GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Master of Computer Applications, 3rd Semester
Subject Name: Software Engineering
Subject Code: 639403

With effective from academic year 2020-21

Prerequisites: Systems & Object Oriented Design Methodologies

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
4	-	-	4	70	30	-	-	100

1. Teaching and Examination Scheme:

2. Course Outcomes:

Course Outcome Component	Course Outcome(Learner will be able to)
CO1	To understand the concepts of software engineering, software process model.
CO2	Able to select and apply appropriate process model to all stages of software development life cycle (SDLC), requirements engineering and how to manage user's requirement
CO3	To know design concepts and user interface
CO4	To understand agile methodology and scrum.
CO5	Understand high level design and UML Diagram, develop prototype model for a given case study using modern engineering tools and students would be able to build an SRS documents of the project.

3. **Course Duration:** The course duration is of 40 sessions of 60 minutes each.

4. Course Contents:

Module No:	Contents	No. of Sessions	70 Marks (External Exam)
I	**Introduction to Software Engineering & Process Models** Software Engineering, Software Process, Process Models – Waterfall, Incremental, Evolutionary Process Model – Prototype, Spiral and concurrent Development Model, Agile Process; Extreme Programming (XP); Brief Overview of Other Agile Process Models: Adaptive Software Development and Scrum	**4**	**05**
II	**Requirement Engineering** Requirements Engineering; Groundwork for Understanding of Software, Requirements; Overview of Eliciting Requirements, Developing Use Cases, Building the Requirements Model; Negotiating Requirements; Validating Requirements;	**8**	**10**

	Requirement Modelling Strategies; Overview of Flow Oriented Modelling, Behavioral Modelling;		
III	**Design Concepts** Design Concepts, Design Model; Architectural Styles, Architectural Design, Assessing Alternative architectural Designs, Architectural mapping Using Data Flow, User Interface Design: Golden Rules of User Interface Design; User Interface Analysis and Design; Interface Analysis; Interface Design steps	**8**	**15**
IV	**Introduction to Agile Methodology** Agile Principles: 12 principles of Agile software, The customer is always right, Delivering the project, Communicating and working together, Project execution - Moving the project Along, Constantly Improving the Project and the Team, Agile Project: Bringing all the principles Together. Scrum and Self organizing Teams: The rules of Scrum, Everyone on a Scrum Team Owns Project, The whole team uses the daily Scrum, Sprints, planning and retrospectives, Scrum Planning and collective commitment: User stories, Velocity and Accepted Scrum Practices, Scrum Values revisited.	**10**	**20**
V	**HIGH LEVEL DESIGN** **Overview:** What to specify: Security, Hardware, User Interface, Internal Interfaces, External Interfaces, Architecture, Reports, Other Outputs, Database (Audit trails, User Access, Database Maintenance), Configuration Data, Data Flows and States, Training, UML Diagrams (Structure Diagram, Behavior Diagrams (Use case, Activity, State Diagram), Interaction Diagrams, Sequence Diagram, Communication Diagram, Timing Diagram, Interaction Overview Diagram**.**	**10**	**20**

5. Pedagogy:

- ICT enabled Classroom teaching
- Case study
- Practical / live assignment
- Interactive class room discussions

6. Evaluation:

Students shall be evaluated on the following components:

A	**Mid-Semester examination**	**(30 Marks)**
B	**End –Semester Examination**	**(70 Marks)**

7. Text Book:

No.	Author	Name of the Book	Publisher
1	Roger S. Pressman	Software Engineering – A Practitioner's Approach",	McGraw Hill Publications

		7th Edition	
2	Andrew Stellman, Greene Jennifer	Beginning Agile	Beginning Agile, O'Reilly
3	Rods Stephen	Beginning Software Engineering	WROX

8. Reference Books:

No.	Author	Name of the Book	Publisher
1	Sommerville	Software Engineering", 8th Edition	Pearson Education
2	Chandramouli Subramanian, Saikat Dutt, Chandramouli Seetharaman, B G Geetha	Software Engineering	Pearson
3	Waman S. Jawadekar,	Software Engineering– Principles and Practices	TMGH Publication
4	Pankaj Jalote	Software Engineering -A Precise Approach	Wiley India
5	Waman S. Jawadekar	Software Engineering - A Primer	TMGH Publication