

**Birla Institute of Technology & Science, Pilani**  
**Work-Integrated Learning Programmes Division**  
**First Semester 2011-2012**

**Course Handout**

**Course No.** : SS ZG562

**Course Title** : Software Engineering & Management

**Instructors** : Praveen R Srivastava, Bhuvnesh K Sharma, V Pavan Kumar, Yogesh Kumar Dada,

**Course Description**

Current concepts, methods, techniques, and tools of the software engineering process; software process models; process definition and assessment; software measurement and metrics; project planning, estimation and control; requirements analysis and specification, design methods; quality assurance and testing; configuration management; process improvement; case studies and project work.

**Scope and Objectives**

Upon completion of this course, the student should be able to:

1. Apply software engineering practices to develop, test and implement a variety of software systems.
2. Manage software projects in a way that will lead to timely delivery of high-quality products.

**Prescribed Text Book**

T1 Pressman, R.S., Software Engineering: A Practitioner's Approach, MGHISE, 7th Ed., 2010

**Reference Books**

- R1. Sommerville, I., Software Engineering, Pearson Education, 7<sup>th</sup> Ed., 2005.
- R2. Schach, S., Software Engineering, TMH, 7<sup>th</sup> Ed., 2007
- R3. Kelkar, S.A., Software Engineering: A Concise Study, PHI, 2007
- R4. Jawadekar, W.S., Software Engineering: Principles and Practice, TMH, 2004
- R5. Behforooz, A. & F.J. Hudson, Software Engineering Fundamentals, OUP, 1996
- R6. Blum, B.I., Software Engineering: A Holistic View, OUP, 1998
- R7. Thayer, R.H., Software Engineering Project Management, WSE, 2<sup>nd</sup> Ed., 2004
- R8. van Vliet, H., Software Engineering: Principles and Practice, Wiley, 2<sup>nd</sup> Ed., 2002
- R9. Humphrey, W.S., Managing the Software Process, Addison Wesley, 1999
- R10. Hughes, B and Cotterel, M., Software Project Management, 3<sup>rd</sup> Edition, TMH, 2004.
- R11. Jackson, M., Software Requirements and Specifications, AddisonWesley, 1995
- R12. Brooks, F.P., The Mythical Man-Month, Pearson, 1995
- R13. K.K.Aggrawal and Yogesh Singh, Software Engineering ,3RD EDITION ,New Age Publisher India

**Plan of Self-Study**

<b>Lecture No</b>	<b>Topic</b>	<b>Reference to Text Book</b>
1	<i>Learning Objective: Basic Ethics of Software Engineering</i> Introduction to Software Engineering : Basic issue regarding Software Engineering, Ethics, process etc A Generic View of Process :	T1-Ch. 1
2-4	<i>Learning Objective: Development process of a software</i> Process Models : Complete Software Process Model An Agile View of Process : Agile Principle, extreme Programming, Agile model	T1-Ch. 2 T1-Ch. 3
5	<i>Learning Objective: Principle of Software Development</i> Software Engineering Practice : Core Principle, Activity	T1-Ch. 4
6	<i>Learning Objective: Understanding Requirement Management</i> Requirements Engineering: Requirement Process, use case, Requirement Model	T1-Ch. 5
7-8	<i>Learning Objective: Requirement Modeling and assessment</i> Requirements Engineering : Requirement Analysis, Scenario based modeling, UML & Data Model, Class based Modeling, DFS, Behavioral Modeling, Modeling for web application	T1-Ch. 6,7
9	<i>Learning Objective: Basics of Software Design</i> Design Concept: Design Process, Concept, Model	T1-Ch. 8
10	<i>Learning Objective: Introduction and understanding of software architecture pattern</i> Architectural Design : Software Architecture, Architectural Style, Architectural Design etc	T1-Ch. 9
11	<i>Learning Objective : Description and Analysis of Software Project Management</i> Project Management : Analysis of 4 P, W5 Principle, Software Measurement, Metrics of software	T1-Ch. 24,25
<b><i>Syllabus for Mid-Semester Test (Closed Book): Topics in Lecturer No. 1 to 11</i></b>		
12	<i>Learning Objective: Component based Classifications</i> Modeling Component-Level Design: Class Based component, component design for web applications, Traditional component, component based development	T1-Ch. 10
13	<i>Learning Objective: Guide of User Interface</i> User Interface & Pattern Based Design : Golden Rule, Analysis and design, design steps, web application design, design evaluation	T1-Ch. 11,12
14	<i>Learning Objective: Understanding of Software Testing Process</i> Testing Strategies: introduction, traditional, object and web based testing, testing steps, debugging	T1-Ch. 17,18
15-16	<i>Learning Objective: Discussion of Methods Exists in Software Testing</i> Testing Tactics: WBT, BBT, MBT, and other related issue	T1-Ch. 19,20
17	<i>Learning Objective: Measurement Aspect of Software Product</i> Product Metrics : Complete analysis using various approach	T1-Ch. 23
18	<i>Learning Objective: Measurement Aspect of Software Process</i> Metrics for Process and Project : Software Measurement	T1-Ch. 25

**Plan of Self-Study**

Lecture No	Topic	Reference to Text Book
19-21	<i>Learning Objective: Complete Analysis of Cost Estimation and Scheduling Estimation</i> :details in cocomo model, decomposition techniques Project Scheduling :earned value analysis, critical path etc	T1-Ch. 26 T1-Ch. 27,28
22-24	<i>Learning Objective: Understanding of Software Quality model</i> Quality Management :Software Quality, Software Quality Dilemma, Achieving Software Quality's Task, Software Reliability, ISO 9000 and other model <i>Learning Objective: Change Management Activity</i> Change Management :Software Configuration Management, SCM Repository's process, and SCM issue for web applications	T1-Ch. 14,16 T1-Ch. 22
<b>Syllabus for Comprehensive Exam (Open Book): All Topics given in Plan of Self Study</b>		

**Evaluation Scheme**

EC No.	Evaluation Component & Type of Examination	Duration	Weightage	Day, Date, Session, Time
EC-1	Assignment/Quiz	TBA	10%	TBA
EC-2	Mid-Semester Test (Closed Book)*	2 Hours	30%	Saturday, 03/09/2011 (AN)* 2 PM – 4 PM
EC-3	Comprehensive Exam (Open Book)*	3 Hours	60%	Saturday, 29/10/2011 (AN)* 2 PM – 5 PM

**\* Legend:**

**AN:** AfterNoon Session; **FN:** ForeNoon Session

**Closed Book Test:** No reference material of any kind will be permitted inside the exam hall.

**Open Book Exam:** Use of any printed / written reference material (books and notebooks) will be permitted inside the exam hall. Loose sheets of paper will not be permitted. Computers of any kind will not be allowed inside the exam hall. Use of calculators will be allowed in all exams. No exchange of any material will be allowed.

**Note:**

It shall be the responsibility of the individual student to be regular in maintaining the self study schedule as given in the course handout, attend the online/on demand lectures as per details that would be put up in the BITS WILP website [www.bits-pilani.ac.in/dlp-home](http://www.bits-pilani.ac.in/dlp-home) and take all the prescribed components of the evaluation such as Mid Semester Test and Comprehensive Examination according to the Evaluation Scheme given in the respective Course Handout. If the student is unable to appear for the Regular Test/Examination due to genuine exigencies, the student must refer to the procedure for applying for Make-up Test/Examination, which will be available through the **Important Information** link on the BITS WILP website on the date of the Regular Test/Examination. The Make-up Tests/Exams will be conducted only at selected exam centres on the dates to be announced later.

**Instructor-in-Charge**