

CHIP 490 - Quality Improvement Data Visualization in Healthcare

In this course students will learn the basic concepts of quality improvement with special emphasis on healthcare applications. We will use many examples from the Institute for Healthcare Improvement, leading hospitals, and other healthcare organizations. This course will cover many other current leading quality management practices including continuous quality improvement, Lean, and Six Sigma. Students will get hands on experience using some data visualization tools with the focus on Tableau software. Students will get an understanding of Tableau's fundamental concepts and features: how to connect to data sources, use Tableau's drag-and-drop interface, and create compelling visualizations.

The course includes a project prototyping using Tableau software for data visualization. We will also hear from data visualization experts who will participate as guest lecturers with opportunities for students to ask questions.

Course Objectives

By the end of the course the student will be able to:

- Describe quality improvement in healthcare system
- Formulate problem statements that identify critical quality improvement opportunities
- Exploring different data visualization tools
- Learning Tableau fundamental concepts and features
- Understand how data visualization can improve healthcare system
- Develop prototype presentation with visualization skills

Time: Tuesday 2:00pm ET – 4:45pm ET

Location: Manning 001

Credits: 3 Hours

Instructor: Shaghayegh R. Arangdad

Office Hours: send me an email anytime you need me.

Email: arangdad@unc.edu (best way to contact me)

Teaching Assistant: Ashley Victor

Office Hours: Monday (10am-11am) and Thursday (4-5pm) (via Zoom). Prior appointment required so a meeting invite can be sent to confirm appointment.

Email: ashv@unc.edu (Preferred **Contact** Method)

Can expect response for emails within 24 hours during weekdays.

Course Outline

- Introduction to Quality Improvement and Lean Six Sigma
- Data Visualizations
- Data Storytelling
- Introduction to Tableau
- Learning about Tableau Features
- Visual Presentation

Course Schedule

Week	Date Tuesday	LECTURE TITLE
1	8/22	Course Introduction
2	8/29	Introduction to Quality Improvement and Six Sigma
3	9/05	No Class
4	9/12	Lean Six sigma
5	9/19	Data Visualization
6	9/26	Data Storytelling
7	10/03	No Class- Midterm Study
8	10/10	Midterm
9	10/17	Introduction to Tableau
10	10/24	Building and Customizing Visualization
11	10/31	Visualize geographic data and plot data onto a map visualization
12	11/07	Presenting Your Data
13	11/14	Tableau workday
14	11/21	Visual Presentation
15	11/28	No Class- Project Workday
16	12/05	Project Presentations and Project Submission
17	12/05	Final Exam will be opened, and you have 72 hours to complete

Canvas: We will use Canvas (<https://edtech.unc.edu/service/canvas/>) in this course to submit assignments, return grades, share lecture notes, provide access to assigned readings and other class resources.

Course Project:

- Pick a project related to your work
- Identify and Define problem you're trying to solve
- Define your mission to solve the problem
- Brainstorm the potential causes
- Improvement and cost saving
- Use Tableau Software to show your data
- Build prototype - mock up- Dashboards
- Present project.

Grading

Your grade for this course will be based on the quizzes, assignment, exams, course project and class participation. The approximate breakdown within those categories is as follows:

HOMEWORK: Weekly Assignments and in-class quizzes (10%).

PARTICIPATION/ATTENDANCE: Attendance, coming prepared, active engagement in discussion is also (10%).

EXAMINATIONS: One midterm exam (25%), and one exam during finals week (25%)

PROJECT: Apply the skills you learned in this course to a project selected by your team (30%). Details on the project requirements will be provided in the third or fourth week of class. If you have personal suggestions for projects, please provide those to the class instructors as soon as possible.

Points	Grade
94>	H
75-94	P
65-74	L
>65	F

Course Policies and Expectations

Communications

- **Course announcements** will be posted on Canvas. Announcements may include information about the week's work, or other timely information.
- **Email** is the best way to contact me.
- **Virtual Office:** for any kind of questions about course, assignments, etc. you can send me an email including your questions. I will answer your questions through email or set up a zoom meeting based on your preference.

Email Policy:

All faculty members receive a large amount of email. For a quicker response, **be sure to include the course name in the subject line**. If you asked a question and do not get a response within three business days, then you may need to send a reminder (with the course name in the subject line!).

Class attendance is crucial to fulfilling learning objectives of the course that relies heavily on information presented by instructor/guest lecturers and in-class discussion.

- Attendance in class is expected
- Be on time for class
- If you know in advance that you will have to miss a class, arrive late to class, or leave early from class, please let me know ahead of time

Class preparation is key to getting the most out of each class.

You are expected to come to class having completed the readings from reading assignment and other resources linked from the class schedule in Canvas. Be prepared to ask questions and take part in discussion.

Assignment Submission

All course project deliverables are to be submitted via Canvas by the start of class on the day they are due. For group projects, only one member of the team needs to submit on behalf of the group.

SOFTWARE REQUIRMENT

Each student must have or have access to a laptop computer with Tableau Desktop Software, MS Word and Excel, a browser, and e-mail. You can send a request to

download Tableau Desktop as a student to your personal computer for academic use. The software will be extensively used in this class.

Academic Integrity and Diversity

UNC-Chapel Hill has had a student-administered honor system and judicial system for over 100 years. Because academic honesty and the development and nurturing of trust and trustworthiness are important to all of us as individuals, and are encouraged and promoted by the honor system, this is a most significant University tradition. You are responsible for being familiar with the UNC-Chapel Hill [Honor System](#).

The UNC Honor Code is in effect for all work in this course. Section II. B. of the [Instrument of Student Judicial Governance](#) gives examples of actions that constitute academic dishonesty

In support of the University's diversity goals and the mission of the School of Information and Library Science, SILS embraces diversity as an ethical and societal value. We broadly define diversity to include race, gender, national origin, ethnicity, religion, social class, age, sexual orientation and physical and learning ability. As an academic community committed to preparing our graduates to be leaders in an increasingly multicultural and global society we strive to:

- Ensure inclusive leadership, policies, and practices
- Integrate diversity into the curriculum and research
- Foster a mutually respectful intellectual environment in which diverse opinions are valued
- Recruit traditionally underrepresented groups of students, faculty, and staff; and
- Participate in outreach to underserved groups in the State.

The statement represents a commitment of resources to the development and maintenance of an academic environment that is open, representative, reflective, and committed to the concepts of equity and fairness.