated and complex, and delivering high quality healthcare to patients is a continuing challenge that requires institutions' unwavering attention, rigorous data collection, and iterative quality improvement (QI) interventions. Healthcare institutions are especially sensitive to this challenge in the context of both internal and federally-mandated quality metrics and standards against which they are measured and compared. This course teaches core, foundational concepts in QI approaches, principles and methods with a focus on their application to the healthcare setting. Students will also learn practical application during a semester-long, small group QI project tackling patient flow at NewYork Presbyterian – Columbia University Medical Center (NYP-CUMC). The project will culminate in a presentation to hospital leadership.

Course Objectives

- Learn quality improvement approaches, principles, and methods (e.g., LEAN, Six Sigma)
- Learn about challenges to delivering high quality healthcare, especially from the perspective of patient flow
- Learn about diagnosing problems, analyzing flow issues, and proposing process and design improvements
- Learn specific assessment methods such as value stream mapping, spaghetti diagrams, fish-bone diagrams, time-motion observations, qualitative survey techniques, waste analysis, SIPOC and stakeholder analysis
- Learn basic analytic methods such as pareto charts, run charts, control charts
- Learn how to develop implementable, innovative interventions that anticipate barriers to change

- Apply the above approaches, principles and methods to a semester-long, small group QI project on patient flow at NYP-CUMC, culminating in a presentation that includes recommendations for interventions to hospital leadership
- Practice collaborative group work and presentation skills
- Build professional and academic networks and project experience

Required Reading

- Arthur, Jay (2011). *Lean Six Sigma for Hospitals*. McGraw Hill.
- There will be additional articles and papers distributed to the class.

Expectations

- Attendance and participation in weekly lectures and labs, with requisite completion of preparatory readings or assignments
- Contribution to applied small group project, requiring 3 – 4 hours of additional time commitment per week outside of lectures and labs
- Final small group presentation to senior NewYork-Presbyterian Hospital leadership

Assessment and Grading Policy

Your grade will be based on:

- Attendance to lectures and labs _____ 10%
- Lab assignments _____ 50%
- One in-class exam _____ 5%
- Peer review of your contributions to the small group project ___ 5%
- Small group project presentation _____ 30%

Requirements [subject to minor revision]:

- *Attendance to lectures and labs*. There will be readings assigned in advance for each and every Tuesday and Friday – starting the first Friday.
- *Lab assignments* are due at the beginning of class on each and every Friday; lab work and discussion will be based on the completed assignments.
- There will be an *in-class exam* the second Tuesday on material covered in lecture and reading assignments.
- A hospital security clearance form must be completed by the third Tuesday.
- There will be *peer review of your contributions to the small group project*. Your peers will be asked to assess your participation, contributions, and ability to work effectively in a team.
- Your *small group project presentation* will be graded by the course instructors and the NYP-CUMC leadership to whom you present. Their evaluation will be based on timely completion, content (i.e., problem definition and analysis, proposal for intervention, inclusion of stakeholders, anticipation of barriers), and presentation skills.

Class Sessions

Lectures	Tuesdays	7:10pm – 9:40pm
Labs	Fridays	10:30am – 11:30am*
Office Hours	Fridays	11:30am – 12:30pm*

*held at NewYork-Presbyterian Hospital-Columbia University Medical Center (168th and Broadway)

Week 1:	Approaches to Quality Improvement
Week 2:	Problem Definition and Analysis
Week 3:	Applying QI to the Healthcare Setting
Week 4:	Waste Analysis
Week 5:	Problem Prioritization, Identifying Stakeholders
Week 6:	Defining Outcomes and Identifying Quality Metrics
Week 7:	QI Study Design and Data Collection Methods
Week 8:	Case Study: QI in Healthcare
Week 9:	Basic Statistics for QI Projects
Week 10:	Designing QI Interventions
Week 11:	Barriers to Change, Change Management
Week 12:	Industrial Organization, Institutional Culture Change
Week 13:	Project Presentations to NYP-CUMC Leadership
Week 14:	Wrap-up with Guest Lecturer