Department of Liberal Education
Era University, Lucknow
Course Outline
Effective From: 2023-24

Name of the Program	**B.A. / B.Sc. (LIBERAL EDUCATION)**			**Year/ Semester:**	**3rd / 5th**
Course Name	**Software Engineering and Project Management**	**Course Code:**	**CS303**	**Type:**	**Theory**
Credits	**04**			**Total Sessions Hours:**	**60 Hours**
Evaluation Spread	**Internal Continuous Assessment:**	**50 Marks**		**End Term Exam:**	**50 Marks**
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	1. To develop knowledge of phases in software development life cycle. 2. To develop good software and design quality of software. 3. To get knowledge about types of testing available for software development. 4. To know the team required for project management and maintenance.				

Course Outcomes (CO): *After the successful course completion, learners will develop following attributes:*

Course Outcome (CO)	Attributes
CO1	Understand about designing model and practical implementation.
CO2	Take decision of project planning on the basis of cost evaluation.
CO3	Understand risk identification and management.
CO4	Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, manufacturability, sustainability, ethical, health and safety.
Pedagogy	Interactive, discussion-bases, student-centered, presentation.
Internal Evaluation Mode	Mid-term Examination: 20 Marks Activity: 10 Marks Class test: 05 Marks Online Test/Objective Test: 05 Marks Assignments/Presentation: 05 Marks Attendance: 05 Marks

Session Details	Topic	Hours	Mapped CO
Unit 1	**Software Product and SDLC:** Software Engineering Fundamentals, Definition of Software Products, Phases of Software Development Life Cycle. **Software Life Cycles Models:** Waterfall Model, Prototype Model, Iterative Model, Evolutionary Model, and Spiral Model. **Software Requirements Specification:** Value of a good SRS, Requirement process, Requirement specification, Desirable characteristics of SRS. Components of SRS. **Activity:**	15	CO1

	• Case Study of Software Development Models Practices.		
Unit 2	**Software Design Principles:** Software design and its activities, Characteristics of a good software design, Cohesion, Coupling, Functional Independence, Function- oriented vs. object-oriented design approach, Data Flow Diagram (DFD), Data Dictionary. **Coding:** Programming Language and Development tools. Selecting Languages and Tools, Good Programming Practices. **Activity:** • Case Study of Software Design Principles.	15	CO2
Unit 3	**Software Testing:** The Testing Concept, Testing Process, and Types of Testing: Black Box testing and White Box Testing. **Level of Testing:** Unit Testing, Integration Testing, Interface Testing, System Testing. **Software Quality Assurance:** Quality concept, Software quality assurance, ISO 9000 and SEI CMM and their Comparison. **Activity:** • Case Study of Testing & Quality Assurance.	15	CO3
Unit 4	**Project Management System:** Definition of Project, Project Specification and Parameters, Principles of Project Management, Project Management Life Cycle. **Program Management Plan:** Concept, Elements, Planning Issues, Benefits of Program Management. **Software Maintenance:** Management of Maintenance, Maintenance Process and Models, Reverse Engineering and Reengineering, Risk Management. **Activity:** • Case Study of Software Project Management Practices.	15	CO4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	2	1	1		2	2	2	2	1	2	2	2	2
CO2	2	1	1	1	1	1	1	1	1	2	1	1	1	2
CO3	2	2	2			1	2	3	2	2	2	1	2	2
CO4	1	2	1		2	1	2	1	2	1	1	2	1	1

Strong contribution-3, ***Average contribution-2,*** ***Low contribution-1,***

Suggested Readings:

Text- Books	1. Software engineering, K. K. Aggarwal & Yogesh Singh, New Age International, 2ndEdition, 2005. 2. Pankaj Jalote, "An Integrated Approach to Software Engineering", Narosa.
Reference Books	1. Software Engineering – A Practitioner's Approach, Roger S Pressman, McGraw Hills Publication, 8th Edition, 2012. 2. Software Architecture in Practice, Len Bass, SEI Series, 3rd Edition, 2010. 3. Software Engineering, I. Sommerville, Addison Wesley, 10th Edition, 2006.
Para Text	**Unit 1:** • https://archive.nptel.ac.in/noc/courses/noc19/SEM2/noc19-cs70/ **Unit 2:** • https://archive.nptel.ac.in/noc/courses/noc21/SEM2/noc21-cs65/ **Unit 3:** • https://nptel.ac.in/courses/106105182 **Unit4:** • https://onlinecourses.nptel.ac.in/noc19_cs70/preview

Recapitulation & Examination Pattern		
Internal Continuous Assessment:		
Component	**Marks**	**Pattern**
Mid Semester	20	**Section A:** Contains **10** MCQs/Fill in the blanks/One Word Answer/ True-False type of questions. Each question carries **0.5 Marks.** **Section B:** Contains **07** descriptive questions out of which **05** questions are to be attempted. Each question carries **03 Marks**.
Activity	10	Will be decided by subject teacher
Class Test	05	Contains **05 descriptive questions.** Each question carries **01** Mark.
Online Test/ Objective Test	05	Contains **10 multiple choice questions.** Each question carries **0.5** Marks.
Assignment/ Presentation	05	Assignment to be made on topics and instruction given by subject teacher
Attendance	05	As per policy
Total Marks	**50**	

Course created by: Dr. Mohd Haleem

Signature:

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Signature: