IDS6938: Introduction to Digital Transformations and Digital Twins

School of Modeling, Simulation, and Training
College of Graduate Studies
Number of Credit Hours: 3

Course Syllabus

Instructor:	Dr. Soheil Sabri	Term:	Summer 2024 (Term C)
Office Location:	3100 Technology Parkway, Partnership II, Room#239	Class Meeting Days:	Thursday
Office Hours:	Wednesdays 15:00 – 17:00 (with appointment only)	Class Meeting Time:	5:30 – 8:20 pm
Phone:	(858) 306-2796	Class Location:	Partnership 3 Room 233 and online
Email:	soheil.sabri@ucf.edu	Course Modality:	In-person +online (Zoom)

GTA(s):	TBD	Email:	TBD

Course Description

This course overviews Digital Twins, their origins, and their essential characteristics. The course will also highlight the enabling technologies and trends facilitating the rapid growth of Digital Twin adoption in different industries. The students will gain interdisciplinary knowledge and skills to analyze and understand the business processes, and their gaps, and identify Digital Twin solutions that can be aligned with a domain problem. Furthermore, different Digital Twin developing approaches are discussed, including physical-based, data-driven, and hybrid methods. Given the significance of governance, ethical, and other non-functional aspects of Digital Twins, in the end, the course highlights these topics to prepare the students for addressing the current and future challenges in the rapidly evolving digital infrastructure developments.

In this course, we cover core Digital Twin components such as real-time data types, analytics, modeling, simulation, and visualization. We also focus on business process mapping and gap analysis for adopting Digital Twins in different domains, such as manufacturing, healthcare, smart cities, disaster management, and supply chains. There are significant challenges in digital transformation and adoption of emerging technologies (e.g. IoT, AI, edge computing) in these

industries, both theoretically and practically. Despite the growing demand from the industry, there is a significant shortage in the Digital Twin expertise for efficiently designing, developing, implementing, and maintaining these technologies in organizations.

Throughout the course, students will engage in various learning activities, such as readings, discussions, guest speakers, hands-on exercises, and team-based projects. Feedback and assessments will be provided to guide their progress and reinforce their learning. The course format will be hands-on, promoting active learning and collaboration. The course embraces a flipped learning approach, combining in-class activities with pre-class readings and online resources. By the end of the course, students will have a comprehensive understanding of the fundamentals of Digital Twins. They will have developed critical thinking skills in business process mapping and gap analysis and acquired practical insights that can be applied in diverse domains. This course empowers students to become self-directed learners and capable of making informed decisions.

Students will engage in both theoretical and practical use case analysis and problem-solving activities. Evaluation will be based on **four assignments (32%)**, **five discussions (20%)**, **five quizzes (10%)**, **a final team-based project (28%) and a final presentation (10%)**.

Course Purpose

The overarching purpose of this course is to equip students with a thorough understanding of the meaning of Digital Twin terminologies and have a basic comprehension of their classifications, principles, methods, and structures necessary to apply those concepts to solve real-world problems. Digital Twins are being adopted in various domains, including manufacturing, healthcare, disaster management, urban planning, and beyond. This course builds the capacity to analyze and solve domain-specific problems using highly customized interdisciplinary knowledge and skills.

By integrating theoretical foundations with hands-on training to adopt steps, techniques, and methods for business process analysis and gap identification experiences, the course aims to prepare students not just as theoreticians but as practitioners capable of contributing to their fields of interest. Ultimately, students completing this course will emerge with strong interdisciplinary and foundational knowledge and applied skills, positioning them as valuable contributors to industries and disciplines where Digital Twin plays a crucial role.

Students will gain:

- **Critical Problem-Solving Skills**: The ability to dissect complex, multidimensional problems related to the design, development, and implementation of Digital Twins, and devise effective solutions.

- **Theoretical Understanding and Practical Application**: Balancing theoretical understanding with practical application to ensure students can contribute immediately and effectively in their chosen fields.

- **Interdisciplinary Knowledge**: Digital Twin design and development is inherently interdisciplinary, students will apply knowledge from this course in various domains, fostering innovation and efficiency.

- **Career Readiness**: Proficiency in Digital Twin opens doors to careers in multi-disciplinary areas including real-time modeling & simulation, business intelligence and situational awareness, digital engineering, and more.

This course matters because it provides the essential knowledge, skills, and attitudes necessary to tackle some of the most pressing and complex problems related to the design, development, and implementation of a road map for the adoption of Digital Twins faced by various industries today. By understanding and applying the principles of Digital Twins, students can drive improvements, innovation, and efficiency within their organizations and society at large.

Enrollment Requirements

Prerequisites:

- Basic understanding of Information Technology, and business process modeling methods,
- Fundamental knowledge of database management, and an introductory understanding of modeling and simulation concepts.

Please note that fulfilling the prerequisites is beneficial, but not essential as the course will provide introductory concepts to ensure students have the necessary knowledge and skills to engage in the course material effectively.

Course Materials and Resources

Required Materials/Resources

- S. Sabri, N. Lee, D. Isaacs and K. Alexandridis, Eds, Digital Twin Fundamentals and Applications. Springer Nature, Forthcoming. (Hard copy will be provided to the students)
- N. Crespi, A. T. Drobot, and R. Minerva, “The Digital Twin: What and Why?,” in The Digital Twin, N. Crespi, A. T. Drobot, and R. Minerva, Eds., Cham: Springer International Publishing, 2023, pp. 3–20. doi: 10.1007/978-3-031-21343-4_1.
- M. Grieves, “Digital Twins: Past, Present, and Future,” The Digital Twin. Springer International Publishing, Cham, pp. 97–121, 2023. doi: 10.1007/978-3-031-21343-4_4.
- G. Chaudhary, M. Khari, and M. Elhoseny, Digital Twin Technology. CRC Press, 2021. [Online]. Available: https://books.google.com/books?id=5AxIEAAAQBAJ
- Digital Twin Consortium, “Components of Digital Twins Reference Architecture,” Digital Twin Consortium. [Online]. Available: https://www.digitaltwinconsortium.org/

Optional Materials/Resources

- S. Sabri, Y. Chen, D. Lim, A. Rajabifard, and Y. Zhang, “An Innovative Tool for Optimised Development Envelope Control (dec) Analysis and Scenario Building in Digital Twin,” ISPRS - Int. Arch. Photogramm. Remote Sens. Spat. Inf. Sci., vol. 48W4, pp. 117–123, Oct. 2022, doi: 10.5194/isprs-archives-XLVIII-4-W4-2022-117-2022.

- K. Alexandridis, S. Zhang, M. Koohikamali, S. Sabri, and E. Ozkaya, “Designing and Implementing a Robust, Modular and Interoperable Digital Twin Smart City Framework for Critical Water Spatial Infrastructure,” in Proceedings of the 2023 Hawaii International

Conference on System Sciences (HICSS 2023), 2023. [Online]. Available: https://hicss.hawaii.edu/

- S. Sabri, K. Alexandridis, M. Koohikamali, S. Zhang, and E. Ozkaya, “Designing a Spatially-explicit Urban Digital Twin Framework for Smart Water Infrastructure and Flood Management,” in Proceedings of the 3rd Annual IEEE International Conference on Digital Twins and Parallel Intelligence (IEEE DTPI 2023), Orlando, FL: IEEE, Aug. 2023. [Online]. Available: https://2023.ieee-dtpi.org/

- A. Tzachor, S. Sabri, C. E. Richards, A. Rajabifard, and M. Acuto, “Potential and limitations of digital twins to achieve the Sustainable Development Goals,” Nat. Sustain., vol. 5, no. 10, Art. no. 10, Oct. 2022, doi: 10.1038/s41893-022-00923-7.

- A list of recommended readings, including scholarly articles, research papers, or book chapters, will be provided throughout the course. These materials will enhance your understanding of the subject matter and support your learning.

Guest Speakers: Invited Digital Twin experts in different domains will deliver a talk to highlight real-world applications and challenges in the Digital Twin design, development, and implementation.

Online Materials:

The course will utilize Webcourses@UCF as the primary online platform for accessing course materials, submitting assignments, participating in discussions, and accessing supplementary resources. Please ensure you have regular access to the internet and familiarity with the platform. If you encounter any challenges accessing online materials or have difficulty obtaining the required resources, please reach out to the instructor for assistance. The course materials have been carefully selected to support your progress in achieving the student learning outcomes and to provide a comprehensive learning experience.

Student Learning Outcomes

The course is designed to provide a comprehensive foundation in the design, development, and implementation of road map for Digital Twins’ adoption in organizations, integrating conceptual frameworks with practical application, and fostering skill development in interdisciplinary collaboration, critical thinking, and application of available tools for context analysis. The course will support the students in understanding how the knowledge and skills of business process analysis will be useful to them in identifying the appropriate Digital Twin solutions. As such, the Student Learning Outcomes (SLOs) will focus on the context and potential applications of Digital Twin frameworks and business process analysis skills. It will also connect learning in various contexts in real-world cases.
By the end of this course students will be able to:

SLO 1: Define the basic characteristics and principles of Digital Twins.
Measurement: This outcome will be measured through the completion and evaluation of assignments, quizzes (formative), and discussion forums (diagnostic). The assignments will present students with use cases requiring the application of the Digital Twin concepts, components, and their maturity levels. The quizzes will test students' understanding and ability to

analyze these concepts in both theoretical and applied contexts. The discussion forums will create a discussion in Canvas to gauge the students' understanding of the distinction between Digital Twins with other digital technologies.

SLO 2: Evaluate the business processes and identify the gaps to be addressed by Digital Twins.
Measurement: Students' proficiency will be measured by evaluating the use case scenario assignments they complete and quizzes (formative), and discussions (diagnostic). The assignments will require them to develop business process model notation (BPMN) and conduct gap analysis methods to identify the potential gaps to be addressed by Digital Twin Solutions. The assignments will be assessed on criteria such as comprehensiveness, efficiency, alignment with the goals, and creativity in identifying the gaps. The quizzes will test students' developing knowledge and skills of the topic.

SLO 3: Formulate a complete and logical road map for the design, development, and implementation of Digital Twin.
Measurement: This outcome will be assessed through written assignment reports, quizzes (formative), a final project report, and a final presentation (summative). Students will be tasked with analyzing use cases, demonstrating the steps taken, explaining their proposed Digital Twin solutions with metrics to measure their performance, and discussing their scalability, advantages, and constraints. Evaluation criteria will include comprehensiveness of steps, depth of analysis, justification of opinions, and ability to propose improvements or alternatives.

SLO 4: Effectively communicate different Digital Twin types and their components to a varied audience.
Measurement: Measurement will occur through the evaluation of the assignment reports (formative), final project, and presentation (summative), and group discussions (diagnostic). Ratings on clarity, coherence, and engagement will indicate achievement in this area.

SLO 5: Become self-directed learners who can independently explore and understand the evolution of Digital Twins.
Measurement: This will be measured through the assignments (formative), final report (summative), and discussions (diagnostic). Assessment will consider the depth and breadth of the topic explored, evidence of independent learning, and the ability to apply new knowledge to solve an advanced problem.

Course Activities

Quizzes: Quizzes are strategically positioned within each Module on Canvas, presenting challenges centered around business process mapping, gap analysis, or the prioritization of Digital Twin components within the proposed architecture. These quizzes provide opportunities for students to enhance their skills, critical thinking, and understanding as they engage with real-world problems. Initially, students may not possess all the skills needed to tackle these challenges, but they will progressively develop them through active participation. The quiz format includes a series of scaffolded questions, guiding students through each step of problem-solving and providing immediate feedback at every juncture.

Group Discussion: Discussions are designed to understand the depth of student's learning and understanding of basic Digital Twin concepts. The discussion will be initiated in certain weeks during each module with an open-ended question. The goal is to build knowledge and develop critical and creative thinking skills. Discussions enable students to broaden and deepen their

comprehension by dispelling misconceptions while also elaborating on and expanding their foundational knowledge of Digital Twins' components and enabling technologies.

Assignments: Assignments are designed to reinforce the concepts and skills introduced in lectures and readings, providing students with practical experience in the design, development, and implementation road map for Digital Twins. These involve business process maps, gap analysis tasks, and Digital Twin framework development. Assignments are intended to be challenging but achievable, prompting students to apply theoretical knowledge to practical scenarios.

Final Project: The final project is a team-based delivery task, designed to be a student-led group assessment task. Students collaborate with their peers to analyze the use cases, identify technological gaps, make decisions, and solve the Digital Twin problem. Students' outputs are an oral presentation and a final report. Irrespective of the output, students must work together as a team towards a common goal and coordinate their roles and responsibilities throughout the process. This process creates an authentic professional environment and helps students build their work-related skills. It is planned to incentivize regular team check-ins and use authentic communication channels (e.g., Microsoft Teams, Slack, etc.).

Final Presentation: The team-based final projects are presented in the last session. The industry representatives are invited to provide feedback (no marking). The presentations take 20 minutes (15 mins presentation + 5 mins question and answer). All team members are assessed based on their communication skills, time management, critical thinking, and depth of knowledge on the subject matter.

Extra Credit: This course does not offer extra credit. The quizzes, assignments, and final projects and presentations are designed to comprehensively cover and assess the knowledge and skills integral to the fundamentals of the Digital Twins. Students are encouraged to focus on these components to maximize their learning and performance.

Resources or Actions:

- **Regular Internet Access**: Students are required to have regular access to the internet. Much of the course content, including readings, assignments, and resources, will be provided or submitted online. Regular access ensures that students can stay up-to-date with course materials and announcements.

- **Weekly Engagement**: Students should plan to log into the course at least twice each week. This will allow them to keep up with the lectures, assignments, and discussions, fostering a continuous learning process.

- **Assignments**: To achieve the learning outcomes of this course, students should anticipate dedicating at least five hours per week outside of class to completing readings, working on assignments, and engaging with supplementary materials.

- **Software Tools**: Assignments will require the use of specific software tools relevant to BPMN development (e.g. LucidChart). Students will be provided with information on how to access these tools and are expected to become proficient in their use as part of completing coursework.

Collaboration and Communication: Collaboration on assignments is encouraged, promoting a deeper understanding through discussion and shared problem-solving. However, students must ensure that any collaborative work adheres to the guidelines for academic integrity specified in the syllabus. Effective communication, both with peers and instructors, is crucial. Students are encouraged to participate actively in discussions and seek feedback on their work to enhance their learning experience.

These activities and requirements are designed to support students in achieving the course objectives, equipping them with the knowledge, skills, attitudes, and abilities to excel in the field of Digital Twin.

Activity Submissions

Assignment Submission

Webcourses@UCF Submission:

- Most assignments will be submitted through the course's Webcourses@UCF platform.
- Instructions for submitting assignments online will be provided for each specific assignment on the corresponding Webcourses page.
- Make sure to adhere to the given submission deadlines and any additional formatting requirements specified in the assignment instructions.

Assignment Formatting Guidelines:

- For written assignments, please follow the specified formatting guidelines, which may include font size, margins, line spacing, and citation style.
- Ensure that your assignments are legible, well-organized, and properly labeled.
- If electronic submission is required, please submit the files in compatible formats (e.g., PDF, Word) as instructed.

Note: It is essential to carefully review the assignment instructions for each specific task to understand the submission method, requirements, and any additional guidelines provided. Failure to follow the submission instructions may result in point deductions or assignment rejection.

Assessment and Grading Procedures

Grading Methods

In this course, your achievement of the student learning outcomes will be evaluated using a comprehensive grading system. The following elements will be considered in determining your final grade:

- Quizzes
- Discussions
- Assignments
- Final Project
- Final Presentation

Evaluation will be based on four assignments (32%), five discussions (20%), five quizzes (10%), a final project (28%), and a final presentation (10%). The table below shows the weight distribution for each assessment method.

Assignment	Unit Percentage of Grade	Total Percentage of Grade

Assignments 1 - 4	8%	4 X 8% = 32%
Discussions 1-5	4%	5 X 4% = 20%
Quizzes 1 - 5	2%	5 X 2% = 10%
Final Project	28%	1 X 28% = 28%
Final Presentation	10%	1 X 10% = 10%
Total		100%

Below table shows the range for each letter grade and uses a plus/minus system.

Letter Grade	Points
A	93 – 100 points
A-	90 – 92 points
B+	87 – 89 points
B	83 – 86 points
B-	80 – 82 points
C+	77 – 79 points
C	73 – 76 points
C-	70 – 72 points
D+	67 – 69 points
D	63 – 66 points
D-	60 – 62 points
F	59 and below

Consult the latest Graduate catalog for regulations and procedures regarding grading such as Incomplete grades, and grade changes.

Attendance/Participation
Please refer to the course expectations for the attendance policy.

Grade Dissemination
To ensure compliance with student privacy regulations, grades will not be released to third parties through public posting or sharing personal identifiers. Graded assignments will be returned to you individually through Webcourses@UCF. All grades will also be recorded in Webcourses@UCF for your reference and adherence to data security standards.

Course Schedule
Below weekly content is structured to ensure a logical flow from fundamental concepts to more advanced topics that allows students to apply what they've learned.

Module	Week	Topic	Activities & Assignments
M1: Fundamentals of Digital Twins	Week 1: Introduction to Digital Twins	Overview of Digital Twins Historical context and evolution; Digital Twins maturity models; Significance in digital transformation and modern industries	Discussion 1: Read Crespi et. al, (2023) and discuss the “What and Why?” of Digital Twin questions

	Week 2: Digital Twin Frameworks	Introduction to different; Digital Twin frameworks; Industry-specific applications; Problem identification and digital transformation roadmap; Case studies (Guest speaker)	Task: Identify the team members (3-4) for the final project Task: review the use cases and identify a potential domain area for the final project Quiz 1
	Week 3: Digital Twin Enabling Technologies	Sensor technologies; Internet of Things (IoT); Cloud computing and edge computing; Machine learning and Artificial Intelligence	Assignment 1: Explain the general components of a Digital Twin System Architecture. Draw a schematic diagram and explain how each component is connected to others.
M2: Digital Twin Development Approaches	Week 4: Physical-based Approaches	Principles and applications; Examples and case studies (Guest speaker)	Discussion 2: What are other examples of physical-based approaches? How do they change their associated business processes?
	Week 5: Data-driven Methods	Data acquisition, preprocessing, and analytics; Case studies illustrating data-driven approaches (Guest speaker)	Quiz 2
	Week 6: Hybrid Approaches	Integrating physical and data-driven elements; Advantages and challenges	Assignment 2: Develop a BPMN for a use case discussed in week 4 and explain which DT developing approach is the best solution.
M3: Digital Twin Data Types and Analytics	Week 7: Digital Twin Data Types and Management	Geometric, behavioral data; Historical, Synthetic, and real-time data; Data acquisition, storage, and processing	Discussion 3: What is data interoperability? Explain it in the context of a case and elaborate on potential challenges. Quiz 3

	Week 8: Data Analytics and Insights	Descriptive analysis; Diagnostic analysis; Predictive analysis; Prescriptive analysis; Data-driven decision-making	Assignment 3: Analyze a dataset provided to you and explain what type of analysis you conducted and develop a gap analysis report to improve the method for a Digital Twin platform
M4: Critical Functional and Non-functional Components	Week 9: Real-time Modeling and Simulation	Dynamic modeling; Simulation techniques; Feedback loops and control systems	Discussion 4: Discuss the technical requirements of real-time agent-based simulation for passenger movement at an airport. Draw a BPMN and explain the technical capability requirements. Quiz 4
	Week 10: Visualization Techniques	3D visualization; Augmented Reality (AR) and Virtual Reality (VR); User interfaces for Digital Twins	Assignment 4: Create a multi-criteria evaluation matrix to select the most appropriate visualization for real-time passenger movement at the airport. Introduce a minimum of 3 visualization methods and elaborate on their advantages and disadvantages
	Week 11: Preparing for Challenges	Anticipating challenges in digital twin implementation; Scalability, security, and integration with legacy systems; Metrics and performance measurement in the success of Digital Twins; Ethical considerations; Strategies for overcoming challenges	Discussion 5: Discuss the trustworthiness and security challenges in Digital Twins in the context of your domain of expertise. What is your solution to address those aspects? Quiz 5
M5: Final Assessment and Evaluation	Week 12: Final Presentation and Report Submission		Presenting the team-based final project. 15 mins presentation + 5 mins Q&A. All team members need to present as the markings are individual

Policy Statements

Academic Integrity

Students should familiarize themselves with UCF's Rules of Conduct at <https://scai.sdes.ucf.edu/student-rules-of-conduct/>. According to Section 1, "Academic Misconduct," students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to other students through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination or course assignments.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student's own academic work.
5. Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping other students violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.
9. **Use of AI only with acknowledgement**. Students are allowed to use Artificial Intelligence (AI) tools on assignments if the usage is properly documented and credited. Also, students must Not feed the assignment or part of it to an AI tool and simply use the answer produced without any significant and meaningful contribution from the student that demonstrate what they learned in solving the assignment.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, *The Golden Rule* <https://goldenrule.sdes.ucf.edu/>. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Unauthorized Use of Websites and Internet Resources

There are many websites claiming to offer study aids to students, but in using such websites, students could find themselves in violation of academic conduct guidelines. These websites include (but are not limited to) Quizlet, Course Hero, Chegg Study, and Clutch Prep. UCF does not endorse the use of these products in an unethical manner, which could lead to a violation of our University's Rules of Conduct. They encourage students to upload course materials, such as test questions, individual assignments, and examples of graded material. Such materials are the intellectual property of instructors, the university, or publishers and may not be distributed without prior authorization. Students who engage in such activity could be found in violation of academic conduct standards and could face course and/or University penalties. Please let me know if you are uncertain about the use of a website so I can determine its legitimacy.

Unauthorized Distribution of Class Notes

Third parties may attempt to connect with you to sell your notes and other course information from this class. Distributing course materials to a third party without instructor authorization is a violation of our University's Rules of Conduct. Please be aware that such class materials that may have already been given to such third parties may contain errors, which could affect your performance or grade. Recommendations for success in this course include coming to class on a routine basis, visiting me during my office hours, connecting with the Teaching Assistant (TA), and making use of the Student Academic Resource Center (SARC), the University Writing Center (UWC), the Math Lab, etc. If a third party should contact you regarding such an offer, I would appreciate your bringing this to my attention. We all play a part in creating a course climate of integrity.

In-Class Recording

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), academic exercises involving student participation, test or examination administrations, field trips, private conversations between students in the class or between a student and the faculty member, and invited guest speakers is prohibited. Recordings may not be used as a substitute for class participation and class attendance, and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct as described in the Golden Rule.

Course Accessibility Statement

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <http://sas.sdes.ucf.edu/> (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

Campus Safety Statement
Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
- Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version at <https://centralflorida-prod.modolabs.net/student/safety/index>.
- Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.
- If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see <https://ehs.ucf.edu/automated-external-defibrillator-aed-locations>.
- To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <https://my.ucf.edu> and logging in. Click on "Student Self Service" located on the left side of the screen in the toolbar, scroll down to the blue "Personal Information" heading on the Student Center screen, click on "UCF Alert", fill out the information, including e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
- Students with special needs related to emergency situations should speak with their instructors outside of class.
- To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video (<https://youtu.be/NIKYajEx4pk>).

Deployed Active Duty Military Students
Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

Make-Up Assignments for Authorized University Events or Co-curricular Activities
Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be applied. For more information, see the UCF policy at <https://policies.ucf.edu/documents/4-401.pdf>

Religious Observances
Students must notify their instructor in advance if they intend to miss class for a religious observance. For more information, see the UCF policy at <http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdf>.

Title IX Policy
Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at https://letsbeclear.ucf.edu and http://cares.sdes.ucf.edu/.