

# UNIVERSITY OF MICHIGAN MEDICAL SCHOOL DEPARTMENT OF LEARNING HEALTH SCIENCES

Quality Improvement in Healthcare Systems  
LHS 641, Section 001  
Winter 2023

**CREDIT HOURS:** 3

**PRE-REQUISITES:** None

**COURSE SCHEDULE AND LOCATION:** Medical Science 2 3733

**INSTRUCTOR:**

Andrew E. Krumm, PhD  
Assistant Professor of Learning Health Sciences  
Assistant Professor of Information  
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**OFFICE HOURS:** By appointment

**COURSE WEBSITE:** <https://umich.instructure.com/courses/577649>

**COURSE DESCRIPTION**

This course addresses QI in healthcare using a multi-level systems perspective. The course addresses both conceptual foundations of QI and direct application of QI tools and processes. Course materials will include examples and application at Michigan Medicine. The course will help participants perform successful QI activities in healthcare settings.

**Course Objectives**

By completion of the course students will be able to:

- Reflect on the history of quality improvement (QI) in health care, the current policy environment driving QI in the U.S. system of health care, and forces driving future trends.
- Describe how QI incorporates scientific problem-solving through sequential hypothesis testing and experimentation.
- Explain the use of measures, measurement, and the display of information in carrying out data-guided QI.
- Compare and highlight the strengths and limitations of different QI approaches, models, and methods, e.g., Lean, Six-Sigma, Model for Improvement, Total Quality.
- Assess interrelationships among QI and related fields/activities, e.g., research, patient safety, implementation science, dissemination and innovation adoption, social marketing, and learning health systems.
- Examine ways in which social systems and technical systems enable successful QI initiatives and describe strategies for addressing each system.
- Describe details of using the A3 problem-solving approach to systematically address a quality problem in health care.

- Apply the A3 problem-solving approach in developing a proposed plan to address an actual problem in health care.
- Assess the quality of A3 problem-solving proposals.
- Specify how content learned in the course may be utilized in future career activities.

## Teaching Methods

Within the course Canvas site, you will access the learning materials and syllabus, respond to discussion prompts, submit assignments, and display your projects. This course will be taught using multiple methods, including, but not limited to *readings, discussions, assignments, and hands-on development of a proposal A3*. The course is organized around two broad themes that will run throughout each module: **general quality improvement topics** and **A3 problem solving**.

## Required Texts and Other Materials

All materials are available through the Canvas site by link or embedded PDF. However, individuals may wish to purchase personal copies of the required textbook:

Johnson JK, Sollecito WA. "McLaughlin & Kaluzny's Continuous Quality Improvement in Health Care, 5<sup>th</sup> edition." Burlington, MA: Jones & Bartlett Learning, 2020. ISBN: 9781284174410

University of Michigan libraries provide free electronic access to the textbook for up to 3 simultaneous users, but you cannot record notes on the free access version. Personal copies of the textbook (in print – both new and used – and in electronic formats) can be purchased through bookstores and online sites, e.g., Barnes & Noble, Amazon. (Check that it is the 5<sup>th</sup> edition, the most current version.)

## DROP-ADD DEADLINES

- **Tuesday, January 24 – full tuition refund** – HILS doctoral students wishing to drop after this date must have permission from the HILS Program Director.
- **Tuesday, February 14 – half tuition refund**

## GRADING AND EVALUATION

### Grading Policies

*No late assignments will be accepted without penalty. Unless an agreement has been reached in advance with the instructor, the student will lose 10% for every day that the assignment is late. For example, if the assignment is worth 10 points and is turned in one day late, the maximum number of points for that assignment will be 9/10. Two days late will result in the maximum number of points being 8/10, and so on. **Graded assignments will be returned through Canvas.***

*Final grades will be accessible through Wolverine Access; grades for each assignment will be posted through the Canvas course site. Overall course grades are posted within 72 hours of when the final course assignment component (typically the final course project report) is due. The course grade will be a letter grade (A – D, F) following the weighting described below. Grades will be assigned using this conversion scale:*

A+	97-100	B+	87-89	C+	77-79	D+	67-69	F	<60
A	93-96	B	83-86	C	73-76	D	63-66		
A-	90-92	B-	80-82	C-	70-72	D-	60-62		

## DLHS Grade and Grievance Policy

Regular feedback on graded assignments and timely resolution of any grading concerns is helpful for student learning and contributes to an overall positive experience. Students are encouraged to discuss any assignment grade concerns with the instructor(s) within two weeks of the grades being posted on Canvas. Similarly, any concerns and grievances related to the overall course grades should be raised by contacting the faculty of record within two weeks of the course grades being posted on Wolverine Access.

For this course, the grade dispute arbitration will happen within the Department of Learning Health Sciences (DLHS). After initial discussion with the faculty of record for the course, there is an opportunity for a second look by another DLHS faculty member with appropriate expertise for resolving grade disputes. If the student and faculty are not able to come to an agreement about the grade dispute, the Associate Chair for Educational Programs or assigned designee will adjudicate the dispute. Per Rackham's Academic Dispute Resolution Process, if the concern is not resolved, the student may seek a formal resolution conference with the Medical School's Rackham Resolution Officer (see <http://www.rackham.umich.edu/policies/academic-dispute-resolution> for full policy and the contact information for the current resolution officer.

## COURSE POLICIES

### Expectations

This is a small class; therefore, discussions will be the key to learning during the course. There will be readings from a textbook and from supplemental sources that will prepare the student for discussions, which will involve initial and follow-up posts. Students will develop a proposal A3 throughout the course on a real and relevant problem of their own choosing. Students will be expected to keep pace with required checkpoints for their A3 throughout the course. Additional assignments and course activities will provide opportunities to explore multiple elements of quality improvement in healthcare.

## COURSE ACTIVITIES

### Graded Activities:

- A. Fourteen Topic Discussions, worth 30 points each (420 points total, ~43% of grade)**  
You will learn about a wide variety of topics relevant to QI in Health Care. To demonstrate your understanding of these topics and their application, you will respond to weekly discussion questions and participate in classroom discussions. If you will knowingly miss class, alternative participation opportunities will be provided.
- B. Four Assignments (topical), worth 20 points each (80 points total, ~8% of grade)**  
You will participate in activities that provide experience in applying skills related to specific topics and provide documentation of having performed the activities.
- C. Five A3 Assignments/Discussions, worth 35 points each (175 points total, ~18% of grade)**  
You will submit assignments that are shared with peers and comment on peer's ongoing work. You will learn the iterative process for developing proposal A3s. You will identify a problem to address. Then you will develop a proposal A3 to address it through cycles of seeking information, developing/updating drafts of expanding content, and seeking feedback from relevant individuals. You will submit successive drafts of your proposal A3 and comment on proposal A3s of peers.
- D. One Final A3 Assignment, worth 297 points (~31% of final grade)**  
You will demonstrate that you have learned to develop a proposal A3. You will submit a final version of your proposal A3 addressing the problem that you identified. The instructor will evaluate proposal A3s using the A3 assessment tool that is explained in the course.

## Content Topics *[Module number in brackets]*

General QI	Proposal for QI Activity
<p><b>Foundation – Systems</b></p> <p>Systems theory and systems thinking [1]            Living systems, levels, and subsystems [1]            Social systems and technical systems [1]            Health care system levels [1]            Academic Health Centers: overlapping systems (clinical care, research, education) [3]            Measuring performance: data, tools, example [4]</p>	<p><b>Proposing QI Activities – A3 Format</b></p> <p>Scientific/structured problem solving [1]            Problem area selection and scoping [2,3]            Proposal A3 content and how to assess A3s [4]            Social and technical processes involved [5]            Iterative development [5]</p>
<p><b>Systems and QI in Health Care</b></p> <p>QI definition and dimensions [1]            History and evolution [2]            Research vs QI [2]            Value in health care and QI [3]            Continuous improvement [3]            Culture and QI [5,6]            Individuals and QI [6]            Teams and QI [6]            Leaders and QI [6]            Management systems and QI [5]            Training systems and QI [5]            Asking helpful questions, humble inquiry [6,7]            Patient/family and QI [8]            Social determinants of health and QI [8]            Public health and QI [10]            National systems and QI (e.g., accreditation, payers, certification) [10]            Low/middle income countries and QI [11]            Future trends in QI for health care [12]            Presenting and publishing QI [11]</p>	<p><b>Individual A3 Sections (content, tools)</b></p> <p>Title [5,6]            Background/importance [5,6]            Current situation and problem statement (process, performance data, gap) [5,6]            Goal(s) [7,8]            Analysis/root causes [7,8]            Countermeasures [9,10]            Action plan [9,10]            Follow-up plan [9,10]</p>
<p><b>Frameworks for Action/Change (focus, concepts, tools)</b></p> <p>Quality improvement frameworks [5]:</p> <ul style="list-style-type: none"> <li>● Model for Improvement</li> <li>● Lean</li> <li>● Six-sigma</li> </ul> <p>Implementation science [7]            Social marketing [8]            Innovation dissemination/adoption [8]            Learning health systems [8]            Patient safety – high reliability [9]            Multiple-organization collaboratives [12]</p>	<p><b>Student’s Proposal A3 Activities</b></p> <p>For each A3 section (sequential, iterative)</p> <ul style="list-style-type: none"> <li>● Draft own sections [5,6,7,8,9,10]</li> <li>● Comment on other student’s sections [6,8,10]</li> </ul> <p>Formally assess example A3 [12]</p> <p>For student’s drafts of complete A3s</p> <ul style="list-style-type: none"> <li>● Formally assess own A3 (formative) [11]</li> <li>● Present A3 to other students [13]</li> <li>● Comment on other student’s A3s [13,14]</li> <li>● Submit final A3 for summative assessment [14]</li> </ul>

## Assignments, Due Dates, and Directions

Assessment	Due Date (Wednesdays)	Possible Points
Module 1 Topic Discussion	Jan 11	30
Module 2 Topic Discussion	Jan 18	30
Module 3 Topic Discussion <i>Module 3 Problem Area Selection and Scoping Assignment/Discussion</i>	Jan 25	30 35
Module 4 Topic Discussion <i>Module 4 A3 Assessment Tool Assignment</i>	Feb 01	30 20
Module 5 Topic Discussion	Feb 08	30
Module 6 Topic Discussion <i>Module 6 Draft of A3 Sections: Title, Background/ Importance, Current State, and Problem Statement Assignment/Discussion</i>	Feb 15	30 35
Module 7 Topic Discussion	Feb 22	30
Module 8 Topic Discussion <i>Module 8 Draft of A3 Sections: Goal(s), Analysis Assignment/Discussion</i>	Mar 08	30 35
Module 9 Topic Discussion <i>Module 9 Universal Skills/ High Reliability Training Assignment</i>	Mar 15	30 20
Module 10 Topic Discussion <i>Module 10 Draft of A3 Sections: Countermeasures, Action Plan, Follow-up Plan Assignment/Discussion</i>	Mar 22	30 35
Module 11 Topic Discussion <i>Module 11 A3 Assessment Assignment</i>	Mar 29	30 20
Module 12 Topic Discussion <i>Module 12 Assess your own A3 Assignment</i>	Apr 05	30 20
<i>Module 13 Current Draft of Proposal A3 and Presentation Part 1</i> <i>Module 13 Current Draft of Proposal A3 and Presentation Part 2</i>	Apr 13	35 30 (Discussion)
Module 14 Topic Discussion	Apr 19 <i>No class</i>	30
Module 14 Final A3 Assignment	Apr 19 <i>No class</i>	297
<b>TOTAL POINTS</b>		972

### Attendance:

Grades will not be negatively impacted by not attending class due to illness. Other than illness, students are expected to attend all classes and will only be excused for extenuating circumstances and cultural and religious holidays. These circumstances shall be discussed with the instructor prior to missing class. Students are expected to make up any work that is missed.

## Readings

Assigned Week	Due Date	Readings
1	Jan 11	Krumm, A. E. (2022) Harrison, R. V. (2022) Harrison, R. V. (2022)
2	Jan 18	Johnson, J. K., & Sollecito, W. A. (2020) Speyer, L. K., & Harrison, R. V. (2015) Burke Paliani, D. & Harrison, R. V. (2022) Burke Paliani, D. & Harrison, R. V. (2022)
3	Jan 25	Johnson, J. K., & Sollecito, W. A. (2020) Harrison, R. V. (2022)
4	Feb 01	Johnson, J. K., & Sollecito, W. A. (2020) Burke Paliani, D. (2021) Michigan Medicine. (2022) Michigan Medicine. (2022) Myers, J. S., Kin, J. M., Billi, J. E., Burke, K. G., & Harrison, R. V. (2021)
5	Feb 08	Johnson, J. K., & Sollecito, W. A. (2020) Scoville, R., Little, K. (2014) Harrison, R. V. (2021) Shook, J. (2009, July 1) Harrison, R. V. & Burke Paliani, D. (2022) Harrison, R. V. & Burke Paliani D. (2022) Burke Paliani, D. & Harrison, R. V. (2022) Burke Paliani, D. & Harrison, R. V. (2022) Burke Paliani, D. & Harrison, R. V. (2022) Harrison, R. V. & Burke Paliani, D. (2022) Burke Paliani, D. & Harrison, R. V. (2022)
6	Feb 15	Johnson, J. K., & Sollecito, W. A. (2020) Swensen S, Pugh M, McMullan C, Kabcenell A. (2013) Schmidt, N. J., & Craig, P. A. (2021)
7	Feb 22	Johnson, J. K., & Sollecito, W. A. (2020) Harrison, R. V., Krumm, A. E., & Burke Paliani, D. (2022) Burke Paliani, D. & Harrison, R. V. (2022) Burke Paliani, D. & Harrison, R. V. (2022)
8	Mar 08	Johnson, J. K., & Sollecito, W. A. (2020) Brach, C., Lenfestey, N., Roussel, A., Amoozegar, J., & Sorenson, A. (2008) Harrison, R.V., Krumm, A.E. (2022) Friedman, C. P., Rubin, J. C., & Sullivan, K. J. (2017) <i>Health Equity Terms</i> . (2019, October) <i>Quality Improvement Data Resources: Addressing Health Disparities and Inequality</i> . (n.d.) Urban Institute. (2018, April 18)
9	Mar 15	Johnson, J. K., & Sollecito, W. A. (2020) Harrison, R.V. (2022) Harrison, R.V. (2022) Burke Paliani, D. & Harrison, R. V. (2022) Burke Paliani, D. & Harrison, R. V. (2022) Burke Paliani, D. & Harrison, R. V. (2022)
10	Mar 22	Johnson, J. K., & Sollecito, W. A. (2020) Harrison, R.V. (2021)
11	Ma 29	Johnson, J. K., & Sollecito, W. A. (2020) Harrison, R.V. (2022) <i>SQUIRE 2.0 guidelines</i> . (n.d.)
12	Apr 05	Johnson, J. K., & Sollecito, W. A. (2020) Luckenbaugh, A., Miller, D. & Ghani, K. (2017)
13	Apr 12	Burke Paliani, D. & Harrison, R. V. (2022) <i>Research guides: Microsoft PowerPoint: Design tips</i> . (2021, February 11)
14	Apr 19	Krumm A.E., Harrison, R. V., Burke Paliani, D. (2022)

## **INSTITUTIONAL POLICIES**

### **Academic Integrity of Students**

The academic community, like all communities, functions best when its members treat one another with honesty, fairness, respect, and trust. Your instructors expect students to work and study together to foster learning and understanding of the material. However, direct copying of homework, copying of homework from existing solutions, cheating on an exam, and other conduct that violates the academic integrity and ethical standards of the Rackham Graduate School community cannot be tolerated and will result in serious consequences and disciplinary action.

All written submissions must be your own, original work. We expect that your submitted work will represent your own thoughts, opinions, and knowledge. If you share it with anyone else prior to submission, you may contribute to a breach of academic integrity, and we encourage you not to share your written work with others until it has been assessed.

You may incorporate selected excerpts, statements or phrases from publications by other authors, but they must be clearly marked as quotations and must be attributed. If you build on the ideas of prior authors, you must cite their work. You may obtain copy editing assistance, and you may discuss your ideas with others, but all substantive writing and ideas must be your own or be explicitly attributed to another.

A resource explaining academic integrity and plagiarism can be found here:  
<https://guides.lib.umich.edu/c.php?g=1039501&p=7538393>

If we suspect you have cheated (including plagiarism), at the very least you will receive a zero on the assignment. Rackham policy dictates that we must report every instance of academic dishonesty, no matter how small. Suspected academic misconduct will be handled initially by your course instructor.  
<https://rackham.umich.edu/academic-policies/section8/>

### **Student Academic Dispute Procedures**

Rackham's Academic Dispute Resolution Policy and Procedures are available to Rackham students who have a dispute or disagreement with faculty or staff about the equity and fairness of decisions or procedures that affect their academic standing, the conduct of their research, and progress toward the degree. Such issues may arise regarding fair and equal treatment in the conduct of a class, in the pursuit of the student's research, and in the grading or evaluation of academic work and research. Other issues may concern the equity and fairness of program, department, or Rackham policies.  
<https://rackham.umich.edu/academic-policies/section9/>

### **Diversity, Equity, and Inclusion**

The Department of Learning Health Sciences (DLHS) is committed to developing the institutional mechanisms and norms necessary to promote the values of diversity, equity, and inclusion, both inside and outside our classrooms. To this end, DLHS upholds the expectations that all courses will: (1) be inclusive, (2) promote honest & respectful discussions, (3) follow multicultural ground rules and (4) abide by UM policies and procedures. Inclusive courses are those in which teachers and learners co-create and co-sustain environments that support and encourage all members to participate equitably.  
<https://rackham.umich.edu/rackham-life/diversity-equity-and-inclusion/>

### **Accessibility and Accommodations**

Students should speak with their instructors before or during the first week of classes regarding any special needs. Students seeking academic accommodations should register with Services for Students with Disabilities (SSD). SSD arranges reasonable and appropriate academic accommodations for students with disabilities. Please visit <https://ssd.umich.edu> for more information.

## Student Mental Health and Well-Being

The University of Michigan is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact Counseling and Psychological Services (CAPS) at (734) 764-8312 and <https://caps.umich.edu/> during and after hours, on weekends and holidays, or through its counselors physically located in schools on both North and Central Campus. You may also consult University Health Service (UHS) at (734) 764-8320 and <https://www.uhs.umich.edu/mentalhealthsvcs>, or for alcohol or drug concerns, see [www.uhs.umich.edu/aodresources](http://www.uhs.umich.edu/aodresources). For a listing of other mental health resources available on and off campus, visit: <http://umich.edu/~mhealth/>.

## Sexual Misconduct/Sexual Harassment Reporting

Title IX prohibits sex discrimination to include sexual misconduct: harassment, domestic and dating violence, sexual assault, and stalking. If you or someone you know has been harassed or assaulted, you can receive confidential support and academic advocacy at the Sexual Assault Prevention and Awareness Center (SAPAC). SAPAC can be contacted on their 24-hour crisis line, 734-936-3333 and online at [sapac.umich.edu](http://sapac.umich.edu). Alleged violations can be reported non-confidentially to the Office for Institutional Equity (OIE) at [institutional.equity@umich.edu](mailto:institutional.equity@umich.edu). Reports to law enforcement can be made to the University of Michigan Police Department at 734-763-3434.

## Support for Food Insecurity

Students across the country experience food insecurity at alarming rates. The Maize and Blue Cupboard at the University of Michigan provides food, kitchen and cooking supplies, personal and household items, and support services. For information about accessing their services, please visit <https://mbc.studentlife.umich.edu/>

## Confidentiality and Mandatory Reporting

As instructors, one of our responsibilities is to help create a safe learning environment. Dr. Gretchen Piatt also has a mandatory reporting responsibility related to her role as the Director of the Health Infrastructures and Learning Systems degree program. Instructors are required to share information regarding sexual misconduct or information about a crime that may have occurred on U-M's campus with the University. Students may speak to someone confidentially by contacting SAPAC's Crisis Line at (734) 936-3333

## COVID-19 Statement

For the safety of all students, faculty, and staff on campus, it is important for everyone to comply with safety measures that have been put in place for our protection. We each have a responsibility for protecting the collective health of our community. Applicable safety measures are described on the U-M Health Response website --<https://healthresponse.umich.edu/>. For current COVID-19 Guidance, please follow the following link: <https://healthresponse.umich.edu/policies-guidance/>. We also encourage you to review the Statement of Student Rights and Responsibilities.