

Keck Medicine
of USC

USC Iovine and
Young Academy

*Arts, Technology and the Business
of Innovation*

**ACAD260/MEDS250: Introduction to Healthcare
Innovations**

2023 SPRING

Units: 4
Meeting Times: Mondays and Wednesdays
12:00 pm – 1:50 pm PST
Location: IYH 212

Instructor:

Dr. Armine Lulejian, EdD, MPH, CHES

Email: alulejia@usc.edu

Phone: 818-590-7899

(Call/text only during the day, or
anytime for emergencies)

Office Hours: Mondays: 11am – 12pm PST

Office: <https://usc.zoom.us/j/8185907899>

Calendly: <https://calendly.com/lulejian/15min>

(To schedule individual office hours)

Instructor will reply within 36 hours during the
weekdays.

Course Description

This course is an introduction to a dynamic and growing field of health innovations. Students will be provided with introductions to various health innovations, including pathways, technology, techniques, and outcomes. This course will expose students to the latest innovations happening in various segments of the healthcare industry.

The purpose of the course is to provide tools for health innovators. On one hand, theoretical and practical understanding of information pathways in the health industries will introduce students to 'venues' for health innovators. Topics include brief introductions to different health technologies including electronic medical records, medical imaging, telemedicine, consumer health informatics, artificial intelligence in healthcare among others. The innovation process including design thinking and startup challenges will be discussed. Topics include needs findings, evaluation of existing solutions, stakeholder and market analysis, among others. Case presentations and guest speakers will follow a didactic component to showcase practical applications.

Goals:

- Gain awareness about healthcare systems as they relate to health innovations
- Examine, analyze and understand health innovations
- Understand how to examine health innovations

Learning Objectives and Outcomes

By the end of this course, students should be able to:

- Understand the field of health innovations
- Explain the processes involved in innovating in healthcare
- Conduct needs assessment and prioritize needs for innovations
- Recognize the major differences between successful innovations and failures; and appreciate both of their places in the process of health innovations
- Understand EMR/I & PHR
- Understand how health policies impact health innovations
- Understand how Virtual Reality (VR) & Augmented Reality (AR) is used in healthcare
- Explain impact of Precision medicine and Personalized medicine
- Understand basics of Artificial Intelligence (AI)
- Discern competitive strategies
- Examine cases in health innovations
- Engage with experts working in the field

Prerequisite(s): None.

Required Readings and Supplementary Materials

Weekly assignments posted on Blackboard.

Additional Readings

Please note that copies of these articles will be posted online.

Course Notes

- This course will be taught using lectures, guest presentations and student-led topic discussions. Active participation is highly suggested.
- This course includes didactic components which follow with relevant case presentations. Expert speakers on the topics will be invited as often as possible to provide exposure to students to key leaders in the field.
- The course will include both individual and group assignments.
- Please read the assignments prior to coming class and be ready to engage in lively discussions with your classmates.
- Please complete all assignments by the due date prior to class.
- Avoid use of cellphones during class, unless part of class work.
- If on zoom, please turn the video on for the duration of class.
- Limit other work (electronic or otherwise) during class.

Grading Scale

Course final grades will be determined using the following scale, based on total percentage for your final grade.

A	95-100
A-	90-94

B+ 87-89
 B 83-86
 B- 80-82
 C+ 77-79
 C 73-76

C- 70-72
 D+ 67-69
 D 63-66
 D- 60-62
 F 59 and below

Grading Breakdown

Deliverable	% of Grade
Tests	
Quizzes (4)	10%
Midterm	15%
Final	15%
<i>In-class Exercises/Assignments</i>	
Assignment #1	3%
Assignment #2	3%
Assignment #3	3%
Assignment #4	6%
Assignment #5	10%
<i>Innovations</i>	
Innovations Discussion #1	5%
Innovations Discussion #2	5%
Innovations Discussion #3	5%
Final Project	20%
TOTAL	100%

Description and Assessment of Assignments

Participation

You are required to participate when attending class. Please complete all assigned readings prior to class. Please turn on videos (if online). Participation points will be awarded based on your own evaluation of yourself as well as the instructors at the end of the semester. Participation is worth 5% of the final grade.

Exams

There are 2 exams in this class and 4 quizzes.. Exams will cover material discussed in class, including readings and presentations. There will be mostly multiple choice. Exams are not cumulative.

Quizzes

Quizzes are there to help you understand the material covered in class. Quizzes are will include multiple choice questions. There are two quizzes prior to the midterm and two

quizzes prior to the final. All the four quizzes in total are worth 15% of the final grade.

Midterm

Midterm will be based on the materials covered in the first half of class. It will include both multiple choice and short answer questions. The midterm is worth 15% of the final grade.

Final

Final will be based on the materials covered in the second half of class. It will include both multiple choice and short answer questions. The final is worth 15% of the final grade.

Innovations Hub

There are three (3) scheduled days designated specifically for evaluation of current scientific literature and other publications related to 'hot' health innovations. Students are expected to come to class prepared to discuss the selected articles and contribute to the discussion. Total innovation hub participation is worth 15% of the final grade, with each worth 5%.

For innovation hubs, each student will be required to select a reading, then presentation of the innovation and lead a discussion of 10 minutes during class. Students are expected to send their selected reading within 2 weeks of the dates of the discussion.

Deliverable: Selection of reading, in-class presentation, leading class discussion and write-up (2.5-3 pages).

In-class Exercises/Assignments

In-class Exercise 1: Introduction to Ideation—Based on the class presentation, the class as a whole comes up with different ideas for exploration in terms of health innovations. The purpose of this exercise is going to be more introduction to ideation and serve as practicing different ideation techniques.

Deliverable: Active participation in class. Self-assessment of student participation via Blackboard online survey. This assignment is worth 3% of the final grade.

In-class Exercise 2: Idea Tournament—An innovation tournament to generate multiple ideas and then in an engaging process to whittle down the ideas; select emerging themes while students naturally lean toward certain ideas.

To manifest this, the students will participate in an innovation tournament. The purpose of the exercise will be to harness the collective genius of the class and to find some challenges that they can spend the semester noodling with the ultimate goal of "pitching" their ideas to community stakeholders.

The process allows the class to generate multiple ideas and then in an engaging process to whittle down the ideas; themes will emerge, and students will naturally lean toward certain ideas.

Deliverable: Active participation in class. Self-assessment of student participation via Blackboard online survey. This assignment is worth 3% of the final grade.

In-class Exercise 3: Team formation—Based on an online survey in BlackBoard, teams will be assigned by the instructor. The survey is based on student education and work backgrounds. The purpose is to form a diverse team with varied backgrounds.

Deliverable: Active participation in class. Self-assessment of student participation via Blackboard online survey. This assignment is worth 3% of the final grade.

In-class Exercise 4: Pitches—Each team comes up with 3 ideas and pitches it to the class and instructor. The team then selects the best idea to move forward based on the class and instructor feedback.

Deliverable: Active participation in class. Individual assessment by instructor (3%) and team assessment (3%). This assignment is worth 6% of the final grade. More instructions to be provided in due time.

In-class Exercise 5: Progress and problems—Each team presents their work progress. Focus will be on solving problems and providing constructive feedback on next steps.

Deliverable: Active participation in class. Team assessment by instructor. There will be one grade for the team, thus all members will receive the same grade. Presentation in class and draft of the final paper. This assignment is worth 10% of the final grade.

Final Project

This assignment will be a report on an idea to change healthcare. Any ideas are welcome! More information about the assignment specifics will be provided later.

Write-ups

Rubrics

All written works in this class should be written in a 12-point font, double spaced, using one-inch margins. For citations, please use American Psychological Association (APA) style guidelines for citing materials used in your assignments.

Submit your write-ups in print at the beginning of class and submit an electronic copy in Blackboard. Files should be appropriately named using your last name, followed by description of the assignment (ex: STUDENTNAME_Hub#, or TEAMNAME_Project).

Write-up Submission Policy

All write-ups are due on predetermined dates. Please see the course weekly schedule.

Written assignments should use a 12-point font, double spaced, using one-inch margins. For citations, please use American Psychological Association (APA) style guidelines for citing materials used in your assignments.

Submit your assignments in print at the beginning of class and send an email copy to the instructor. Files should be appropriately named using your last name, followed by description of the assignment(ex: STUDENTNAME_Hub#, or TEAMNAME_Project).

For group assignments, only one submission is necessary. Please include names of all group members in the body of the submission.

Grading Timeline

Assignments will be graded and returned to students within a week.

Additional Policies

Late assignments

Assignments that are submitted late will lose 33% of the cumulative grade for that assignment on the first day that an assignment is late. After that, 66% of the cumulative grade for that assignment will be deducted for each day the assignment is late, up to two whole letter grades. Thus, you have 2 days past the due date to submit assignments.

Missed classes

Please note that you will lose points for missing classes and tardiness based on IYA policy. However, most importantly, absenteeism will impact your participation in class.

Academy Student Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by 1/3 of a grade (e.g., an A will be lowered to A-, an A- will be lowered to B+, etc.).

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

Use of technology in the classroom

Cell phones are not permitted to be used during class. Please turn off your phone, or if you must have it on, then please silence it so that there are no disruptions.

- No recording of any kind permitted.
- No computers are to be used during class, unless it is necessary for the course session.

Technological Proficiency and Hardware/Software Required

Students must provide their own laptop. The laptop specifications take into consideration that students will be creating, streaming, and downloading audio and video; communicating using video conferencing applications; and creating and storing large multimedia files.

	Apple	Windows PC
Laptop (Minimum standards)	<ul style="list-style-type: none">• 2.6 GHz dual-core Intel Core i5 or 2.0 GHz quad-core Intel Core i7• Minimum 13" display• 250 GB SSD or larger• 16 GB memory	<ul style="list-style-type: none">• Intel Core i5 or Intel Core i7• Minimum 14" display• 250 GB SSD or larger• 16 GB memory
Warranty	<ul style="list-style-type: none">• Manufacturer warranty or extended warranty coverage (AppleCare)	<ul style="list-style-type: none">• Manufacturer warranty or extended warranty coverage
Operating System	<ul style="list-style-type: none">• Mac OS X 10.13 or higher	<ul style="list-style-type: none">• Windows 7, 10 operating system or higher
Peripherals	<ul style="list-style-type: none">• HD webcam, speakers and microphone (Most newer laptops have built-in webcam, speakers and microphone)• Headset• Digital camera (Cameras on newer smartphones are acceptable)• External drive for cloud account for backup and storage	
Software	<ul style="list-style-type: none">• Adobe Creative Cloud (Photoshop, Illustrator, and InDesign)• Adobe Acrobat Reader• Microsoft Office Suite• Sophos Endpoint Security (antivirus)• Browser: Most recent version of Firefox, Chrome, Safari, or Internet Explorer	
Network	<ul style="list-style-type: none">• Cable modem, DSL, T1/T3 or higher	

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in Scampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in Scampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services – (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline – 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call

engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX – (213) 740-5086

equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support – (213) 740-2421

studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs – (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy – (213) 821-4710

studentaffairs.usc.edu/sssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC – (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency – UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety – UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

**ACAD 260/MEDS 250: Introduction to Healthcare Innovations
2023 SPRING**

Course Schedule: A Weekly Breakdown

(Deviations may be necessary)

Week	Date	Topic/Daily Activities	Deliverable
1	1/9	Introductions; Course overview; Intro. to health innovations	In-class Exercise #1; Self-assessment #1
	1/11	Intro. to health innovations (cont.)	
2	1/16	MLK (No class)	
	1/18	<i>Innovation hub #1</i>	Innovation hub #1: Paper & Discussions
3	1/23	COVID-19 as an example of health innovation	
	1/25	Genomics	
4	1/30	Innovative cases in genomics	Quiz #1
	2/1	<i>Idea Tournament</i>	In-class Exercise #2; Self-assessment #2
5	2/6	dHealth	In-class Exercise #3; Self-assessment #3
	2/8	Consumer health informatics	
6	2/13	Data Science	
	2/15	<i>Innovation hub #2</i>	Innovation hub #2: Paper & Discussions
7	2/20	President's Day (No class)	
	2/22	EHRs/PHRs	Quiz #2
8	2/27	Applications of EHRs	
	3/1	Surveillance methods for health	
9	3/6	Concept review	Jeopardy
	3/8	Exam: Midterm	Midterm
10	3/13	Spring Break (No class)	
	3/15	Spring Break (No class)	
11	3/20	Mobile health apps & mHealth	
	3/22	Mobile health apps & mHealth (cont.)	Exercise #4
12	3/27	Personalized Medicine & Precision Medicine	
	3/29	Robotics & Virtual Reality	Quiz #3
13	4/3	In-Progress Final Presentations	Exercise #5
	4/5	Biases and disparities	

ACAD 260/MEDS 250: Introduction to Healthcare Innovations

2023 SPRING
Course Schedule: A Weekly Breakdown
 (cont.)

Week	Date	Topic/Daily Activities	Deliverable
14	4/10	<i>Innovation hub #3</i>	Innovation hub #3: Paper & Discussions
	4/12	Tech. big four and success factors	
15	4/17	Failed innovations	
	4/19	Innovative idea: Mock	Quiz #4
16	4/24	<i>Health innovations pitch: Ideas to change health!</i>	Final Presentations
	4/26	<i>Concept review</i>	Jeopardy
17	5/1	Study day (No class)	No class
	TBD	Exam: Final	Final