

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11CI513	Semester Odd (specify Odd/Even)	Semester 7th Session 2019 -2020 Month from July to Dec
Course Name	Software Engineering		
Credits	4 (3-1-0)	Contact Hours	4

Faculty (Names)	Coordinator(s)	Dr. Sangeeta
	Teacher(s) (Alphabetically)	Dr. Anuja Arora, Dr. Sangeeta, Dr. Sarishty Gupta

COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Explain software engineering principles and software process models for project development.	Remembering(Level 1)
CO2	Identify functional and non-functional requirements of a software project and design document software requirements specification.	Understand (Level 2)
CO3	Design, represent and document software requirements specification. Plan and execute activities for a software project.	Create (Level 6)
CO4	Apply UML modeling for software design from software requirements specification.	Apply(Level 3)
CO5	Analyze code checklist. Perform code Reviews, Code Refactoring, and Code optimization.	Analyze(Level 4)
CO6	Apply testing principles, develop and implement various manual and automated testing procedures.	Apply(Level 3)
CO7	Evaluate software in terms of general software quality attributes and possible trade-offs presented within the given problem.	Evaluate(Level 5)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	<i>Unit-1</i>	<i>Introduction to Software Engineering:</i> Introduction to software engineering Principles, Software process models(build and fix model,waterfall model, Incremental process model, Evolutionary- Prototype and Spiral models, Agile Models, PSP, TSP, Software Reengineering.Project planning, Project Scheduling: network diagram, Gant Chart, CPM and PERT. [7L]	7
2.	<i>Unit-2</i>	<i>Requirement Engineering:</i> Types of requirement, Requirement Elicitation, Analysis, Specification, SRS, Requirement Verification and Validation.[4L]	4
3.	<i>Unit-3</i>	<i>Software Design:</i> Use case diagram, State diagram, Activity Diagram, Class Diagram, Sequence diagram, Collaboration diagram, Deployment Diagram, Component Diagram and Package diagram. Design Modularity: Coupling Cohesion. [7L]	7
4.	<i>Unit-4</i>	<i>Software Construction:</i> Coding standards and guidelines, Code checklist, Code	8

		Reviews, Code Refactoring, Code optimization. Modern programming environments (Code search, Programming using library components and their APIs), Program comprehension; Program correctness, Defensive programming. [8L]	
5.	Unit-5	Software Metrics: Size-Oriented Metric, Function-oriented Metric, Halstead's Software Metric, Information Flow Metric, Object-oriented Metric, Class-Oriented Metric, COCOMO Model. [7L]	7
6.	Unit-6	Software Testing: White-Box Testing, Basis Path Testing, Control Structure Testing: Condition Testing, Data Flow Testing, Loop Testing, Black-Box Testing: Equivalence class partitioning, Boundary Value Analysis, Decision table testing, Cause effect graphing, Mutation Testing and regression Testing.[9L]	9

Total number of Lectures			42
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Evaluation Criteria	
Components	Maximum Marks
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignments/Tutorial: 20+ Attendance:5)
Total	100

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

Text Book(s):

1.	Roger S. Pressman, "Software Engineering: A practitioner approach", Fifth Edition-TMH International .
2.	Sommerville , "Software Engineering" , Seventh Edition - Addison Wesley.

Reference Book(s):

3.	Grady Booch, James Rumbaugh, Ivar Jacobson, The Unified Modeling Language User Guide, Addison Wesley, Reading, Massachusetts, May 2005
4.	Richard Thayer , "Software Engineering Project Management", Second Edition -Wiley-IEEE Computer Society Press.
5.	B. Bezier, "Software Testing Techniques", Second Edition- International Thomson Computer Press.
6.	Pankaj Jalote, "An Integrated Approach to Software Engineering" Third addition , Springer Press