DARBHANGA COLLEGE OF ENGINEERING

DARBHANGA

COURSE FILE OF
SOFTWARE ENGINEERING
(05 1614)

DEPARTMENT
OF
COMPUTER SCIENCE AND ENGINEERING

FACULTY NAME
MR. SUNIL KR. SAHU
(Assistant Professor)

Institute/College Name:	Darbhanga College of Engineering
Program Name:	B.Tech (CSE, 6th semester)
Course Code:	051614
Course Name:	Software Engineering
Lecture/Tutorial(per week):	3
Course Credits:	3
Course Co-coordinator Name:	Mr. Sunil Kumar Sahu

1. Scope and Objective of Course

Before starting a software project, it is essential to determine the tasks to be performed and properly manage allocation of tasks among individuals involved in the software development. Hence, planning is important as it results in effective software development.

1. It defines the roles and responsibilities of the project management team members.
2. It ensures that the project management team works according to the business objectives.
3. It checks feasibility of the schedule and user requirements.
4. It determines project constraints.

2. Textbooks

TB1: Fundamental of Software Engineering by Rajeev Mall, PHI.
TB2: Software Engineering by James F. Peters, Wiley.
TB3: Software Engineering A. Practitioner's Approach by Pressman, MGH

3. Reference Books

1. Software Project Management from Concept to Development by Kieron Conway, Dreamtech Press.
2. Software Engineering by Sommerville, Pearson Education.
3. Software Engineering by Jawadekar, TMH.

Other readings and relevant websites

S. No.	Link of journals, Magazines, websites and Research papers
1.	https://www.youtube.com/watch?v=Z6f9ckEElsU&list=PL8751DA481F0F0D17
2.	https://www.tutorialspoint.com/software_engineering/index.htm

Course plans

Lecture No.	Date of Lecture	Topics	Web Links for Videos Lecture	Text Books/Reference books/Reading Materials	Page No. of Text Books
1-3	29/01/18 to 06/0218	**Introduction** S/W Engineering Discipline-Evolution and Impact, Program vs. S/W Product, Emergence of S/W Engineering.	https://www.youtube.com/watch?v=Z6f9ckEElsU&list=PL8751DA481F0F0D17	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 01-26
		Laborartory-1			
4-6	12/02/18 to 14/02/18	**Software Life Cycle Models** Waterfall, prototyping, Evolutionary, Spiral models and their comparisons.	https://www.youtube.com/watch?v=ayP5Ey-djgw&list=PL0eXJqlwBJ19L1gIo_94r93vvrphmcz8f&index=8	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(Tb1)30-52 (Tb3)77-98
		Laborartory-2			
7-10		**Software Project Management** Project Manager responsibilities, project planning, Project Size estimation Metrics Project Estimation, Techniques, COCOMO, Staffing Level Estimation, Scheduling, Organization & Team Structures Staffing, Risk	https://www.youtube.com/watch?v=5pwc2DYlKQU&list=PL0eXJqlwBJ19L1gIo_94r93vvrphmcz8f&index=29	(TB3) Software Engineering A. Practitioner's Approach by Pressman, MGH	(TB1)57-107, (TB3)128-152

		Management, S/W Configuration Management.			
		Assignment-1, Laborartory-3			
10-13		**Requirements Analysis and Specification** Requirement Gathering and Analysis, SRS, Formal System Development Techniques, Axiomatic and Algebraic Specification.	https://www.youtube.com/watch?v=wEr6mwquPLY&list=PL8751DA481F0F0D17&index=5	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 108-148
		Laborartory-4			
14-16		**Software Design** Overview, Cohesion and Coupling, S/W Design Approaches, Object- oriented vs. Function Operated Design.	https://www.youtube.com/watch?v=izAq05SBvMI&index=14&list=PL8751DA481F0F0D17	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 149-169
		Laborartory-5			
17-19		**Function- Oriented S/W Design** SA/ SD Methodology, Structured Analysis, DFDs, Structured Design, Detailed Design, Design Preview.	https://www.youtube.com/watch?v=IPlP2R7l-Nc&index=17&list=PL8751DA481F0F0D17	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 170-216
		Assignment-2, Laborartory-6			
20-22		**Object Modeling using UML** Overview, UML, UML Diagrams, Use Case Model, Class Diagram etc	https://www.youtube.com/watch?v=Ln9Fpa7clRo&list=PL3-wYxbt4yCi5WymYaVLSpCto_LNbVNNA&index=4	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 217-263
		Laborartory-7			
23-25		**Object Oriented Software Development** Design Patterns, Object-Oriented analysis and Design Process,OOD Goodness Criteria.	https://www.youtube.com/watch?v=mabRepmXLGA&list=PL8751DA481F	(TB3) Software Engineering A. Practitioner's	(TB1) 264-299

			0F0D17&index=9	Approach by Pressman, MGH	
		Laborartory-8			
26-28		**User Interface Design** Characteristics, Basic Concepts, Types, Components Based GUI Development, User Interface Design Methodology.	https://www.youtube.com/watch?v=73HwflsbzaI&list=PL8751DA481F0F0D17&index=23	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 300-322
		Laborartory-9			
29-31		**Coding and Testing** Coding, Code Review, Testing, unit Testing, Black Box Testing, White- Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing, General Issues.	https://www.youtube.com/watch?v=Q50ZyydS7pI&index=18&list=PL8751DA481F0F0D17	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 323-369
		Laborartory-10			
32-35		**Software Reliability and Quality Management** S/W Reliability, Statistical Testing, S/W Quality, S/W Quality management System ISO 9000, SEI CMM, Personal Software Process, Six Sigma.	https://www.youtube.com/watch?v=AK8fm7t3tZU&list=PL8751DA481F0F0D17&index=35	(TB3) Software Engineering A. Practitioner's Approach by Pressman, MGH	(TB1) 370-395
		Laborartory-11			
36-38		**Computer Aided Software Engineering** CASE and its Scope, Environment, Support, Other Characteristics.	https://www.youtube.com/watch?v=QH_kZhw_5wc	(TB1) Fundamental of Software Engineering by Rajeev Mall, PHI.	(TB1) 396-403
		Assignment-3,Laborartory-12			
39-42		**Software Maintenance** Characteristics, S/W Reverse Engineering, S/W Maintenance Process Models, Estimation of Maintenance Cost.	https://www.youtube.com/watch?v=QwjGvzEOtKo&index=22&list=PL8751	(TB1) Fundamental of Software Engineering	(TB1) 404-411

			DA481F0F0D17	by Rajeev Mall, PHI.	
		Laborartory-13			
43-45		**Software Reuse** Basic Issues, Reuse Approach, Reuse at Organization Level.	https://www.youtube.com/watch?v=afdCiAGZ42k	(TB3) Software Engineering A. Practitioner's Approach by Pressman, MGH	(TB1) 412-421
		Laborartory-14			

Syllabus

Topics	No. of Lectures	Weightages
Introduction: S/W Engineering Discipline-Evolution and Impact, Program vs S/W Product, Emergence of S/W Engineering.	3	5%
Software Life Cycle Models: Waterfall, prototyping, Evolutionary, Spiral models and their comparisons.	2	6%
Software Project Management: Project Manager responsibilities, project planning, Project Size estimation Metrics Project Estimation, Techniques, COCOMO, Staffing Level Estimation, Scheduling, Organization & Team Structures Staffing, Risk Management, S/W Configuration Management.	3	7%
Requirements Analysis and Specification: Requirement Gathering and Analysis, SRS, Formal System Development Techniques, Axiomatic and Algebraic Specification.	4	8%
Software Design: Overview, Cohesion and Coupling, S/W Design Approaches, Object- oriented vs. Function Operated Design.	3	7%
Function- Oriented S/W Design: SA/ SD Methodology, Structured Analysis, DFDs, Structured Design, Detailed Design, Design Preview.	4	9%
Object Modeling using UML : Overview, UML, UML Diagrams, Use Case Model, Class Diagram etc.	3	7%
Object Oriented Software Development: Design Patterns, Object-Oriented analysis and Design Process, OOD Goodness Criteria.	4	8%

User Interface Design: Characteristics, Basic Concepts, Types, Components Based GUI Development, User Interface Design Methodology.	**4**	**7%**
Coding and Testing : Coding, Code Review, Testing, unit Testing, Black Box Testing, White- Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing, General Issues.	**4**	**10%**
Software Reliability and Quality Management : S/W Reliability, Statistical Testing, S/W Quality, S/W Quality management System ISO 9000, SEI CMM, Personal Software Process, Six Sigma,	**4**	**7%**
Computer Aided Software Engineering: CASE and its Scope, Environment, Support, Other Characteristics.	**3**	**5%**
Software Maintenance: Characteristics, S/W Reverse Engineering, S/W Maintenance Process Models, Estimation of Maintenance Cost.	**2**	**7%**
Software Reuse: Basic Issues, Reuse Approach, Reuse at Organization Level.	**2**	**7%**
Total	**45**	**100%**

Evaluation and Examination Blue Prints:

Internal assessment is done through quiz tests, presentations, assignments and projects work. Two sets of question paper are asked from each faculty and out of these two, without the knowledge of faculty, one question paper is chose for the concerned examination. Examination rules and regulations are uploaded on the student's portals. Evaluation is a very transparent process and the answer sheets of sessional tests, internal assessment assignments are returned back to the students.

The components of evaluation along with their weightage followed by the university is given below:

Component-1	Sessional test-1	25%
	Sessional test-2	
	Sessional test-3	
Component-2	Assignments, Quiz's, Test, Seminars	05%
Component-3	End Term Examination	70%
Totals		100%

Designation	**Name**	**Signature**
Course Coordinator	Mr. Sunil Kumar Sahu	
H.O.D	Dr._____	
Principal	Dr._____	
Date	…../…./…….	

SE LAB FILES

Institute/College Name:	Darbhanga College of Engineering
Program Name:	B.Tech (CSE, 6th semester)
Course Code:	051614
Course Name:	Software Engineering Lab
Lab (per week)	1
Course Credits:	3
Course Co-coordinator Name:	Mr. Sunil Kumar Sahu

Lab Objective

The Software Engineering Lab has been developed by keeping in mind the following objectives:

1. To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner through the Web.
2. Present case studies to demonstrate practical applications of different concepts.
3. Provide a scope to students where they can solve small, real life problems

Lab Outcome

1. Can produce the requirements and use cases the client wants for the software being produced.
2. Participate in drawing up the project plan. The plan will include at least extent and work assessments of the project, the schedule, available resources, and risk management can model and specify the requirements of mid-range software and their architecture.
3. Create and specify such a software design based on the requirement specification that the software can be implemented based on the design.
4. Can assess the extent and costs of a project with the help of several different assessment methods.

LAB MANUALS: -

S. No.	Experiment Details	Date	Signature & Date
1.	Write the complete problem statement.		
2.	Develop requirements specification for a given problem.		
3.	Draw the waterfall model.		
4.	Draw the spiral model.		
5.	Draw the prototype model.		
6.	Draw the entity relationship diagram		
7.	Develop DFD model (level-0, level-1 DFD and Data dictionary) of the project.		
8.	Develop UML Use case model for a problem.		
9.	Develop sequence diagram.		
10.	Develop Class diagrams		
11.	Draw collaboration diagram.		
12.	Use testing tool such as Junit.		

Designation	Name	Signature
Course Coordinator	Mr. Sunil Kumar Sahu	
H.O.D	Dr._____	
Principal	Dr._____	
Date	…../…./…….	