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

1.0 Course Syllabus

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

1	**Course Code**	CS3203				
2	**Course Name**	Software Engineering				
3	**Version**	1				
4	**Name(s) of Academic Staff**	**Instructor**	Abdulhak, Mansoor	**Email**	m.hak@ou.edu	
		Teaching Assistant	Ajisegiri SJ	**Email**	oluwasijibomi.ajisegiri@ou.edu	
		Teaching Assistant		**Email**		
5	**Semester**	Fall				
6	**Year**	2024				
7	**Program Level**	BS				
8	**Prerequisite Course**	CS 2413 or CS 2414 and CS 2813 or Math 2513				

9 Contact Hours

Delivery Methods		Hour per week		Implementation	Date	Time	Location
In-Person (Student Center Learning) Activities	Lecture	3	units	(3 hour(s) per week)	MWF	11:00 am - 12:00 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	(2 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)	M Dec 9	01:30 pm - 03:30 pm	Gallogly Hall 127

10 Course Description

This course focuses on modern software engineering techniques used in the development of software products. You will learn how software products are developed incrementally using agile methods, executes on the cloud, security is critical and it will be maintained and managed by a DevOps team. Within a group format, you will employ these concepts to design and document software products, as well as explore topics related to professional ethics, responsibility, and legal issues.

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.
ASO 6	Apply computer science theory and software development fundamentals to produce computing-based solutions.
N/A	N/A
N/A	N/A

12 Assessment Methods

Methods		Weighting	ASO 3	ASO 4	ASO 5	ASO 6	Letter Grades	
Presentations		0%					≥ 90	A
Sprints	(Ticket 1-4) 5%*4	20%	√	√	√	√	80-89	B
Midterm Exam		10%		√		√	70-79	C
Project	(Ticket 5) *2	30%	√		√		60-69	D
Assignments		20%	√	√	√	√	< 60	F
Final Exam		20%		√		√		
Total		**100%**						

13 Learning References

Required 1	Sommerville, I (2019), Engineering Software Products: An Introduction to Modern Software Engineering, 1st edition, Pearson Education
Supplementary 2	David Kung. (2024). Software Engineering, 2nd Edition. McGraw Hill.
Supplementary 3	Sommerville, I. (2015). Software Engineering. Addison-Wesley.
Supplementary 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.

READ ME

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	Software Products	1.1 The product vision 1.2 Software product management 1.3 Product prototyping	1.1 Introduction 1.2 Communication Activity 1.3 Group forming 2.1 Group Meeting to complete tasks 3.1 Presenting (Ticket 1)	Software Engineering Professional Practice (KA)	Ticket 1 Group Presentation Evaluation	5
2	Agile Software Engineering	2.1 Agile methods 2.2 Extreme programming 2.3 Scrum	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Football week no Class (Submission Ticket 2)	Software Engineering Management (KA)	Ticket 2 Scrum Plan	5
3	DevOps and Code Management	10.1 Source code management	1.1 Labor day no Class 2.1 Introduction & Group Meeting to complete tasks 3.1 Preparing (Ticket 3) Prepare the Git Repository Practice Branching and Merging	Software Configuration Management (KA)	Ticket 3 Branching & Merging Video Tutorial	5
4	DevOps and Code Management	10.2 DevOps automation 10.3 DevOps measurement	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Reviewing (Ticket 3)	Software Configuration Management (KA)	Review Ticket 3	
5	Cloud-based Software	5.1 Virtualization and containers 5.2 Everything as a service 5.3 Software as a service 5.4 Multitenant and multi-instance systems 5.5 Cloud software architecture	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Preparing Infrastructure as Code	Software Construction (KA) Software Engineering Operations (KA)		
6	Microservices Architecture	6.1 Microservices 6.2 Microservices architecture 6.3 RESTful services 6.4 Microservice deployment	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Reviewing (Progress Sprint 1-1)	Software Construction (KA) Software Engineering Operations (KA)	Project Code Review Form-1-1	5
7	Features, Scenarios and Stories	3.1 Personas 3.2 Scenarios	1.1 Introduction 2.1 Group Meeting to complete tasks 2.2 Writing Requirements: Stories and Features 2.3 Writing User-Experience Scenarios Clarifying User Goals 3.1 Midterm	Software Requirements (KA)	Midterm	10
8	Features, Scenarios and Stories	3.3 User stories 3.4 Feature identification	1.1 Introduction 2.1 Group Meeting to complete tasks 2.2 Discuss the product backlog 3.1 Preparing USE CASE component	Software Requirements (KA)	Assignment 1 Use Case Template (PeerReview Form)	10
9	Software Architecture	4.1 Why is architecture important? 4.2 Architectural design 4.3 System decomposition	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Design the product architecture	Software Architecture (KA)	Ticket 4 Architectural Design	5
10	Software Architecture	4.4 Distribution architecture 4.5 Technology issues	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Presenting (Ticket 4)	Software Design (KA)		
11	Test	9.1 Functional testing 9.2 Test automation 9.3 Test-driven development	1.1 Introduction 2.1 Group Meeting to complete tasks 2.2 Discuss the product unit testing 3.1 Preparing TEST CASE component	Software Testing (KA)	Assignment 2 Test Case Template (PeerReview Form)	10
12	Test	9.4 Security testing 9.5 Code reviews	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Reviewing product unit testing (Progress Sprint 1-2)	Software Maintenance (KA) Software Quality (KA)	Project Code Review Form-1-2	5
13	Security and Privacy	7.1 Attacks and defenses 7.2 Authentication 7.3 Authorization 7.4 Encryption 7.5 Privacy	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Develop the product Sprint 2	Software Security (KA)	Ticket 5 Sprint Execution	
14	Reliable Programming	8.1 Fault avoidance 8.2 Input validation 8.3 Failure management	1.1 Introduction 2.1 Group Meeting to complete tasks 3.1 Develop the product Sprint 2	Software Engineering Professional Practice (KA)	Ticket 5 Sprint Execution	
15	Code Review	Code Review Sprint 2	Code Review Sprint 2	Software Engineering Professional Practice (KA)	Project Code Review Form-2	20
16	Pre-finals week	Relax Week	Do nothing		Final Exam	20
17	**Exam & Class Points**					
					Total Marks	**100**

Notes: ***Nothing for now**

READ ME

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	Topic	Dates	Hours	Questions	Skills	Comments
1	Software Products	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?	Observation Structuring correct Questions Research Understanding others	1. Knowing your classmate schedule to form groups 2. Prepare 2 Multiple Choice Questions (CH1) 3. Ticket 1 Submission (Aug 23rd/8:00 am) 4. Presentation Form 5. 360 Feedback Form
2	Agile Software Engineering	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? 05 What are the artefacts required to develop? 06 Who is doing what? 07 When do they need to be delivered?	Adoption Fast Learning Planning Time Control Team Player	1. Identifying the group skills (who is good at what) 2. Prepare 2 Multiple Choice Questions (CH2) 3. Ticket 2 Submission (Aug 30th/8:00 am) 4. Evaluation Form 5. 360 Feedback Form
3	DevOps and Code Managem	2-Sep	9	01 What is branching strategy? 02 What practices are followed when creating and reviewing pull requests? 03 How to commit a clear and descriptive messages? 04 How to merge the code and what are the conflicts might arise? 05 How is versioning handled and what is the process for managing releases?	Organizational Skills Version Control Knowledge Transfer	1. Finding my code mate within my group 2. Ticket 3 Submission (Sep 09th/8:00 am) 3. 360 Feedback Form
4	DevOps and Code Managem	9-Sep	9	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?	Scripting and Programming Configuration Management Monitoring and Logging	1. Prepare 2 Multiple Choice Questions (CH10) 2. Submit Ticket 3 Review (Sep 16th/8:00 am) 3. Prepare a README.md file check this link https://tiloid.com/p/readme-md-the-ultimate-guide
5	Cloud-based Software	16-Sep	9			1. Prepare 2 Multiple Choice Questions (CH05) 2. Environment Setup (Check Case Study) 3. Prepare your DevOps check this link in the first part (15min) https://youtu.be/f5EpcWp0THw?si=As6IVcWmGI5SwvCf
6	Microservices Architecture	23-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?	Understanding of Software Architecture Object-Oriented Analysis and Design (OOAD) Critical Thinking	1. Peer Review Form 1-1 (Sep 27th/11:00 am) 2. Prepare 2 Multiple Choice Questions (CH 6)
7	Features, Scenarios and Stori	30-Sep	9	02 What Data Is Involved? 03 What Are the Existing Workflows and Processes? 04 What Are the Legal and Regulatory Requirements? 05 What Are the User and Customer Expectations?	System Analysis and Design Leadership Creativity	1. Midterm (Oct 04th/11:00 am)
8	Features, Scenarios and Stori	7-Oct	9	06 What Are the Pain Points and Challenges? 07 What Are the Future Trends and Needs? 08 What Are the Constraints? 09 What Is the System's Scalability and Growth Potential? 10 How Will the System Be Maintained and Supported?	Programming Proficiency Domain Knowledge Attention to Detail	1. Submit Assignment 1 (Oct 14th/08:00 am) 2. Prepare 2 Questions (CH 3)
9	Software Architecture	14-Oct	9	01 What are the main user interactions or use cases to be represented in the sequence diagram? 02 Which objects or components are involved in the sequence, and what roles do they play? 03 What messages or events are exchanged between objects during the sequence? 04 Are there any decision points or conditional branches in the sequence of events? 05 Does the sequence diagram cover the complete lifecycle of the interaction, including initiation and termination?	Design Modeling Communication Problem-Solving	
10	Software Architecture	21-Oct		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?	Understanding of Software Architecture Object-Oriented Analysis and Design (OOAD) Critical Thinking	1. Submit Ticket 4 (Oct 25th/08:00 am) 2. Prepare 2 Questions (CH 4)
11	Test	28-Oct	9	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?	Understanding of Testing Principles Refactoring and Code Design Continuous Learning	1. Submit Assignment 2 (Nov 04th /8:00 am) 2. DevOps second part (15min) https://youtu.be/f5EpcWp0THw?si=As6IVcWmGI5SwvCf IaC: https://www.youtube.com/watch?v=POPP2WTJ8es
12	Test	4-Nov	9	01 Is the code easy to read and understand? 02 Are variable and method names descriptive? 03 Are there comments where necessary to explain complex logic? 04 Are functions/methods appropriately sized and focused on a single responsibility? 05 Is the code efficient, how to improve it?	Technical Proficiency Empathy (understanding the coder is a human)	1. Peer Review Form 1-2 (Nov 08th /11:00 am) 2. Prepare 2 Questions (CH 9) https://www.youtube.com/watch?v=pg19Z8LL06w
13	Security and Privacy	11-Nov	9			1. Prepare 2 Questions (CH 7) https://youtube.com/watch?v=6WZ6S-qmtqY&si=fSv3vduavp2NgSFF
14	Reliable Programming	18-Nov	9			1. Prepare 2 Questions (CH 8)
15	Code Review	25-Nov	9			
16	Pre-finals week	2-Dec	6	How can I use Student Experience Evaluation to make a difference? What Strategies I need to implement in my Revision? Do I need to Seek Clarification?	Ethical Conduct Manage Stress Review and Reflect	1. Ticket 5-S2 Submission (Dec 06th/11:00 am)
17	Exam & Class Points	9-Dec	2	What did we learn?? How awesome our group work and activity? How can we answer the final exam questions?	Understanding Exam Question Application of Knowledge Clear Communication	Final Exam
Notes:	Total Hours		134			

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. **Update your group ID in 3.1 Student List By Week ONE**
				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. **Update your group ID in 3.1 Student List By Week ONE**
		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: 360 Feedback 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