

Branch Name:	Bachelor of Computer Application (Graphics Animation and VFX)
Program Code:	CS102
Course Title :	Software Engineering
Course Code :	24-CAM206-2C
Pre-requisite Course:	Systems & Object-Oriented Design Methodologies and Fundamentals of Structured Programming.

Course Objective (CO):

This course is intended to make the students:

- To understand fundamentals of software development.
- To learn SDLC and software models.
- To develop basic requirement analysis and design skills.
- To understand testing and maintenance concepts.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	
3	-	-	3	18	50	09	25	-	-	-	-	75

Course Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1.	Introduction & SDLC • Definition and importance of Software Engineering, Software characteristics, Software Crisis, Introduction to Software Process, SDLC overview • Phases of SDLC: ▪ Requirement ▪ Design ▪ Implementation ▪ Testing ▪ Deployment ▪ Maintenance ▪ Real-life examples.	10	25
2.	Software Development Models • Waterfall Model • Incremental Model • Spiral Model (basic idea) • Agile Model (intro – Scrum concept) • Advantages & disadvantages • Comparison of models	12	25

3.	Requirement Analysis & Design - Requirement Engineering - Functional & Non-functional requirements - Introduction to UML (basic) - Data Flow Diagram (DFD) (Level 0, 1) - Structure Chart (basic) - Simple system design (Library / College system)	12	25
4.	Testing & Maintenance - Importance of software testing - Types of testing: - Unit Testing - Integration Testing - System Testing - Test case basics - Debugging concept - Software Maintenance - Types of maintenance - Introduction to version control (basic idea)	12	25

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO1:** Explain basic software engineering concepts.
- CLO2:** To **design** and conduct experiments, as well as to analyze and interpret data.
- CLO3:** Analyze requirements and design simple systems.
- CLO4:** Describe SDLC phases and models.
- CLO5:** **Identify** and analyze the system requirements using various system analysis techniques.
- CLO6:** **Design** information system using structured and object-oriented techniques.
- CLO7:** Understand testing and maintenance processes.

List of Text book:

- Software Engineering – Ian SommervilleM.
- Software Engineering – K.K. Aggarwal.

List of Reference book:

- Waman S. Jawadekar, “Software Engineering – Principles and Practices”, TMGH Publication.
- Systems Analysis and Design by Kendall & Kendall, PHI Publication, 7th Edition.
- Fundamentals of Software Engineering by Rajib Mall, Prentice Hall India.
- Roger S. Pressman – Software Engineering.
- Rajib Mall – Fundamentals of Software Engineering.

E-Resources/ Web Links:

- https://www.tutorialspoint.com/software_engineering/index.htm.
- [tutorialspoint.com](https://www.tutorialspoint.com).
- [geeksforgeeks.org](https://www.geeksforgeeks.org).
- [javatpoint.com](https://www.javatpoint.com).
- [w3schools.com](https://www.w3schools.com).

Mapping of CLO, PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	H	M	L	L	L	L			M			M	H	M	H
CLO2	H	M	M	L	L		L	M			M		H	M	
CLO3	M		M		H	M			M			M	H	H	M
CLO4	H	H	M	M	L	H	L		M	L		M	M	M	L
CLO5		M	M		L		M		H		L		L	H	
CLO6	M		M		M	L	M	M		M	L		M	M	M
CLO7	M	L		L	M	M	H		M		M	L	H	M	M

H: High, M: Medium, L: Low