Keck School of
Medicine of USC

USC Iovine and
Young Academy
*Arts, Technology and the Business
of Innovation*

ACAD261/MEDS261: Human Health and Technology
FALL 2022

Units: 4
Meeting Times: Mondays and Wednesdays,
                      12:00PM – 1:50 PM PST

Location: IYH 212
                      If necessary:
                      o   Online/Zoom (Synchronously)
                          https://usc.zoom.us/j/8185907899
                      o   Blackboard (Asynchronously)

Instructors: Dr. Armine Lulejian

Instructor contacts:

Email: alulejia@usc.edu
Phone: 818-590-7899 (please use discretion when calling/texting)
Office Hours: Mondays: 11:00am – 11:50am
               Or by appointment

Instructors will reply within 24 hours during the weekdays.

Course Description

 This course introduces major concepts of the biological, scientific and technical basis
of health and disease. The course will also provide a general introduction to the field
of consumer health informatics by introducing existing technologies, their application
to human health, and discussion of outcomes (both wanted and unintended). Some of
the topics examined in this class will include applications in mobile health (mHealth),
big data and surveillance methods, electronic health records, personal health records,
wearables, biomedical technologies in genetics and immunology, artificial
intelligence, virtual realities, augmented realities, telehealth and smart homes.
Cutting-edge examples such as cancer immunotherapy, consumer genetic testing, and
virtual reality to treat mental health disorders will be integrated to illustrate these

concepts.

Students will be provided with an understanding of the biological basis of specific health issues or diseases, and challenged to assess consumer health technologies as solutions. Students will also address existing needs, gaps and disparities of health technologies and suggest theoretically based practical improvements.

This class will use team-based learning (TBL) as the core teaching philosophy. Hence, students will participate in teams to complete course deliverables.

Learning Objectives and Outcomes

By the end of this course, students should be able to:
● Explain basic concepts about the impact of technology on individual health.
● Explain basic concepts about the impact of technology on population health.
● Describe existing consumer health applications and the health needs they serve.
● Identify shortcomings and possible unintended outcomes of health technologies.
● Assess consumer/human health needs and propose health applications to address existing gaps.

Prerequisite(s): None.
Co-Requisite(s): None.
Concurrent Enrollment: None.
Recommended Preparation: None.

Course Notes

● This is a seminar-style course. Active participation is not only encouraged, but mandatory in this class.
● Each topic will be introduced by providing descriptions of relevant technologies, human diseases/health issues, their impact and outcomes.
● Based on the TBL method, the course will include both individual and group assignments.
● Attendance is an integral part of your learning. Thus, coming to class and actively participating engages you in becoming a better 'consumer' of knowledge!
● Please read the assignments prior to coming class and be ready to engage in lively discussions with your classmates.
● Please complete all assignments by due date prior to class.

Teaching Philosophy

This course will utilize Team Based Learning (TBL). TBL is a didactic approach that encourages active learning by having learners engage in more hands-on applications of concepts through problem solving in team-based environments. TBL utilizes Readiness Assurance Tests (RAT) for both (1) Individual Readiness Assessment Tests (iRAT) and Team Readiness Assessment Test (tRAT).

iRAT
iRAT is the Individual Readiness Assessment Tests. iRATs will be completed at the beginning of each class. Students will receive immediate feedback on their performance on iRAT during the class session.

tRAT
tRAT is the Team Readiness Assessment Test (tRAT). tRATs will be completed after iRAT. Similar to tRAT, feedback will be provided in class.

Teams
Teams will be assigned by the instructor. Teams will include 3-4 members. Efforts will be made to assign students using different factors such as student major, minor, career interests, learning styles (if known), etc. Teams composed of members with different backgrounds tend to do best on all measures of team dynamics.

TBL places strict responsibilities for both students and instructors. First and foremost, the instructor is the facilitator for the course. Instructor responsibilities for this course in regard to TBL are as follows:

o   Prepare all materials for a session and make them available for students at least two weeks prior to instruction
o   Prepare iRAT and tRAT assessments and make them available for students during the session
o   Answers questions iRAT/tRAT
o   Prepare sets of problems for students to solve during the application during class
o   Facilitate class discussions and provide feedback
o   Grade all course assessments (iRATs, tRATs, final exam)

Student responsibilities for this course in regard to TBL are as follows:
o   Complete all assigned readings prior to coming to class.
o   Study lecture notes posted online prior to coming to class.
o   Work individually to study course materials.
o   Work in groups to master course materials.
o   Take iRAT at the beginning of class, whenever one is scheduled.
o   Be ready and take tRAT with a designated team member, whenever one is scheduled.

Technological Proficiency and Hardware/Software Required
No cell phones permitted during class.

Required Readings and Supplementary Materials
●   Selected chapters from texts, including supplemental materials from journals and scientific publications, and book chapters.
●   Available for download on Blackboard.

- Hulu subscription, or access to media to watch TV shows and documentaries.

Grading Breakdown

Assignment	% of Grade
CHI Application Critique I	5
CHI Application Critique II	10
CHI Application Critique III	15
Individual assessments (iRAT)	15
Team Assessments (tRAT)	10
Participation	5
In-class assignment	10
Midterm	15
Final	15
TOTAL	100%

Grading Scale
Course final grades will be determined using the following scale (based on percentage of total 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

Description and Assessment of ASSIGNMENTS

Health technology critiques (Individual Assignments)
Assignments 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 assignments via Blackboard at the beginning of class the day the assignment is due in Assignments, and send an email copy to the instructor. Files (Word docs) should be appropriately named using your last name, followed by

description of the assignment (ex: LASTNAME_ LASTNAME_Assignment#)

ASSIGNMENT I
Learning objectives: Evaluate a health application related to COVID19.
Percent of final grade: 5%

What to do:
Step 1: Description
- Select a health application: An ideal application for the purpose of this assignment is one that you have used or have some familiarity with.
- Describe the health issue
    - Explain body organs involved
    - Risk factors
    - Disease/condition prognosis
    - Disease/condition management
- Describe the application
    - Intended use, intended target, intended outcomes
- Describe the technological platform
    - Some examples include web, iPhone
    - Other important technological features (interactive, metrics based, etc.)
- Summarize the features of the application and its content.

Step 2: Evaluation
- Evaluate its appropriateness
- Evaluate its effectiveness
- Evaluate its strengths
- Evaluate its weaknesses

Final document
Your final assignment should be 2-3 double-spaced pages in length, and should include the following components:
- Name of the application and how to access it (please be clear in regard to access)
- Description of the health application

● Evaluation of the health application

ASSIGNMENT II

Learning objectives: Compare and evaluate a health application and *suggest alternatives.*
Percent of final grade: 10%

What to do:
Follow Steps 1 and 2 for ASSIGNMENT I (outlined above)

Step 3: Suggest alternatives
   ● Based on a SWOT analysis (Strengths, Weakness, Opportunities, and Threats), suggest alternatives
   ● Changes you'd make using Weaknesses and Opportunities as your guide

Final document
Your final assignment should be 3-4 double-spaced pages in length, and should include the following components:
   ● Name of the application and how to access it (please be clear in regard to access)
   ● Description of the health application
   ● Evaluation of the health application
   ● Description of the behavior change theory and how to improve the application

ASSIGNMENT III

Learning objectives: As a team, compare and evaluate a health application specific to a health topic/disease, and suggest alternatives.
Percent of final grade: 15%

   ▪ Since this assignment is due later in the course, you must demonstrate a thorough understanding of the health application concepts, theories, etc.

   ▪ One submission per team

   ▪ One grade per team

What to do:
Follow Steps 1 and 3 for ASSIGNMENT II (outlined above)

Final document
Your final assignment should be 5-6 double-spaced pages in length, and should include the following components:
● Name of the application and how to access it
● Description of the health issue including effected population (not more than a paragraph)
● Description of the health application

- Evaluation of the health application
- Description of the behavior change theory and how to use it to improve the application

Individual Assessments (iRAT)

iRAT is the Individual Readiness Assessment Tests.

Learning objectives: Assessment of student learning.
Percent of final grade: 15%
- iRATs must be completed in the beginning of class.
- There will be a total of 8 iRATs, 4 before the midterm and 4 after the midterm.
- Students will receive feedback on their performance on iRAT during the class session.
- Out of the 8 total iRATs, your lowest score will be dropped and thus only 7 best will count towards your final grade.

Team Assessments (tRAT)

tRAT is the Team Readiness Assessment Test (tRAT)

Learning objectives: Assessment of student learning while incorporating team learning and teaching as part of testing.
Percent of final grade: 10%

- tRATs must be completed during class as a team.
- tRATs will be completed with your group.
- Only one submission per team is required.
- Team members must work together to get the final answers and teach/learn each other based on their own iRAT scores.
- Feedback will be provided during class.

Class Participation

Learning objectives: Participation and engagement in class to foster active learning.
Percent of final grade: 5%

Learning is best when there is active participation. As such, when present in class, you are highly encouraged to participate.

Participation will be based on an assessment by the student and the instructor. For the self-assessment portion, you'll be asked to rate yourself on your own performance in the group, as well as the overall course. This will count 50% of the class participation. Overall, participation is 5% of your overall grade in the course.

Class Exercises

Learning objectives: Participation and engagement in class to work on problems relevant to topics of discussion
Percent of final grade: 10%

Overall, there will be 4-5 in class exercises where you'll be participating as a team to solve problems related to human health and disease. Overall, these exercises will count towards 10% of your overall grade in the course.

Midterm
Learning objectives: Assessment of student knowledge.
Percent of final grade: 15%

Midterm will include a combination of multiple choice and short answer questions. It will cover all class materials from beginning of class to midterm of instruction.

Final
Learning objectives: Assessment of student knowledge.
Percent of final grade: 15%

Final will be similar to the midterm, except that it will be a cumulative assessment that will include a combination of multiple choice and short answer questions. It will cover all class materials from after the midterm. The final exam is NOT cumulative.

Written Assignment Submission Policy
All written assignments are due on predetermined dates. Please see the course weekly schedule.

Assignments 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.

Please follow these guidelines for Module submissions (Modules 3, 6, and 9).

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: LASTNAME_CRITIQUE#).

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

Grading Timeline
Assessments will be graded during class. Individual assessments will be graded while the team is completing the team assessments.
Papers 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.

Attendance
Even though this class will be taught entirely online, your attendance and participation are important. Please arrive (i.e., be online on time), try to read the assignments beforehand and be prepared to participate in class discussions.

Missed classes
You may lose points for missing classes, and most importantly absenteeism will impact your participation in class. If you're going to miss a class, as a courtesy, you may choose to let me know. Please note IYA Academy Student Attendance Policy for more details.

IYA 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.

Synchronous session recording notice
In the event we have to be online, all class sessions will be recorded and made available online to all students enrolled in the class asynchronously.

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. Because the course is entirely online, you must have access to a working laptop and/or computer with functionality to join zoom.

USC technology rental program
We realize that attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program. To apply, please submit an application. The Student Basic Needs team will contact all applicants in early August and distribute equipment to eligible applicants prior to the start of the fall semester.

USC Technology Support Links

Zoom information for students

Blackboard help for students

Software available to USC Campus

Sharing of course materials outside of the learning environment
USC has a policy that prohibits sharing of any synchronous and asynchronous course content outside of the learning environment.

SCampus Section 11.12(B)
Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (See Section C.1 Class Notes Policy).

Netiquette

"Netiquette" or "internet etiquette," describes the recommended communication and behavior of online communication. We'll follow the guidelines recommend by USC Center for Excellence in Teaching as noted below.

Respect
▪ Listen actively and attentively.   ▪ Listen respectfully, without interrupting.   ▪ Comments that you make (asking for clarification, sharing critiques, expanding on a point, etc.) should reflect that you have paid attention to the speaker's comments.   ▪ Respect each other's views.   ▪ Challenge one another, but do so respectfully.

Constructiveness
▪ Criticize ideas, not individuals or groups.   ▪ Focus on ideas, not personalities.   ▪ Respect others' rights to hold opinions and beliefs that differ from your own.   ▪ If we wish to challenge something that has been said, we will challenge the idea or the practice referred to, not the individual sharing this idea or practice.   ▪ Refer to the text to support your ideas.   ▪ Support your statements. Use evidence and provide a rationale for your points.
▪ Ask questions when you do not understand; do not assume you know what others are thinking.   ▪ Ask for clarification if you are confused.   ▪ Ask clarifying questions if you do not understand a point raised.   ▪ Ask a question to explore areas of uncertainty or discomfort.

Constructiveness

- Try to see the issue from the other person's perspective before stating your opinion.

- Build on your classmates' comments. Acknowledge them, even if you disagree with them.

- Speak from your own experience, without generalizing.

- Use "I" statements to state your views. For example, "I notice that when I'm with my friends we pay attention differently" is more constructive than "When you're with friends you pay attention differently."

- Listen and also share. Share briefly from your own experiences when appropriate, rather than simply your positions.

- Be careful not to generalize about people.

- Avoid blame and speculation.

- Respond to what is said in class, without attributing motivation to the speaker (this can be very challenging).

Inclusivity

- Let other people speak. Once you are done speaking, let at least two other people talk before you speak again.

- Don't dominate the discussion.

- Consider anything that is said in class strictly confidential. We want to create an atmosphere for open, honest exchange.

- Maintain confidentiality (what is said in the classroom stays in the classroom.)

- Keep confidential any personal information that comes up in class.

- Know that it is okay to be emotional about issues and to name those emotions.

- It's OK to ask a question that you think may be unsophisticated or uninformed.

- Don't worry about impressing people.

Inclusivity

- Try not to silence yourself out of concern for what others will think about what you say.

- Do not remain silent. Make sure to contribute to the discussion.

- Step Up, Step Back. Be mindful of taking up much more time than others. On the same note, empower yourself to speak up when others are dominating the conversation.

- Everyone in the group should participate in the conversation.

- Allow everyone the chance to talk. If you have much to say, try to hold back a bit; if you are hesitant to speak, look for opportunities to contribute to the discussion.

- If you think something is missing from the conversation, don't wait for someone else to say it; say it yourself.

- Acknowledge points made by previous questioners.

- Support good ideas that other people have, even if they are different from your own.

- Take responsibility for the quality of the discussion.

- We will not demean, devalue, or "put down" people for their experiences, lack of experiences, or difference in interpretation of those experiences.

- Recognize and/or remember that we have different backgrounds.

- Our primary commitment is to learn from each other. We will listen to each other and not talk at each other. We acknowledge differences amongst us in backgrounds, skills, interests, and values. We realize that it is these very differences that will increase our awareness and understanding through this process.

Procedure

- State your name before making your statement, so other students can reference your statement properly. Especially important in the beginning of the class.

- If responding or reacting to a statement by another student, indicate by name the student whom you are referencing.

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/ssa
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.

ACAD261/MEDS261: Human Health and Technology
FALL 2022
Course Schedule: A Weekly Breakdown

Week	Date	Topic/Daily Activities	Assessments	Deliverable
1	8/22	Introductions; Course overview		
	8/24	Intro. to technologies in human health		
2	8/29	Intro. to Assignments; Intro. to TBL; Public health, pandemics and COVID19		
	8/31	Public health, pandemics and COVID19 (cont.)		
3	9/5	*Holiday - No Class*		
	9/7	Surveillance methods for health	iRAT1; tRAT1	
4	9/12	mHealth		
	9/14	mHealth apps		
5	9/19	Assignment #1		*Assignment #1; Presentations*
	9/21	Electronic Health Records (EHRs)	iRAT2; tRAT2	
6	9/26	Patient Health Records (PHRs)		
	9/28	Health education & health promotion, theories for health behavior modification		
7	10/3	Health communication, technology and COVID19		
	10/5	Assistive technologies for humans	iRAT3; tRAT3	
8	10/10	Review		In-class Jeopardy
	10/12	*Midterm*		Midterm
9	10/17	Assignment #2		Assignment #2; Presentations
	10/19	Techonology and covid vaccinations		
10	10/24	** Guest lecture/Online learning (TBD)		
	10/26	** Guest lecture/Online learning (TBD)		
11	10/31	Genetic consumer health technologies		
	11/2	Cases in genetic consumer health technologies	iRAT4; tRAT4	

ACAD261/MEDS261: Human Health and Technology
FALL 2022
Course Schedule: A Weekly Breakdown (cont.)

Week	Date	Topic/Daily Activities	Assessments	Deliverable
12	11/7	Telehealth/Telemedicine		
	11/9	Body computing devices and emerging technology	iRAT5; tRAT5	
13	11/14	Smart homes		
	11/16	Biases		
14	11/21	Examples of innovative applications		
	11/23	No class (Thanksgiving holiday)		
15	11/28	Assignment #3	iRAT6; tRAT6	Assignment #3; Presentations
	11/30	Review		In-class Jeopardy
16	12/5	Study day		
Finals	TBA	Exam: Final		