



AMITY UNIVERSITY  
— UTTAR PRADESH —

### COURSE CURRICULUM

**Course Name: ADVANCED SOFTWARE ENGINEERING**  
**Course Level : Ph.D.**  
**Course Type : PCC**  
**Course Code: CSIT903**  
**Credit Unit: 04**

L	T	P/S	TOTAL CREDIT UNITS
3	1	-	4

#### **Course Objective:**

The Objective of the course is to:

- To explain and apply a broad range of concepts from software engineering
- To apply all aspects the software engineering process.
- They should be able to recognize, define, and make correct use of generally accepted software engineering terminology.

#### **Pre-requisites:**

Fundamentals of software engineering.

**Course Contents/Syllabus:**

	Weightage (%)
<b>Module-I Introduction</b>	
Evolution of Software Engineering, Software Problems, Issues Involved in Software Engineering, Fundamental Qualities of a Software Product, Planning the development Process, Software Life Cycle Models	<b>15</b>
<b>Module-II Software Project and Requirement analysis</b>	
Software Requirement Specification and Software Project Programming, Requirement Engineering, Requirement elicitation, Requirement analysis, requirement documentation. Size Estimation, Cost Estimation Models, COCOMO, COCOMO II, Putnam Resource allocation model, Software Risk Management, Case Study..	<b>25</b>
<b>Module III: Software Design</b>	
Software Designing Principles Various Strategies, Module Level Concepts, Structured Design Methodologies Software Metrics-Software Metrics, Token Count, Data Structure Metrics, Information Flow Metrics and Metrics analysis.	<b>20</b>
<b>Module IV: Software Testing</b>	
Testing Process, Some terminology, Functional Testing, Structural Testing, Levels of Testing, Debugging and Testing Tools, Software Reliability - Basic Concepts, Software quality, software reliability models.	<b>20</b>
<b>Module V: Software Maintenance</b>	<b>20</b>
Maintenance Process, Maintenance Model, Estimation of maintenance cost, Reverse Engineering,	

Software Re-engineering.  Component based Software Engineering; CBSE-a new paradigm, types of software components, Software component model, CBSE process.	
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**Student Learning Outcomes:**

After the completion of course, the student will be able to:

- Explain about software development life cycle models and its implementation.
- Describe about software requirement specification and software project programming.
- Analyze size and cost of software.
- Explain about concept of software testing and software reliability.
- Explain the implement and maintenance of software
- Describe about concept of component based software engineering.

**Pedagogy for Course Delivery:**

The class will be taught using software development life cycle modeling. In addition to assigning the case studies, the course instructor will spend considerable time in understanding the concept of innovation through the eyes of the software developer and tester. The instructor will cover the ways to think innovatively liberally using thinking techniques.

**Assessment/ Examination Scheme:**

Theory L/T (%)	Lab/Practical/Studio (%)	Total
100	-	100

**Theory Assessment (L&T):**

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Mid-Term Exam	Assignments	Project/Viva	Attendance	
Weightage (%)	10	10	5	5	70

***Text & References:***

***Text:***

- Software Engineering, A Practitioner's Approach, Roger S. Pressman, McGraw-Hill,2010
- Software Engineering, K.K. Agarwal, Yogesh Singh, New Age International Publishers,2007
- An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa Publication, 2007

***References:***

- Software Engineering Concepts, Richard Fairley, McGraw-Hill Education, 1985

***Journals:***

- International Journal of System Assurance Engineering and Management, Springer
  - IEEE Transactions on Software Engineering, IEEE
  - Information and Computation, Elsevier
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