

| Course code | Course Name | L-T-P-Credits | Year of Introduction |
|--|---|---------------|----------------------|
| CS308 | Software Engineering and Project Management | 3-0-0-3 | 2016 |
| Pre-requisite: Nil | | | |
| Course Objectives <ul style="list-style-type: none"> To introduce the fundamental concepts of software engineering. To build an understanding on various phases of software development. To introduce various software process models. | | | |
| Syllabus Introduction to software engineering, Software process models, Software development phases, Requirement analysis, Planning, Design, Coding, Testing, Maintenance. | | | |
| Expected Outcome The students will be able to <ol style="list-style-type: none"> Identify suitable life cycle models to be used. Analyze a problem and identify and define the computing requirements to the problem. Translate a requirement specification to a design using an appropriate software engineering methodology. Formulate appropriate testing strategy for the given software system. Develop software projects based on current technology, by managing resources economically and keeping ethical values. | | | |
| References <ol style="list-style-type: none"> Ian Sommerville, Software Engineering, University of Lancaster, Pearson Education, Seventh edition, 2004. K. K. Aggarwal and Yogesh Singh, Software Engineering, New age International Publishers, Second edition, 2005. Roger S. Pressman, Software Engineering : A practitioner's approach, McGraw Hill publication, Eighth edition, 2014 S.A. Kelkar, Software Project Management: A concise study, PHI, Third edition, 2012. Walker Royce, Software Project Management : A unified frame work, Pearson Education, 1998 | | | |
| COURSE PLAN | | | |
| Module | Contents | Hours | End Sem. Exam Marks |
| I | Introduction to software engineering- scope of software | 07 | 15% |

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|-----------------------------|---|-----------|------------|
| | engineering - historical aspects, economic aspects, maintenance aspects, specification and design aspects, team programming aspects. Software engineering a layered technology - processes, methods and tools. Software process models - prototyping models, incremental models, spiral model, waterfall model. | | |
| II | Process Framework Models: Capability maturity model (CMM), ISO 9000. Phases in Software development - requirement analysis- requirements elicitation for software, analysis principles, software prototyping, specification. | 06 | 15% |
| FIRST INTERNAL EXAM | | | |
| III | Planning phase - project planning objective, software scope, empirical estimation models- COCOMO, single variable model, staffing and personal planning. Design phase - design process, principles, concepts, effective modular design, top down, bottom up strategies, stepwise refinement. | 07 | 15% |
| IV | Coding - programming practice, verification, size measures, complexity analysis, coding standards. Testing - fundamentals, white box testing, control structure testing, black box testing, basis path testing, code walk-throughs and inspection, testing strategies-Issues, Unit testing, integration testing, Validation testing, System testing. | 07 | 15% |
| SECOND INTERNAL EXAM | | | |
| V | Maintenance-Overview of maintenance process, types of maintenance. Risk management: software risks - risk identification-risk monitoring and management. Project Management concept: People - Product-Process-Project. | 07 | 20% |
| VI | Project scheduling and tracking: Basic concepts-relation between people and effort-defining task set for the software project-selecting software engineering task Software configuration management: Basics and standards User interface design - rules. Computer aided software engineering tools - CASE building blocks, taxonomy of CASE tools, integrated CASE environment. | 08 | 20% |
| END SEMESTER EXAM | | | |

Question Paper Pattern

1. There will be *five* parts in the question paper - A, B, C, D, E
2. Part A
 - a. Total marks : 12
 - b. Four questions each having 3 marks, uniformly covering modules I and II;

- All four questions have to be answered.
3. Part B
 - a. Total marks : 18
 - b. Three questions each having 9 marks, uniformly covering modules I and II; Two questions have to be answered. Each question can have a maximum of three subparts.
 4. Part C
 - a. Total marks : 12
 - b. Four questions each having 3 marks, uniformly covering modules III and IV; All four questions have to be answered.
 5. Part D
 - a. Total marks : 18
 - b. Three questions each having 9 marks, uniformly covering modules III and IV; Two questions have to be answered. Each question can have a maximum of three subparts
 6. Part E
 - a. Total Marks: 40
 - b. Six questions each carrying 10 marks, uniformly covering modules V and VI; four questions have to be answered.
 - c. A question can have a maximum of three sub-parts.
 7. There should be at least 60% analytical/numerical questions.

