



**SECOND-YEAR DIPLOMA ENGINEERING SYLLABUS**

Semester: 4<sup>TH</sup>

Course Code: 002204407

Type of Course: PCC-13

Course Name: Software Engineering

Course Prerequisites: Basic knowledge of Software Engineering

**COURSE OBJECTIVE(S):**

The software development process in the industry is also changing rapidly. This course guides the students to analyze, design, implement and test the software product with proper documentation during the courses in higher semesters of diploma programme.

**TEACHING & EXAMINATION SCHEME:**

Teaching Scheme (Hrs/Week)				Examination Scheme					
Theory	Tutorial	Practical	Credit	SEE		CA			Total
				Th	Pr	MSE	PLE	LA	
3	0	0	3	60	00	20	20	00	100

Th: Theory; Pr: Practical; FA: Final Assessment; CAT: Continuous Assessment Theory; CAP: Continuous Assessment Practical;

TOTAL Theory Hours: No. of Th. and Tut. Hrs/Week\*15 = 45

**COURSE CONTENT(S):**

Unit No.	Content	Hours	Weightage (%)
1	<p><b><u>Software Development Process</u></b></p> <ul style="list-style-type: none"> <li>• Software - definition, characteristics</li> <li>• Software Application Domain : System Software , Application Software, Embedded Software, Web Application, Artificial Intelligence Software</li> <li>• Software Development Models : Waterfall Model, Incremental Process Model, Prototype Model, Spiral Model</li> <li>• Agile Development Model : Agility Principles, Agile Model vs Iterative Waterfall Model</li> <li>• Types of widely used Agile Models : Extreme Programming(XP) , Scrum .</li> </ul>	10	20%
2	<p><b><u>Software Requirement Analysis and Design</u></b></p> <ul style="list-style-type: none"> <li>• Requirement gathering and Analysis Software Requirement Specification (SRS) : Characteristic, Customer requirement, Functional Requirement</li> <li>• Software Requirement</li> <li>• Specification(SRS)</li> </ul>	09	30%



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	<ul style="list-style-type: none"> <li>• <b>Software Design</b> : Characteristics of good software design, Analysis v/s design</li> <li>• <b>Cohesion &amp; Coupling</b> : Classification of cohesion , Classification of coupling</li> </ul> <p><b>Function Oriented Software Design</b></p> <ul style="list-style-type: none"> <li>• <b>Data Flow Diagram(DFD)</b> : Context Diagram , Level 1 DFD</li> <li>• <b>Object Modeling with UML</b> : Use case Diagram , Class Diagram, Sequence Diagram , Activity Diagram.</li> </ul>		
3	<p><b>Software Project Estimation &amp; Scheduling</b></p> <ul style="list-style-type: none"> <li>• <b>Responsibility of software project Manager</b></li> <li>• <b>Metrics for Size Estimation</b> : Line of Code, Function Points</li> <li>• <b>Project Estimation Techniques using COCOMO model</b></li> <li>• <b>Project Scheduling</b> : Gantt Chart, Flow Chart, Sprint burn down chart for agile model</li> <li>• <b>Risk Management</b> : Risk Identification, Risk Assessment, Risk Control</li> </ul>	14	30%
4	<p><b>Software Coding and Testing</b></p> <ul style="list-style-type: none"> <li>• <b>Coding</b> : Coding standards and guidelines, Code review, Code Walk through, Code Inspection</li> <li>• <b>Testing</b> : Test cases and test suit, Verification, Validation Unit testing , Black-box testing , White-box testing.</li> </ul>	12	20%
	<b>TOTAL</b>	<b>45</b>	<b>100%</b>

**Text Book(s):**

Title of the Book	Author(s)	Publication
Software Engineering	Uresh N Parmar	ATUL PRAKASHAN

**Reference Book(s):**

Title of the Book	Author(s)	Publication
Software Engineering: A Practitioner's Approach	Roger S. Pressman	Tata McGraw Hill, New Delhi
Fundamentals of Software Engineering	Rajib Mall	PHI Learning Private Limited, New Delhi
Object Oriented Modeling	Michael R Blaha and James	Pearson Prentice



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and design with UML	R Rambaugh	Hall
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**Web Material Link(s):**

- a) <http://cpuburst.com/ganttcharts.html>
- b) <https://www.tutorialspoint.com>
- c) [www.w3schools.com](http://www.w3schools.com)
- d) <https://nptel.ac.in/courses/106106144>
- e) <https://nptel.ac.in/courses/106105214>
- f) <https://nptel.ac.in/courses/106102132>

**Equivalent/Corresponding Course on NPTEL (SWAYAM):**

NPTEL course on

[https://onlinecourses.nptel.ac.in/noc21\\_cs02/preview](https://onlinecourses.nptel.ac.in/noc21_cs02/preview)

<https://nptel.ac.in/courses/106/105/106105151/>

**COURSE EVALUATION:**

Sr. No.	Activity	Marks	Weightage
1	Semester End Examination (External Th)	60	60%
2	Internal Examination	40	40%
2(a)	Mid Semester Examination	20	
2(b)	Attendance	10	
2(c)	Assessment Types (Any One from 2(c).1 to 2(c).7)	10	
2(c).1	Subject (Course) based Mini-Project		
2(c).2	Industry/Site Visit & Report		
2(c).3	Assignment		
2(c).4	Seminar		
2(c).5	Case Study		
2(c).6	Surprise Class Quiz		
2(c).7	Design Exercise		
2(c).7	Presentation		
2(d)	Practical (if Applicable)		

\* For 4 Credit Subjects

1 Credit = 25 Marks

Theory: 3 Credits = 75 Marks

Practical's: 1 Credit = 25 Marks

SEE Evaluation will be of 100 marks and converted to 50 Marks (75 Th + 25 Pr)

CA Evaluation will be of 100 Marks and converted to 50 Marks. (75 Th + 25 Pr)

**Distribution of Marks for Theory Evaluation as per Bloom's Taxonomy Level:**

Level	Remember	Understand	Apply	Analyse	Evaluate	Create
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% Weightage	20%	10%	10%	-	10%	-
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**COURSE OUTCOMES:** *(in the range of 4 to 6)*

CO1	Compare various software development process models.
CO2	Prepare software analysis and design using SRS, DFD and object oriented UML diagrams.
CO3	Prepare software development plan using project scheduling.
CO4	Prepare test-cases to test software functionalities.