The objectives of this course are:

1) To review the conceptualization and measurement of quality of healthcare and patient safety.
2) To illustrate basic concepts and methods in quality improvement as applied to current issues in healthcare.
3) To understand the diverse perspectives that can be used to address quality and safety issues in different healthcare organizations.

Course Objectives
A packet of required readings has been organized by weekly reading assignments and will be provided on CD-ROM. These readings are also available on the course Learn@UW site. Staying current with assigned readings and participation in class discussions is required.

Course Modules (150 possible points for each of 4 modules = 600 possible points)

- The course is composed of four 3-week modules. Each module is worth 150 points (detailed below).
  - Module 1 – Conceptualization and Measurement – A Clinical Perspective
  - Module 2 – Conceptualization and Measurement – A Systems Engineering Perspective
  - Module 3 – Quality Improvement by Changing Provider Behavior
  - Module 4 – Technological Design and Implementation

- 50 points per module - your attendance and participation in class. Students are expected to prepare for class by completing all assigned readings in advance. The basis for the participation grade is the amount and quality of effort put forth by each student to provide thoughtful and constructive commentary.

- 100 points per module - your grade on a mini-paper.
  - For each Module, you will choose a topic from the list of possible paper topics below. Using your knowledge gained from that module, write a mini-paper (~1000 words) addressing the questions posed. Use the references provided or any other references of your choosing. Your papers will be submitted online.
  - For Module 2, your paper topic must be different from the topic for Module 1.
  - For subsequent Modules, you may repeat topics or choose different ones.

- No points will be given for papers received after the due date (final class of each module).

Final Group Project (300 possible points)

- The final group poster and presentation is an analysis of an attempt to improve the quality of health care. Groups of students will be determined by the course faculty and will consist of students from different academic disciplines (i.e., 1 health care student paired with 1 engineering student). During class the groups are requested to exchange phone numbers and e-mail addresses and to schedule meeting times. The timeline and detailed information on the group project are located below.

- The objectives of the group poster and presentation are to:
  1. Identify course principles that apply to the problem
  2. Identify how different principles interact and conflict
  3. Identify alternative approaches to solving the problem
  4. Improve the ability to research the primary literature on a specified subject;
  5. Evaluate methodologies, technologies, and experiments serving as the basis of research;
  6. Determine how pertinent data and analyses lead to conclusions reached by experts;
  7. Equip students in the concise preparation of data for presentation in a poster format.
- Each poster should contain the following components (use charts or graphs when possible):
  1. Description of the problem that the process was targeted to address.
  2. Description of the process adopted by the organization or individual.
3. Extraction of the core principles that appear to have informed the process. Describe as a bulleted list (with sufficient detail to allow someone who has not taken the class to understand your points). Avoid jargon. Reference supporting literature for these principles.

4. Discussion of how these principles interact or potentially conflict with one another. Use the literature to support your discussion of how these principles interact or conflict.

5. Discussion of other ways to approach the process for this problem. Reference these approaches in the literature.

6. Identification of core principles relevant to these other approaches. Describe as a bulleted list. Reference supporting literature for these principles.

7. Discussion of what you would have done if faced with this problem. Describe how your approach would differ. Reference supporting literature for your approach.

8. A complete bibliography of papers referenced in the poster should be included.

The final reporting of the grade is a simple total of three components (faculty evaluation of the poster, peer evaluation, and faculty evaluation of the individual student). Only the total grade is reported—since the peer evaluation is anonymous, we cannot reveal any of the grades for the three components. Students strongly support this policy.

- Faculty evaluation of poster: All faculty will evaluate posters for the purpose of assigning a group grade. Each faculty independently grades the posters on a basis of 0-100 points (with 100 being highest). These evaluations and questions regarding the posters must be completed before the oral defense. The group grade for the poster is arrived at by consensus discussion and is awarded to each student in the group.

- Peer evaluation: Each student is required to evaluate every other member of his/her group. This peer evaluation is worth 100 points. Each student must apportion a fixed number of points to her/his peers. It is the students’ responsibility to determine what criterion to use in this apportioning of points. Some of the criteria students may use could be time spent, useful discussion, work on research, work on layout, and general organizational skills. The peer evaluation form will be posted on Learn@UW. The form must be completed and returned at the time of your oral exam (it is your ticket to the exam).

- Faculty evaluation of individual student: Each student defends the poster individually. Other students cannot attend the oral. The exam consists of a series of questions that may be drawn from any material on the poster and other material pertaining to an understanding of the data and concluding statements. Each oral is 5-7 minutes per student. Each faculty independently evaluates the student on a basis of 0-100. The grade for the defense is arrived at by consensus discussion.
**Mini-Paper and Group Project Topics**

**Important Note:** References below are given only as a starting point for your research. You may use any references of your choosing to address the problem and evaluate the solution.

1) **Problem:** 31% of Americans who have hypertension are not receiving treatment.
   
   **Organization involved:** A local health plan.
   
   **Possible solution:** Medical record review and feedback of performance to individual primary care physicians, comparing the percentage of their hypertensive patients who are receiving treatment to the average percentage of hypertensive patients receiving treatment across the health plan.
   
   **Question:** What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


2) **Problem:** The use of medical abbreviations contributes significantly to medication errors.
   
   **Organization involved:** A local hospital
   
   **Possible solution:** Large colorful advertisements placed in obvious locations around the hospital urging providers not to use medical abbreviations.
   
   **Question:** What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


3) **Problem:** Information sharing among primary care, anesthesiology, and surgical team members is critical for optimal care in the ambulatory surgery setting, but a significant number of patients arrive on the day of surgery without complete information available to their surgical team.
   
   **Organization involved:** A local ambulatory surgery center
   
   **Possible solution:** Create an electronic template that must be submitted by the surgeon at least 24 hours in advance of the surgery.
   
   **Question:** What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


4) **Problem:** Patients in ambulatory surgery settings are often discharged within a few hours of surgery, allowing potentially preventable complications to occur in the home and leading to subsequent hospital readmission.
   
   **Organization involved:** A local ambulatory surgery center.
Possible solution: Identify high-risk patients for additional telephone follow-up at regular intervals.

Question: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


5) Problem: Many patients hospitalized with a heart attack do not receive life-saving drug therapy on discharge.

Organization involved: A local hospital.

Possible solution: Develop and implement a guideline for heart attack patients in your hospital that includes the recommendation to discharge patients on these drugs.

Question: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


6) Problem: Approximately two-thirds of kidney dialysis patients with hyperlipidemia do not receive hyperlipidemic drugs.

Organization involved: A local kidney dialysis center.

Possible solution: Organize an in-house workshop for all physicians associated with the kidney dialysis center to educate them in the necessity of conducting laboratory testing to identify hyperlipidemia and the importance of drug therapy for kidney dialysis patients.

Question: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


7) Problem: 50% of all antibiotics for upper respiratory infection are unnecessary.

Organization involved: A local group of primary care physicians.

Possible solution: Large colorful advertisements placed in the clinic waiting room to educate patients about the inappropriateness of antibiotics for viral infections.

Question: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


8) Problem: Four out of every 1000 drugs ordered in a hospital setting are administered inappropriately (wrong route, wrong dose, wrong patient, wrong time, wrong drug) (Lesar 1997).

Organization involved: A local hospital.

Possible solution: Implementation of a bar-coding medication administration system.

Question: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


9) **Problem**: 1-2% of physician prescriptions are illegible.

**Organization involved**: A local outpatient clinic associated with a large teaching hospital.

**Possible solution**: Implementation of a computerized physician order entry system.

**Question**: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


Scanlon, M. Computer physician order entry and the real world: We’re only humans. Joint Commission Journal on Quality and Safety, 30(6), 342-246.


10) **Problem**: The information in paper medical charts is not easily accessible by all providers involved in a patient’s care, leading to significant safety and quality problems in health care.

**Organization involved**: A local health system.

**Possible solution**: Implementation of a system-wide (inpatient and outpatient) electronic medical record.

**Question**: What key factors should this organization consider when considering this solution from the perspective of Module (Fill in the Blank)?


### Timeline for Group Project

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Tue, Feb 3</td>
<td>Groups are determined and posted on the Learn@UW site. During class the groups are requested to exchange phone numbers and e-mail addresses and to schedule meeting times.</td>
</tr>
<tr>
<td>Fri, Feb 13</td>
<td>Groups choose a poster topic from the available list of topics. E-mail the poster topic to the course organizer (Dr. Smith).</td>
</tr>
<tr>
<td>Tue, Feb 17</td>
<td>Groups are assigned faculty advisors. Students begin data collection; make appointments with library staff as necessary. Within the next several weeks, students must analyze the project case and complete a literature search.</td>
</tr>
<tr>
<td>Fri, Mar 13</td>
<td>Students submit a rough draft of several items from the required poster content to their advisor for critique through Learn@UW. The groups must address the following areas and must include a draft bibliography.</td>
</tr>
<tr>
<td></td>
<td>1. Description of the problem that the process was targeted to address.</td>
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<tr>
<td></td>
<td>2. Description of the process adopted by the organization or individual. Reference supporting literature for this process.</td>
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<tr>
<td></td>
<td>3. Discussion of other ways to approach the process for this problem. Reference these approaches in the literature.</td>
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<td>4. A complete bibliography of papers referenced should be included.</td>
</tr>
<tr>
<td>Fri, Mar 13</td>
<td>The format for posters is posted on the Learn@UW site.</td>
</tr>
<tr>
<td>Fri, Apr 3</td>
<td>Students submit a rough draft of their poster and their final bibliography to their advisor through Learn@UW. Size limitations (4'x 3' w x h) should be adhered to.</td>
</tr>
<tr>
<td>Fri, Apr 24</td>
<td>Students are assigned times for oral defense.</td>
</tr>
<tr>
<td>Tue, May 5</td>
<td>The group project is presented and defended. Each student presents their completed evaluation of fellow group members as a ticket to the exam. <strong>The evaluation form must be completed and returned at the time of your oral exam.</strong> Each student defends the poster individually.</td>
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### Introduction

**Tue, Jan. 20 - Guest Lecture - “Patient Safety- What Really Matters”**

Dr. Kosseff serves as SSM Health Care’s Medical Director of System Clinical Improvement, as Physician Director of Quality Improvement at St. Mary's Hospital in Madison, WI, and was the chairperson of The Madison Patient Safety Collaborative for 2004. He practiced internal medicine at The Dean Health Systems in Madison, Wisconsin for 21 years. He is interested in the use of quality improvement techniques to change clinical practice and discovering ways to spread clinical improvements from one health care organization to another. He is also a certified Team STEPPS Master Trainer and has led
teamwork training for over 500 doctors and nurses in the past 2 years. In 2002, SSM Health Care won the Malcolm Baldridge National Quality Award, making it the first health care organization to receive the honor from the U.S. Commerce Department.

**Tue, Jan. 20 - Introduction to PH703 Philosophy and Instructors**


Shi L, Singh DA. A Distinctive System of Health Care Delivery. Delivering Health Care in America - A Systems Approach. 3d ed. Sudbury, MA: Jones and Bartlett; 2004. (pp. 2-20 ONLY)

**Conceptualization and Measurement: A Clinical Perspective Module 1 - Maureen Smith**

**Tue, Jan. 27- Lecture - Quality Assessment and the Professional Model**


**Tue, Jan. 27 – Lab – Measuring the Quality of Care for a Heart Attack Patient**

We will abstract structural, process, and outcome measures of the quality of care from the hospital chart of a patient discharged with a diagnosis of acute myocardial infarction.

Improving care for acute myocardial infarction. (2002). CMRI.


Review [www.wchq.org](http://www.wchq.org) specifically for measures of “heart care.”

Identify where UW Hospitals and Clinics ranks within the Southern region on CMS/JCAHO measures of hospital quality for heart attack care (including Adult Smoking Cessation, ACE Medication, Aspirin at Discharge, Aspirin at Arrival, Beta Blocker at Discharge, Beta Blocker at Arrival, and PCI within 120 minutes).

**Tue, Feb. 3 - Lecture - Performance Measurement - Who Does It?**


Identify where Unity Health Insurance ranks within the Southern region on HEDIS measures of health plan quality for blood sugar control. (Unity Health Insurance is wholly owned by UW Health.)

Identify where UW Medical Foundation ranks within the Southern region on WCHQ measures of physician group quality for blood sugar control.


**Tue, Feb. 3 - Lecture - Pay for Performance - Are We Ready?**


**Tue, Feb. 10 - Guest Lecture - Quality Assurance at Group Health Cooperative**

Dr. Bartel is an internal medicine physician, Director of Clinical and Service Quality at Group Health Cooperative of South Central Wisconsin, and a clinical assistant professor in the Department of Internal Medicine at the University of Wisconsin. She has a Masters degree in Population Health Sciences from the University of Wisconsin. Her research interests have included health care access and quality, clinical guidelines, and disease management.

**Tue, Feb. 10 - Measuring and Improving Performance**


**Tue, Feb. 17 - Transition from Module 1 to Module 2**

**Tue, Feb. 17 - Visit to the Trauma and Life Support Center at UW Hospital**

Dr. Ken Wood, director of critical care medicine at UW Hospital, will give us a tour of the Trauma and Life Support Center (TLC), a 24-bed medical/surgical ICU at the UW Hospital. The TLC is a hybrid critical care unit: it is a closed unit for medical patients, but an open unit for the surgical patients. In an open system, patients receive care primarily from physicians with responsibilities outside the ICU. Critical care specialists are often available to provide expertise on a consultation basis. In a closed system, patients are cared for exclusively by critical-care specialists or teams that are closer on hand for both fine-tuning routine care and dealing with emergencies. About 2,000 patients are admitted in TLC per year;
half of them are ventilated. (Mechanical ventilation is the use of a mechanical device (machine) to inflate and deflate the lungs.) The most frequent diseases diagnosed are sepsis, multiple trauma, vascular surgery, head trauma and GI bleed.

**Tue, Feb. 17 – Guest Lecture – Measuring Quality in Critical Care**

Dr. Wood, director of critical care at the UW Hospital, will give a presentation on measures of quality of care in the domain of critical care medicine. Dr. Wood will draw on his extensive experience and expertise in measurement of quality in critical care units.

**Conceptualization and Measurement - A Systems Engineering Perspective**

**Module 2 – Pascale Carayon**

**Tue, Feb. 24 – Lecture – Systems Engineering and Quality: Structure and Process**


**Tue, Mar. 3 – Guest Lecture – Creating the Affinity Medical Home**

Dr. Erik A. Emaus DO, CPE, President, Affinity Medical Group, will give a presentation on the journey of Affinity toward the implementation of the Medical Home concept.

**Tue, Mar 3 - Discussion about the Medical Home**

Based on the presentation by Dr. Emaus and the readings, we will identify the structural and process issues related to the Medical Home concept.


**Tue, Mar. 10 – Case Study – Work System and Process Analysis in Outpatient Surgery**

We will apply the systems engineering perspective and the SEIPS model of work system and patient safety to outpatient surgery. We will use the SEIPS model to analyze observation data on the experience of a patient at an outpatient surgery center.


Tue, Mar. 10 - Organizational Change and System Redesign


Quality Improvement by Changing Provider Behavior
Module 3 - Christopher Crnich

Tue, Mar. 17 - Spring Break

Tue, Mar. 24 - Guest Lecture - Clinical Practice Guideline Development
Rita McCormick is a registered nurse and certified infection control practitioner at the University of Wisconsin. Rita is a past member of the Center for Disease Control and Prevention Healthcare Infection Control Practices Advisory Committee (HICPAC). She has been actively involved in the development and dissemination of a number of clinical practice guidelines, including ones that cover hand hygiene and the insertion and maintenance of intravascular catheters.

Tue, Mar. 24 - Do Clinical Practice Guidelines Improve the Quality of Patient Care?


Tue, Mar. 31 - Beyond Guidelines: Cognitive Theories of Behavior Modification

Tue, Mar. 31 - Making Behavior Modifications Stick: What Works?


Tue, Apr. 7 - Common Pitfalls in Quality Improvement Research


Tue, Apr. 7 - Lab

We will apply what we have learned about modification strategies to improvement of oral hygiene in mechanically ventilated patients in an ICU.


**Tue, Apr. 14 – Lecture – The Promise of the Technological Solution in Health Care**


**Tue, Apr. 14 – Lecture – Technology Design**


**Tue, Apr. 21 – Technology Implementation**


**Tue, Apr. 21 – Lecture – Technology Use “in situ”**


**Tue, Apr. 28 - Guest Lecture - Technology implementation strategies to ensure quality solutions (Dr. Bruce Slater - Dept of Biostatistics and Medical Informatics)**

Implementation of a mission critical software application is much more than programming and creating databases. Careful analysis of existing workflow and work culture and consideration of these factors in software and user interface design can make the difference between a successful and sub-optimal result. Dr. Slater will discuss the organization perspective on design and implementation of a new electronic health record with Computer Provider Order Entry (HealthLink) at the University of Wisconsin Hospital and Clinics.

**Tue, Apr. 28 - Technology Use “in situ” - The User Perspective (End User Discussion Panel TBD)**

End-user discussion panel on HealthLink technology use in practice, the sociotechnical issues surrounding each of the technology and how the HealthLink design enhances and changes the health care delivery.

**Conclusion**

**Tue, May 5 - Student presentations**