Course Curriculam

Course Code: IT301

Course Level UG

Course Title Software Engineering

Course Description :

Credit Units

L	T	P/S	SW	AS/DS	FW	No. of PSDA	Total Credit Unit
3	0	2	2	0	0	0	5

Course Objectives :

SN.	Objectives
1	To make student learn how to use available resources to develop software, reduce cost of software and how to maintain quality of software
2	To develop skills that will enable them to construct software of high quality – software that is reliable, and that is reasonably easy to understand, modify and maintain

Pre-Requisites : General

SN.	Course Code	Course Name

Course Contents / Syllabus :

SN.	Module	Descriptors / Topics	Weightage
1	Module I Introduction	Software life cycle models: Waterfall, Prototype, Evolutionary and Spiral models Agile Methodology Overview of Quality Standards like ISO 9001, SEI-CMM	20.00
2	Module II Software Metrics and Project Planning	Size Metrics like LOC, Token Count, Function Count Design Metrics Data Structure Metrics Information Flow Metrics Cost estimation, static, Single and multivariate models, COCOMO model, Putnam Resource Allocation Model Risk management	20.00
3	Module III Software Requirement Analysis, design and coding	Problem Analysis Software Requirement and Specifications Behavioural and non-behavioural requirements Software Prototyping Cohesion & Coupling Classification of Cohesiveness & Coupling Function Oriented Design, Object Oriented Design, User Interface Design Top-down and bottom-up Structured programming, Information hiding	20.00
4	Module IV Software Reliability, Testing and Maintenance	Failure and Faults Reliability Models: Basic Model, Logarithmic Poisson Model Software process Functional testing: Boundary value analysis, Equivalence class testing, Decision table testing, Cause effect graphing Structural testing: path testing Data flow and mutation testing, unit testing, integration and system testing, Debugging, Testing Tools, & Standards. Management of maintenance, Maintenance Process, Maintenance Models, Reverse Engineering, Software RE-engineering	25.00
5	Module V UML	Introduction to UML Introduction to Rational Rose Environment Class Diagram in UML Use Case Diagram in UML State Diagram in UML Object Diagram in UML Activity Diagram in UML Sequence Diagram in UML Collaboration Diagram in UML Componant Diagram in UML Deployment Diagram in UML DevOps: Introduction, Life cycle, tools, Difference between Agile and DevOps	15.00

Course Learning Outcomes :

SN.	Course Learning Outcomes

1	Understand the software life cycle models.
2	Understand the importance of the software development process.
3	Design and develop correct and robust software products.
4	Understand business requirements pertaining to software development
5	Evaluate the quality of the software project.

Pedagogy for Course Delivery :

SN.	Pedagogy Methods
1	The class will be taught using remote teaching methodology. Students' learning and assessment will be on the basis of four quadrants and flipped class method. E-content will be also provided to the students for better learning. The class will be taught using theory, practical and case-based method.

Theory /VAC / Architecture Assessment (L,T & Self Work): 80.00 Max : 100

Attendance+CE+EE : 5+35+60

SN.	Type	Component Name	Marks
1	Attendance		5.00
2	End Term Examination (OMR)		60.00
3	Internal	MID TERM EXAM	15.00
4	Internal	INTEGRATED PROJECT	10.00
5	Internal	PRESENTATION	10.00

Lab/ Practical/ Studio/Arch. Studio/ Field Work Assessment : 20.00 Max : 100

Attendance+CE+EE : 5+35+60

SN.	Type	Component Name	Marks
1	Attendance		5.00
2	External	PRACTICAL	30.00
3	External	VIVA VOCE	30.00
4	Internal	PERFORMANCE	15.00
5	Internal	PRACTICAL / LAB RECORDS	10.00
6	Internal	VIVA VOCE	10.00

Lab/ Practical details, if applicable :

SN.	Lab / Practical Details
1	Class Diagram in UML
2	Use Case Diagram in UML
3	State Diagram in UML
4	Object Diagram in UML
5	Activity Diagram in UML
6	Sequence Diagram in UML

7	Collaboration Diagram in UML
8	Componant Diagram in UML
9	Deployment Diagram in UML

List of Professional skill development activities :

No.of PSDA : 2

SN.	PSDA Point
1	Integrated Project
2	Case based Presentation

Text & References :

SN.	Type	Title/Name	Description	ISBN/ URL
1	Book	R. S. Pressman, “Software Engineering – A practitioner’s approach”, 5th Ed., McGraw Hill Int. Ed.,		
2	Book	K. K. Aggarwal & Yogesh Singh, “Software Engineering”, 2nd Ed, New Age International, 2005.		
3	Book	Rajib Mall, Fundamentals of Software Engineering, Prentice Hall India.		
4	Book	Ian Summerville, Software Engineering, Addison-Wesley.		