SIR SYED UNIVERSITY OF ENGINEERING & TECHNOLOGY
COMPUTER SCIENCE AND INFORMATION TECHNOLOGY DEPARTMENT
BS (Computer Science)

COURSE INFORMATION SHEET

Session:	Spring-2024
Course Title:	Software Engineering
Course Code:	CS-226
Credit Hours:	3
Semester	4th
Pre-Requisites:	NONE
Office Hours:	Tuesdays (11:30 am – 1:00 pm) Wednesdays (02:30 pm – 4:00 pm)
Mode of Teaching:	**Synchronous**/~~Asynchronous/ Hybrid/Blended~~

COURSE OBJECTIVE:
The objective of this course is to:

- Establish a strong foundation in Software Engineering.
- Highlight the importance of Software Engineering through study of inclusive activities such as Requirement Engineering, System Modeling and Quality Assurance in detail.
- Create a basic capability of building a quality software through Software Engineering.
- Develop familiarization with the concepts of Software Quality Maintenance and Improvement.

COURSE OUTLINE:

Software and Software Engineering, Software Engineering Practices, Generic Process Framework, Software Process Models, Agile Software Development, Scrum and Extreme Programming (XP), Requirements Engineering Process, Software Project Management, System Modeling Techniques and UML, Software Architecture Design Patterns, Software Testing and Quality Assurance, Software Evolution, Configuration Management, Software Process Improvement.

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COURSE LEARNING OUTCOMES (CLOs):

CLO No.	Course Learning Outcomes (CLOs)	PLOs	Bloom's Taxonomy
1	**Describe** key principles and activities of software engineering.	PLO_1 (Academic Education)	C2 (Understanding)
2	**Explain** the purpose of software engineering process elements.	PLO-2 (Knowledge for Solving Computing Problems)	C2 (Understanding)
3	**Apply** the software engineering knowledge to suggest an appropriate solution that meets the customer's requirements.	PLO-3 (Problem Analysis)	C3 (Applying)

RELATIONSHIP BETWEEN ASSESSMENT TOOLS AND CLOs:

Assessment Tools	CLO1	CLO2	CLO3
Quizzes	4 (14%)	3 (8%)	3 (8%)
Assignments	4 (14%)	3 (8%)	3 (8%)
Mid	10 (36%)	10 (28%)	10 (28%)
Final	10 (36%)	20 (56%)	20 (56%)
Total	28 (28%)	36 (36%)	36 (36%)

GRADING POLICY:

Assessment Tools	Percentage	Marks
Quizzes	10%	10
Assignments	10%	10
Midterm Exam	30%	30
Final Exam	50%	50
TOTAL	**100%**	**100**

Recommended Book:

- Sommerville, I., 2011. *Software Engineering, 9/E*. Pearson Education India.

Reference Books:

- Roger, S.P. and Bruce, R.M., 2019. *Software Engineering: A Practitioner's Approach.* McGraw-Hill

LECTURE PLAN

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Week No.	Week Dates	Course Plan	Recommended Reading	Assessment Tools
1		**Introduction To Software Engineering** • Professional Software Development • Software Engineering Ethics • Case Studies	IS-Chap 1: Pg. 01 – 17	
2		**Software Processes** • Software Process Models • Process Activities • The Rational Unified Process	IS-Chap 2: Pg. 27 – 50	
3		**Agile Software Development I** • Plan-Driven and Agile Development • 12 Principle of Agile Manifesto • Agile Methods • Extreme Programming	IS-Chap 3: Pg. 56 – 64	Quiz # 1
4		**Agile Software Development II** • Scrum • Scrum Practices And Roles • Kanban	RL1	
5		**Requirements Engineering, I** • Functional And Non-Functional Requirements • Requirements Specification	IS- Chap 4 Pg. 82-84	Assignment #1
6		**Requirements Engineering II** • Requirements Engineering Processes • Requirements Validation • Requirements Management	IS-Chap 4: Pg. 91-111	
7		**System Modeling 1** • Context Models • Interaction Models • Structural Models	IS-Chap 5: Pg. 118 – 129	
8		**System Modeling II** • Behavioural Models • Model-Driven Engineering	IS-Chap 5: Pg. 129 – 138	Quiz # 2
9	**Midterm Examination**			

10		**Architectural Design** • Architectural Design Decisions • Architectural Views • Architectural Patterns • Application Architectures	IS-Chap 6: Pg. 147-164	
11		**Design And Implementation** • Object Oriented Design Using UML • Design Patterns **Introduction To Software Engineering Tools** • Microsoft Visio • Rational Rose	IS-Chap 7: Pg. 176 – 189	Assignment # 2
12		**Software Testing** • Development Testing • Test-Driven Development • Release Testing • User Testing	IS-Chap 8: Pg. 205 – 228	
13		**Software Evolution** • Evolution Process • Software Maintenance	IS-Chap 9: Pg. 234 – 242	Quiz # 3
14		**Project Planning** • Software Pricing • Plan-Driven Development • Agile Planning • Estimation Techniques **Project Management** • Risk Management • Managing People • Teamwork	IS-Chap 22: Pg 591-607 & IS-Chap 23: Pg. 618 – 633	
15		**Quality Management** • Software Quality • Reviews And Inspections • Software Standards	IS-Chap 24: Pg. 651 – 668	Assignment # 3
16		**Configuration Management** • Change Management • System Building	IS-Chap 25: Pg. 681 – 699	

		• Release Management **Process Improvement** • The Process Improvement Process • Process Measurement • Process Analysis	& IS-Chap 26: Pg. 705 – 715	
Final Examination				

IS: Ian Summerville **RL1**: Resource Link https://www.scrum.org/resourccs/what-is-scrum