Data Science and Technology in Gerontology

Prefix + Number Section:
Class Periods: Online
Location: Online

Instructor:
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352-392-1816
Office Hours: by appointment

Course Description

This course introduces students to the state-of-the-art concepts in technology and data science and their applications in the healthcare domain with a focus on geriatric health outcomes. Topics of interest include: data science fundamentals, electronic health records, ethics in AI, precision medicine, technology adoption among older adults, ecological momentary assessment, digital phenotyping, the role of technology to alleviate loneliness among older adults, life-space mobility, and the use of technology to support the caregivers of Alzheimer patients. The course will provide a global education about these concepts without diving into technical details. At the completion of this course, students will be able to describe how technology and data science are employed in the healthcare domain in general and the geriatric domain in specific.

Course Pre-Requisites / Co-Requisites

Students must be registered students in good standing at the University of Florida. The course is open to individuals from all disciplines.

Course Objectives

At the end of the course, students will be able to:

- Define basic data science terminologies and describe the essential components of data science and the accompanied opportunities and challenges.
- Describe data science applications in the healthcare and geriatric domains.
- Describe the perception of older adults toward the adoption of technology and identify the technological features that can assist older adults in their daily life including mobility and cognition.
- Describe the digital phenotyping concept and how that can be used to advance healthcare research.

Course material

There is no textbook for this course. Each week, students will be required to read a set of materials posted on the course Canvas site. The weekly modules also include videos posted on the course Canvas site that each student will be required to watch. Readings will be taken from relevant journal articles, web sites, and other sources that will be freely accessible to all registered UF students.

Course Schedule

Week	Module/Activity
Week 1	Course Introduction
Week 2	Introduction To Data Science
Week 3	Electronic Health Records
Week 4	Predictive Analytics in Healthcare
Week 5	Predictive Analytics: Supervised Learning
Week 6	Predictive Analytics: Unsupervised Learning
Week 7	Data Visualization in Aging Research
Week 8	Ethics in AI
Week 9	Precision Medicine
Week 10	Older Adults' Adoption of Technology

Week 11	Ecological Momentary Assessment
Week 12	Digital Phenotyping
Week 13	The Role of Technology in Alleviating Loneliness and Isolation
Week 14	Dementia, Caregivers, and Technology
Week 15	Course Project Presentation

Course assignments

- Each week, students will be expected to submit a project or assignment related to that week's course topic.
- Each assignment will include two components: material reflection and a research question. Material reflection will include questions that can be answered from the provided material and the research question will require students to do some research and provide their findings or discuss a certain idea and provide their own perspectives.
- All assignments will be peer-reviewed. However, the final grade will be assigned by the instructor. Peer-review duties are part of the participation grade.
- Point values for each week's assignment will vary but will be stated with each assignment. Assignments will be posted on the course Canvas site. Some assignments will involve discussions among all students in the class; other assignments will be more individual.

Course exams

There will no traditional exams/quizzes in this course. Only assignments per topic (week). At the end of the course, students need to write a small review paper about a topic of their choice from a list of topics provided by the instructor.

Late Work Policy:

All assignments/projects must be submitted via the deadline provided on the course web site.
For assignments that require manual grading (e.g., research papers, projects), unless you have an approved excused absence, a 10% deduction will be applied for each week the assignment is late.

Evaluation of Grades

Assignment	Percentage of Final Grade
Homework Sets (14)	65%
Discussions (6)	15%
Review Paper	20%
	100%

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 – 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 – 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Artificial Intelligence (AI) Use Policy
For this graduate level course, GMS6808 Data Science Technology in Gerontology, it is imperative that all work submitted is your own. The use of AI tools, including but not limited to, generative language models, code generation tools, and automated essay writer, is strictly prohibited for all assignments. Any work found to have been produced with the aid of such AI tools will result in a zero for that assignment. This policy is in place to ensure the integrity of your learning experience and to respect the academic standards of this course. If you have any questions about this policy or need assistance with your work, please do not hesitate to reach out to your instructor.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.