The UNIVERSITY of OKLAHOMA
GALLOGLY COLLEGE OF ENGINEERING
SCHOOL OF COMPUTER SCIENCE

1.0 Course Syllabus

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1. This Document Details the Course Content
2. Cells with a red triangle contain a note; hover to read it.

1	**Course Code**	CS4273							
2	**Course Name**	Capstone Design Project							
3	**Version**	1							
4	**Name(s) of Academic Staff**	**Instructor**	Mansoor Abdulhak	**Email**	m.hak@ou.edu				
		Teaching Assistant	Arezoumand, Amirhossein	**Email**	amirhossein.arezoumand@ou.edu				
		Teaching Assistant		**Email**					
5	**Semester**	Fall							
6	**Year**	2024							
7	**Program Level**	BS							
8	**Prerequisite Course**	None							

		Delivery Methods		**Hour per week**		**Implementation**	**Date**	**Time**	**Location**
9	**Contact Hours**	In-Person (Student Center Learning) Activities	Lecture	3	units	(3 hour(s) per week)	MWF	12:00 pm - 12:50 pm	Gallogly Hall 127
			Tutorial	0	units	(0 hour(s) per week)			
			Laboratory	0	units	(0 hour(s) per week)			
			Supervision	0	units	(0 hour(s) per week)			
			Online Learning	0	units	(0 hour(s) per week)			
			Out Class	6	units	(6 hour(s) per week)			
			Students Hour	2	units	(1 hour(s) per week)	MW	09:30 am - 10:30 am	Devan Energy Hall 234 or Virtually
			Final Exam	0	units	(2 hour(s) per Sem)	R Dec 12	1:30 pm - 3:30 pm	Gallogly Hall 127

10	**Course Synopsis**	This course offers you an in-depth exploration of the principles and practices of software engineering. With a strong emphasis on hands-on learning, you will delve into the entire software development lifecycle, mastering essential skills. Topics include methods and tools for software specification, design, and documentation, software development processes, professional ethics, responsibility, and liability in the software lifecycle. You will learn about current software engineering practices and tools, and complete team projects in the process. Interaction with project sponsors from industry, government, and academia will provide realistic experience with software engineering from a professional perspective. As part of the course outcome, you will also hone your abilities in both oral and written communication.

11	**ABET Student Outcomes**	By the end of semester, students should be able to:	
		ASO 3	Communicate effectively in a variety of professional contexts.
		ASO 4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
		ASO 5	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
		Not Applicable	N/A
		Not Applicable	N/A
		Not Applicable	N/A

		Methods	**Weighting**	**ABET Student Outcomes**				**Letter Grades**	
12	**Assessment Methods**	Presentations	10%	ASO 3				≥ 90	A
		Sprints (PeerReview) *4	80%		ASO 5			80-89	B
		Homework	0%					70-79	C
		Project	0%					60-69	D
		Assignments	0%					< 60	F
		Final Exam (Poster)	10%		ASO 4				

13	**Learning References**	**Total**	**100%**
		1	David Kung. (2024). Software Engineering, 2nd Edition. McGraw Hill.
		2	Sethi, R. (2022). Software Engineering. Cambridge University Press.
		3	Sommerville, I. (2015). Software Engineering. Addison-Wesley.
		4	Pressman, R. S., & Maxim, B. R. (2019). Software Engineering: A Practitioner's Approach.

Notes: Instructor reserve the right to modify or update the content on this platform at any time without prior notice. Users are encouraged to check for updates regularly. Your continued use of the platform after changes are made constitutes acceptance of those changes.

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1. This Document Details the:
a) **Week**: Indicates the number of the week., b) **Chapter**: The chapter from the required textbook., c) **Syllabus**: The specific topic to be discussed.,
d) **Class Activity**: We have 3 sessions each week; the number indicates the session (e.g., 1 indicates activities during the 1st session).
e) **SWEBOK v4.0**: Refers to the Software Engineering Body of Knowledge, version 4.0, which outlines the knowledge areas covered this week.,
f) **Assessment Method**: The type of assessment (e.g., quiz, assignment) assigned for this week, g) **Total Marks**: The weight or points assigned to this week's activities
2. Cells with a red triangle contain a note; hover to read it.

Week	Chapter/Topic	Syllabus	Class Activity	SWEBOK v4.0	Assessment Method	Total Marks
1	Domain Identification	1.1 Introduction & Welcome 1.2 Discuss the Master Document 1.3 Meet Mentors and get Project 2.1 Understand Domain 2.2 Brainstorm with group 3.1 Presentation	1 KO (Mansoor: Teamwork) 2 Group Meeting with Mentors 3 Presenting 3 min/group (Ticket 1)	Software Engineering Professional Practice (KA)	Ticket 1 Group Presentation Evaluation	5
2	Technology Identification	1.1 Brainstorm the technologies 1.2 Search for recourses for help 2.2 Practice development 3.1 Presentation	1 Schettler Brian, (Monday 26th) 2 Kanban Board 2.1 Identify TWO alternatives (Open Source) 2.2 Develop ONE Feature sample code (using 3 different languages) 3 Football week (Class is Canceled)	Software Engineering Management (KA)	Ticket 2 Group Presentation Evaluation	5
3	Sprint 1 Design & Develop	1.1 Labor Day Holiday 2.1 Replacement Class 2.2 Brainstorm the user stories & Assign the tickets 3 Implement the tickets	1 Holiday 2 Group Meeting with Mentors 2.1 Presenting 3 min/group (Ticket 2) 2.2 Writing Requirements: Stories and Features 2.3 Writing User-Experience Scenarios 3 Clarifying User Goals	Software Requirements (KA) Software Architecture (KA)	Ticket 3-S1 360 Feedback (5%) Mentor Evaluation (5%) Instructor Evaluation (10%)	20
4	Sprint 1 Develop & Test	1 Implement the tickets 2 Review and Retrospective	1 Group Meeting 2 Discuss the challenges 3 Review Implementation	Software Design (KA) Software Construction (KA)		
5	Sprint 1 Test & Deploy	1 Implement the tickets 2 Review and Retrospective 3 Update the TRACKING PROGRESS	1 Discuss the challenges 2 Internal Code Review 3 Submit Ticket 3-S1	Software Testing (KA) Software Configuration Management (KA)		
6	Sprint 2 Design & Develop	1 Brainstorm the user stories 2 Assign the tickets 3 Implement the tickets	1 Group Meeting with Mentors 1.1 Writing Requirements: Stories and Features 1.2 Writing User-Experience Scenarios 1.3 Clarifying User Goals	Software Requirements (KA) Software Architecture (KA)	Ticket 3-S2 360 Feedback (5%) Mentor Evaluation (5%) Instructor Evaluation (10%)	20
7	Sprint 2 Develop & Test	1 Implement the tickets 2 Review and Retrospective	1 Group Meeting 2 Discuss the challenges 3 Review Implementation	Software Design (KA) Software Construction (KA)		
8	Sprint 2 Test & Deploy	1 Implement the tickets 2 Review and Retrospective 3 Update the TRACKING PROGRESS	1 Discuss the challenges 2 Internal Code Review 3 Submit Ticket 3	Software Testing (KA) Software Configuration Management (KA)		
9		PEER REVIEW SESSION	Invite mentors to review	Software Quality (KA) Software Engineering Operations (KA)		
10	Sprint 3 Design & Develop	1 Brainstorm the user stories 2 Assign the tickets 3 Implement the tickets	1 Group Meeting with Mentors 1.1 Writing Requirements: Stories and Features 1.2 Writing User-Experience Scenarios 1.3 Clarifying User Goals	Software Requirements (KA) Software Architecture (KA)	Ticket 3-S3 360 Feedback (5%) Mentor Evaluation (5%) Instructor Evaluation (10%)	20
11	Sprint 3 Develop & Test	1 Implement the tickets 2 Review and Retrospective	1 Group Meeting 2 Discuss the challenges 3 Review Implementation	Software Design (KA) Software Construction (KA)		
12	Sprint 3 Test & Deploy	1 Implement the tickets 2 Review and Retrospective 3 Update the TRACKING PROGRESS	1 Discuss the challenges 2 Internal Code Review 3 Submit Ticket 3	Software Testing (KA) Software Configuration Management (KA)		20
13	Sprint 4 Design & Develop	1 Brainstorm the user stories 2 Assign the tickets 3 Implement the tickets	1 Group Meeting with Mentors 1.1 Writing Requirements: Stories and Features 1.2 Writing User-Experience Scenarios 1.3 Clarifying User Goals	Software Requirements (KA) Software Architecture (KA)	Ticket 3-S4 360 Feedback (5%) Mentor Evaluation (5%) Instructor Evaluation (10%)	
14	Sprint 4 Develop & Test	1 Implement the tickets 2 Review and Retrospective	1 Group Meeting 2 Discuss the challenges 3 Review Implementation	Software Design (KA) Software Construction (KA)		
15	Sprint 4 Test & Deploy	1 Implement the tickets 2 Review and Retrospective 3 Update the TRACKING PROGRESS	1 Discuss the challenges 2 Internal Code Review 3 Submit Ticket 3	Software Testing (KA) Software Configuration Management (KA)		
16	Poster	PEER REVIEW SESSION	PEER REVIEW SESSION	Software Quality (KA) Software Engineering Operations (KA)	Ticket 4 Committee Evaluation Form	10
	Class Points					
					Total Marks	**100**

Notes: ***Nothing for now**

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1. This Document Details the:
a) **Week**: Indicates the number of the week., b) **Topic**:The chapter from Section 2.1 of the textbook, focusing on the specific topic to learn, c) **Date**: The specific start date of the week,
d) **Hours**: The estimated hours required per week for an average student to complete the activities e) **Questions**: Prepared questions to help you understand the topic,
f) **Skills**: The skills this week aims to help you gain or improve, g) **Comments**: Details of the week's activities, including any deadlines if applicable.

Weeks	Topics	Dates	Hours	Description	Skills	Comments
1	Domain Identification	19-Aug	9	01 What Is the domain of the System? 02 What is the Purpose and Goals of the System? 03 Who Are the Primary Stakeholders? 04 What Are the Functional/Non Requirements? 05 What Data Is Involved? 06 What Are the Existing Workflows and Processes? 07 What Are the Legal and Regulatory Requirements? 08 What Are the User and Customer Expectations? 09 What Are the Pain Points and Challenges? 10 What Are the Future Trends and Needs? 11 What Are the Constraints? 12 What Is the System's Scalability and Growth Potential? 13 How Will the System Be Maintained and Supported?	Observation Structuring correct Questions Research Understanding others	Ticket 1 Submission (Aug 23/8:00 am) Presentation Form
2	Technology Identification	26-Aug	9	01 What and Why Technology to use for (Design, Develop, Test & Deploy)? 02 How? (my level on the available tools: Do I need more to learn? 03 What (free & easy) recourse available to learn from? 04 Is there an Open Source technology alternatives?	Adoption Fast Learning	Ticket 2 Submission (Sep 04/8:00 am) Presentation Form
3	S1 Design	2-Sep	5	01 What are the artefacts required to develop? 02 What are the deliverables? 03 When do they need to be delivered?	Analysis Design Critical Thinking	Starting Sprints
4	S1 Develop	9-Sep	9	01 What are the main entities or classes in the system? 02 What attributes and methods are associated with each class? 03 What relationships exist between classes? 04 What are the main components or modules of the system? 05 Are there any dependencies or associations between components?	Modeling Understanding of Software Architecture Object-Oriented Analysis and Design (OOAD)	
5	S1 Test	16-Sep	12	01 What Is the Expected Behavior? 02 What Are the Test Cases? 03 How Can the Code Fail? 04 What Is the Minimal Code to Pass the Tests?	Communication Time Control	360 Feedback Form Mentor Evaluation Form
	S1 Deploy		1	01 What aspects of the software development lifecycle (SDLC) or infrastructure are currently automated, and to what extent? 02 What is DevOps and why I should know? 03 What tools and technologies are being utilized for automation in the DevOps pipeline? 04 How is continuous integration CI and continuous deployment CD (CI/CD) implemented in the development process? 05 What key performance indicators (KPIs) or metrics are currently being measured in the DevOps pipeline?	Team Player Leadership Creativity	Ticket 3-S1 Submission (Sep 23/8:00 am)
6	S2 Design	23-Sep	5			
7	S2 Develop	30-Sep	9			Informal Review (Select the suitable time) Schedule will be announced in Canvas
8	S2 Test	7-Oct	12			360 Feedback Form Mentor Evaluation Form
	S2 Deploy		1			Ticket 3-S2 Submission (Oct 14/8:00 am)
9	Peer Review	14-Oct	6	01 Provide brief overview of your capstone project? 02 What were the main challenges? 03 What is the key design and implementation decisions we made? 04 How did we approach testing and validation? 05 What are some potential future enhancements?		Review Form Schedule will be announced in Canvas
10	S3 Design	21-Oct	5			
11	S3 Develop	28-Oct	9			
12	S3 Test	4-Nov	12			360 Feedback Form Mentor Evaluation Form
	S3 Deploy		1			Ticket 3-S3 Submission (Nov 11/8:00 am)
13	S4 Design	11-Nov	5			
14	S4 Develop	18-Nov	9			
15	S4 Test	25-Nov	12			360 Feedback Form Mentor Evaluation Form
	S4 Deploy		1			Ticket 3-S4 Submission (Dec 03/8:00 am)
16	System & Lesson Learned	12-Dec	2	What did we do? How awesome our project is? How can we tell others in 3 min that our project is awesome? What did we learn?	Presenting, Utilizing visual Aids	Ticket 4 Submission (Dec 12/8:00 am) Poster Evaluation Form The final exam will be in the form of a poster presentation. The date of the poster session will be determined by the School of Computer Science and announced once finalized.
	Total		134			

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Read Me				1. This Document Details the course, school, and university policies. 2. Please review this document before starting the course or contacting the instructor.
1	**Instructor**	**1**	**About Instructor**	Mansoor Abdulhak
		2	**Teaching Philosophy**	My teaching methods include a variety of up-to-date techniques including active participation via an inverted classroom and experiential learning through project-based instruction and assessment. Through these methods, I seek to make courses imitate the work environment as much as possible in order to best prepare students for their careers.
2	**Course**	**1**	**Home Page**	This class will use Canvas software for our home page. The URL for the home page is http://canvas.ou.edu. Login with your 4+4 using your standard OU password. If you have difficulty logging in, call 325-HELP. This software provides a number of useful features, including a list of assignments and announcements, an electronic mailing list, and grade book. The Canvas course site will be used for all updates. You should check the site regularly.
		2	**Grade Checking**	Canvas is equipped with a grade book that preserves the raw data utilized for computing your course grade. It is crucial that you routinely verify the accuracy of your recorded grades. In the event of any identified discrepancies or disagreement, promptly notify me via email (follow the policy of **Communication**), and I shall promptly address and rectify the matter. Keep in mind Notifications must be submitted within the same week as the grade release; otherwise, changes will not be processed.
		3	**Deadlines**	Unless explicitly stated otherwise specified in writing, please ensure all assignments are submitted by the designated date in the Ticket instructions. In the event of a delay, a 10% deduction will be applied for each day beyond the specified deadline. This policy is in place to maintain fairness and consistency. It's worth noting that, as software engineering professionals, it's our responsibility to ensure timely submission, avoiding any delays that may result in fines for our workplace.
		4	**AI Tools**	In recognizing the lasting impact of AI tools, I encourage their use to improve your skills on using them. However, given that AI tools are not fully matured, it is the responsibility of the student to evaluate the content generated and learn how to effectively work with AI tools to achieve optimal results. This approach reflects our commitment to adapting and utilizing emerging technologies responsibly in the learning environment. It is essential to note that any direct copy-pasting without reading, understanding, analyzing, and actively working to enhance your skills will be considered academic misconduct.
		5	**Exams**	Follow the University Final Exam Policies
		6	**Ownership of Course Materials**	All original content used in this course is owned by Mansoor Abdulhak. This includes but is not limited to exams, lectures, quizzes, handouts, protocols, electronic documents, and syllabi. Original or transcribed content may not be copied, recorded, retransmitted, posted online, or sold without her and/or her expressed, written consent.
3	**Class**	**1**	**Communication**	1.The primary method of communication outside of class will be through a Discord server. The server link will be shared on Canvas. All general questions related to the learning outcomes of the class are encouraged to be discussed openly within the appropriate channels on Discord. However, for questions involving personal matters, participants are welcome to send private messages within the Discord server for a more confidential interaction. 2.Urgent announcements will be communicated through Canvas. It is your responsibility to regularly check Canvas for updates. 3.For formal communication, please use email to contact me. To facilitate this communication PLEASE, Ensure that you include the semester, the course code ID, the group ID and your Sooner ID (e.g. Fall24-CS3032-GroupA-123456789) before the subject in your email. Without this information, your message may not be noticed or entertained.
		2	**Class Attendance**	As part of our commitment to student success, I offer two attendance tracks to accommodate diverse circumstances. The first track follows a traditional attendance policy. The second track, known as the double exam policy, is designed to support students who may face challenges in regular attendance. This alternative option allows students to demonstrate their understanding through exams, providing flexibility for those who may have commitments that prevent consistent attendance. Our aim is to ensure that all students have an opportunity to succeed, regardless of their individual circumstances. It's important to note that the cut-off for selecting your attendance track will be in week one, and switching tracks won't be allowed unless exceptional circumstances arise.
			Attendance (Track 1)	This course follows a synchronous format, requiring your attendance at all scheduled class sessions and labs in person. Exceptions are made for illness, unforeseen caretaking duties, or if you feel uncomfortable being in group settings at the moment. In addition to the aforementioned policy, you have the option to opt for the **Double Exam (Track 2)** policy.
			Double Exam (Track 2)	Attendance to classes and participation in group activities are not mandatory and won't be calculated. However, your final grade will be determined by a combination of an individual assignments scores and twice the exam score. This calculation will contribute to your overall assessment for the course, with the maximum achievable grade capped at a 'C'. As you will only be evaluated based on the ASO 4 & ASO 6 outcomes.

		3	**Classroom Conduct**	Disruptions of class will not be permitted. In the case of disruptive behavior, You will be asked to leave the classroom and may charge you with a violation of the Student Code of Responsibilities and Conduct.
		4	**Grade**	Your grade will be determined through 1: The assessment method detailed in the 1. Course Syllabus 2: Peer evaluations of teamwork • your contributions to the team homework • your enabling others to make contributions • may significantly impact your letter grade
		5	**Online Class**	See the Online Learning at OU
4	University	1	**Land Acknowledgement**	The University of Oklahoma recognizes the historical connection our university has with its indigenous community.
		2	**Academic Integrity**	See Academic Integrity Policy
		3	**Religious Observance**	See Faculty Handbook 3.15.2
		4	**Accommodation of Disabilities**	To discuss potential accommodations, please contact the ADRC at 730 College Avenue, (ph.) 405.325.3852, or adrc@ou.edu.
		5	**Title IX**	See Resources and Reporting Requirement
		6	**Adjustments for Pregnancy/Childbirth Related Issues**	Contact me or the Accessibility and Disability Resource Center at 405/325-3852 as soon as possible. Also, see the Institutional Equity Office FAQ on Pregnant and Parenting Students' Rights for answers to commonly asked questions.
		7	**Final Exam Preparation Period**	See Faculty Handbook 4.10
		8	**Weather Safety Information**	See Information
		9	**Emergency Protocol**	See Procedures
		10	**Severe Weather**	1. **Look** for severe weather refuge location maps located inside most OU buildings near the entrances 2. **Seek** refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building. 3. **Go** to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows. 4. **Get** in, Get Down, Cover Up 5. **Wait** for official notice to resume normal activities. Weather Safety Information
		11	**Armed Subject/Campus Intruder**	1. **Avoid**: If you believe you can get out of the area WITHOUT encountering the armed individual, move quickly towards the nearest building exit, move away from the building, and call 911. 2. **Deny**: If you cannot flee, move to an area that can be locked or barricaded, turn off lights, silence devices, spread out, and formulate a plan of attack if the shooter enters the room. 3. **Defend**: As a last resort fight to defend yourself. visit OU's Active Shooter page
		12	**Fire Alarm/General Emergency**	1. **LEAVE** the building. Do not use the elevators. 2. **KNOW** at least two building exits 3. **ASSIST** those that may need help 4. **PROCEED** to the emergency assembly area 5.ONCE safely outside, **NOTIFY** first responders of anyone that may still be inside building due to mobility issues. 6. **WAIT** for official notice before attempting to re-enter the building. OU Fire Safety on Campus
		13	**Mental Health Support Services**	If you are experiencing any mental health issues that are impacting your academic performance, counseling is available at the University Counseling Center (UCC). The Center is located on the second floor of the Goddard Health Center, at 620 Elm Rm. 201, Norman, OK 73019. To schedule an appointment call (405) 325-2911. For more information, please visit University Counseling Center University Counseling Center