I. Course Description

This course provides an overview of quality improvement (QI) in health care and public health settings. While QI has a long history in health care and is a central component of recent health reform efforts, it is also increasingly important in public health. It is now widely recognized that incorporating quality improvement in an organization’s vision, mission and operations can enhance processes, prevent failure, and improve quality. The type of organization may range from a hospital to a local public health agency. Regardless of setting or organization, the cornerstones of QI are: identifying and using data to prioritize opportunity and measure impact, setting goals based on evidence or best
practice, and creating changes that result in improved care or service that are sustainable over time.

The course will start with an overview of the theoretical and conceptual background needed to develop the systems thinking skills necessary for effective QI. Through lecture, discussions, and activities, students will be challenged to look for improvement opportunities and identify the impact of processes and systems on human performance.

Next, the course will focus on the practical applications of QI tools and techniques in public health and health care. This will include the skills needed to design and manage a QI project as well as the use of commonly used tools from the “QI toolbox.” Lectures and discussions will focus on explaining and demonstrating the use of tools such as the Plan-Do-Study-Act (PDSA) cycle, flowcharting, cause and effect diagrams (the Fishbone) and Root Cause Analysis (RCA). There will be opportunity to practice using these tools through activities and assignments.

The course wraps up with a focus on measurement and analysis techniques and strategies to sustain and spread improvements. In QI projects, there is a risk of measurement and analysis being neglected due to lack of comfort with data or data monitoring. This course will provide the opportunity to practice measurement and analysis skills, such as identifying and creating process and outcome measures, along with the use of statistical process control techniques, such as run charts and control charts.

Throughout the course, students will be challenged to look at the world through the QI lens and see ways to make innovative and effective changes that improve health and how we provide care.

II. Course Prerequisites: There are no prerequisites for this course. Statistical knowledge is not required.

III. Course Goals and Objectives

Upon completing this course, students will be able to:

1. Describe the history and background of Quality Improvement in health care and public health
2. Summarize the most commonly used Quality Improvement models (e.g., Model for Improvement, LEAN Six Sigma) and relate each to the tools used to support each model
3. Use QI tools appropriately including: process mapping/flowcharting, cause and effect diagrams, PDSA, and group process techniques
4. Plan a QI project/initiative
5. Develop performance measures
6. Describe key steps to manage a QI project
7. Analyze improvement data using statistical process analysis tools such as run charts and control charts
8. Describe methods for sustaining and spreading the outcomes of QI initiatives
9. Describe how accreditation, regulation and public reporting impact quality improvement
IV. Methods of Instruction and Work Expectations

The general format of the course will consist of short recorded lectures along with selected readings and facilitated online discussion. Assignments and projects are intended to provide practice with CQI tools and techniques. Wherever possible, students will be encouraged to use material from other projects or their work setting. The purpose for this is to make the assignments not only an opportunity for learning but also bring value. The Moodle site will be used to share all the materials for the class as well as post questions to guide discussion. Because quality improvement is generally best done in teams, the discussions and some of the class activities will be done in small groups. In addition to the posted discussion questions, students are encouraged to pose quality improvement questions or problems for discussion and feedback from group and the instructors.

V. Course Text and Readings:

The following texts are required:


OR


The texts are available at the University of Minnesota Bookstore in Coffman Union on the Minneapolis Campus or via on-line services such as Amazon.com.

Additional readings are assigned each week. They are listed on the course schedule below and are available on the Moodle website. Some weeks also provide optional readings; these are not required but are useful resources.
VI. Course Outline/Weekly Schedule

January 19-25: Defining Continuous Quality Improvement

Learning Objectives:
- Define continuous quality improvement (CQI)
- Contrast CQI approach to the approach(es) commonly seen in practice
- Describe what it means to achieve the triple AIM

Required Readings:


Optional Readings:


Assignment #1: Summary of interview with a public health or healthcare professional (max. 1,000 word). See Moodle site for instructions and due date

January 26 – February 1: Processes and Systems, the evolution of the quality movement – QI models and frameworks

Learning Objectives:
- Differentiate systems and processes
- Create a process map
- Identify contributions of the CQI founders and current gurus
- Compare and contrast Lean, Six Sigma, and the model for improvement
- Identify the tools used is Lean, Six Sigma, and the model for improvement

Required Readings:


Websites to review:


8. Institute for Healthcare Improvement. Model for Improvement: [http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx](http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx). This site allows you to read about the fundamentals of the Model for Improvement and testing changes on a small scale using Plan, Do, Study, Act cycles.

Assignment #2: Create a flowchart. See Moodle site for instructions and due date

**February 2-8: Variation – Quality Assurance vs. Quality Improvement – Accreditation and Regulation**

*Learning Objectives:*

- Distinguish between common cause vs. special cause variation
- Describe why understanding variation is important in order to understand human performance
- Compare and contrast QA and QI
- Describe how regulation and accreditation can both support and hinder QI efforts

**Required Readings:**


   Particularly review Domain 9 Standards: pages 203-218.

February 9-15: Human Factors and Human Error – Supporting Human Behavior

**Learning Objectives:**
- Define human factors
- Defend the statement that “human error is predictable”
- Describe characteristics of high reliability organizations
- Employ TeamStepps tools and techniques

**Required Readings:**

**Websites to Review:**
5. Become familiar with TeamSTEPPS by visiting the website. Students should focus their review on the sections titled ‘About TeamSTEPPS’ and the ‘readiness assessment’: [http://teamstepps.ahrq.gov/](http://teamstepps.ahrq.gov/)

**Optional Readings:**

**Assignment #3:** Short (max 1,000 word) paper applying team performance strategies (TeamSTEPPs). See Moodle site for instructions and due date

February 16-22: Predicting and responding to Human Behavior and Human Error

**Learning Objectives:**
- Differentiate human error, at-risk behavior and reckless behavior
- Describe what is meant by a “just” approach to managing human behavior
- Discuss the relationship between safety and CQI
Guest Presenter: Allison Page. Discuss real-life case(s) and response(s).

Required Readings:


Optional Readings:

3. Just Culture Algorithm V3.2: https://store.justculture.org/products/the-just-culture-algorithm-v3-1/#.U8RVrFZOVRA

Assignment # 4: Apply the Just Culture Algorithm. See Moodle site for instructions and due date

February 23-March 1: Exam and *the Quality Improvement tool box I*

**Learning Objectives:**

- Discuss scope of improvement projects
- Describe common methods and tools used in CQI projects and initiatives
- Use brainstorming, affinity grouping, and multi-voting techniques

Required Readings:


Websites to Review:


Exam # 1: Short-answer/essay based on material covered in weeks 1-5.
March 2-8: The Quality Improvement tool box II

**Learning Objectives:**
- Develop a project charter that defines the project scope and includes a problem statement and goals
- Formulate SMART goals
- Describe how flowcharting can be used to map a process and identify opportunities for improvement
- Demonstrate tools to encourage creative thinking
- Organize information using cause and effect diagrams, force field, radar charts, VOC, and multi-voting

**Required Readings:**

March 9-15: Leading and managing a QI project I

**Learning Objectives:**
- Apply prioritization techniques to choose opportunities for improvement (PICK, prioritization matrix)
- Identify the necessary steps to effective project implementation
- Describe project management tools including affinity network diagrams (AND), Gantt charts, tree diagram
- Utilize tools for leading effective project teams
- Identify strategies to choose QI interventions
- Documentation of PDSA cycles
- Discuss methods for developing and implementing change
- Identify the role of change concepts/packages
- Describe the learning collaborative model applied to CQI

**Required Readings:**

**Group Project: Developing a plan for a Performance Improvement Project. See Moodle site for instructions and due date**
March 16 – 23: *Spring Break*

March 23 - 29: *Leading and managing a QI project II*

**Learning Objectives:**
- Classify types of data
- Create measures and indicators (outcome, process, balancing and structural)
- Describe and contrast the RCA process vs. FMEA
- Identify tools commonly used in RCA and FMEA
- Describe the Learning Collaborative model for QI
- Demonstrate application of the PDSA cycle

Guest Presenter: Stephanie Lenartz. QI professional from public health to discuss management and leadership in the context of a specific QI project

**Required Readings:**


March 30 – April 5: *Responding to adverse events, unintended outcomes and proactive risk management (RCA and FMEA)*

**Learning Objectives:**
- Review the RCA process
- Apply concepts of human factors and human decision making to RCA
- Gather and organize information for RCA
- Practice an RCA
- Compare and contrast weak, intermediate and strong interventions

Guest Presenter: Rosie Emmons. QI professional to discuss experiences with RCA

**Required Readings:**


**Review these QAPI Tools:**


Assignment #5: Development a Root Cause Analysis (RCA). See Moodle site for instructions and due date

April 6 - 12: Measurement and analysis I

Learning Objectives:
- Analyze evidence base and apply to CQI
- Differentiate data for CQI vs. data for research
- Identify role of IRB in health care and public health data collection
- Formulate goals and thresholds
- Develop a data collection strategy (collection, sample, frequency and duration)

Required Readings:

April 13 - 19: Measurement and analysis II

Learning Objectives:
- Demonstrate strategies for converting data into information for CQI
- Create control charts and run charts
- Describe how to interpret data from control charts and run charts
- Develop pareto charts, histograms and scatter plots
- Describe how pareto charts, histograms and scatter plots can be used in a CQI project

Guest Presenter: Dr. Craig Solid. Present practical applications of statistical process control techniques

Required Readings:
Optional Reading:

April 20 - 26: Measurement and analysis III

Learning Objectives:
- Utilize Statistical Process control techniques to create control charts

April 27 – May 3: Health Information Technology – Publically Reported Data for CQI

Learning Objectives:
- Describe ways Health Information Technology (HIT) can support QI
- Describe approaches to measuring satisfaction for use in QI
- Identify examples of publicly reported measures
- State advantages and disadvantages of publicly reported data in QI

Guest Presenters:
- Dr. Paul Kleeberg – How HIT can support QI efforts, currently and in the future.
- Tina Frontera – MN Community Measurement – History and current role in public reporting for QI

Required Reading:

Optional Reading:

Assignment #6: Completion of a self-assessment rubric. See Moodle site for instructions and due date

May 4-10: Sustainability and Spread - Course re-cap

Learning Objectives:
- Describe the concepts of sustainability and spread in QI
Required Reading:


Optional Reading:


Exam # 2: Short-answer/essay questions covering material from weeks 10-15.
VII. Evaluation and Grading

Course grades will be determined based on the following criteria. Further details for each assignment along with grading rubrics will be provided on the Moodle site. Due dates will be included on the Moodle site. Late submissions are subject to point deduction.

<table>
<thead>
<tr>
<th>Description</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Discussion/Participation: Engagement in class activities and discussion.</td>
<td>20</td>
</tr>
<tr>
<td>Assignment #1: Create a flowchart</td>
<td>10</td>
</tr>
<tr>
<td>Assignment #2: Summary of interview with a public health or health care professional (max. 1000 words)</td>
<td>10</td>
</tr>
<tr>
<td>Assignment #3: Paper applying team performance strategies (TeamSTEPPs) (max.1000 words)</td>
<td>10</td>
</tr>
<tr>
<td>Assignment #4: Apply the Just Culture Algorithm</td>
<td>10</td>
</tr>
<tr>
<td>Exam #1: Short-answer/essay based on material covered in weeks 1-5.</td>
<td>30</td>
</tr>
<tr>
<td>Group Project: Developing a plan for a performance improvement project</td>
<td>40</td>
</tr>
<tr>
<td>Assignment #5: Develop a Root Cause Analysis (RCA) (5-6 pages)</td>
<td>20</td>
</tr>
<tr>
<td>Assignment #6: Self-assessment rubric:</td>
<td>20</td>
</tr>
<tr>
<td>Exam #2: During final exam period: Short-answer/essay based on material covered in the course.</td>
<td>40</td>
</tr>
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Grading System:

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

A  4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
A-  3.667
B+  3.333
B   3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
B-  2.667
C+  2.333
C   2.000 - Represents achievement that meets the course requirements in every respect
C-  1.667
D+  1.333
D  1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements
S  Represents achievement that is satisfactory, which is equivalent to a C- or better.

For additional information, please refer to: http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSFORMS.html.

Course Evaluation
The SPH will collect student course evaluations electronically using a software system called CoursEval: www.sph.umn.edu/courseval. The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: www.sph.umn.edu/grades. All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

Incomplete Contracts
A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student’s college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: www.sph.umn.edu/grades.

University of Minnesota Uniform Grading and Transcript Policy
A link to the policy can be found at onestop.umn.edu.

VIII. Other Course Information and Policies

Grade Option Change (if applicable)
For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e., summer and half-semester courses) can be found at onestop.umn.edu.

Course Withdrawal
Students should refer to the Refund and Drop/Add Deadlines for the particular term at onestop.umn.edu for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw.
Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at sph-ssc@umn.edu for further information.

**Student Conduct Code**
The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: Student Conduct Code. To review the Student Conduct Code, please see: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

**Use of Personal Electronic Devices in the Classroom**
Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html.

**Scholastic Dishonesty**
You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: http://www1.umn.edu/oscai/integrity/student/index.html. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and
methods for citing sources, if electronic aids are permitted or prohibited during an exam.

**Makeup Work for Legitimate Absences**
Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html.

**Appropriate Student Use of Class Notes and Course Materials**
Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html.

**Sexual Harassment**
"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf.

**Equity, Diversity, Equal Opportunity, and Affirmative Action**
The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

**Disability Accommodations**
The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center Student Services is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 or ds@umn.edu to arrange a confidential discussion regarding equitable access and reasonable accommodations.
If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, [https://diversity.umn.edu/disability/](https://diversity.umn.edu/disability/).

**Mental Health and Stress Management**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: [http://www.mentalhealth.umn.edu](http://www.mentalhealth.umn.edu).

**The Office of Student Affairs at the University of Minnesota**

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development – Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at [http://www.osa.umn.edu/index.html](http://www.osa.umn.edu/index.html).

**Academic Freedom and Responsibility: for courses that do not involve students in research**

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.
* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".

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