Institute / College Name :	Bakhtiyarpur College of Engineering, Bakhtiyarpur		
Program Name	**B.Tech (CSE)**		
Academic Year	**2020-21**		
Course Code	**PCC CS 504**		
Course Name	**Software Engineering**		
Semester	**5th**		
Lecture / Tutorial (per week):	**3**	**Course Credits**	**3**
Course Coordinator Name:	RAJEEV RANJAN		

1. Scope and Objectives of the Course

1. To understand the basic concepts of software engineering, life cycle models and project management concepts
2. To understand in detail about the requirement analysis and requirement engineering processes.
3. To understand the concepts and principle involved in software design.
4. To understand the concepts and various types of software testing and project implementation techniques.
5. To understand the techniques involved in software project management and Risk management.

2. Textbooks

TB1: Roger S. Pressman, "Software Engineering – A Practitioner's Approach", Seventh Edition,Mc Graw-Hill International Edition, 2010.

TB2: Rajib Mall, "Fundamentals of Software Engineering", Third Edition, PHI Learning Private Limited, 2009.

3. Reference Books

RB1: Ian Sommerville, "Software Engineering", 9th Edition, Pearson Education Asia, 2011.

RB2: Pankaj Jalote, "Software Engineering, A Precise Approach", Wiley India, 2010.

RB3: Kelkar S.A., "Software Engineering", Prentice Hall of India Pvt Ltd, 2007.

RB4: Stephen R.Schach, "Software Engineering", Tata McGraw-Hill Publishing Company Limited, 2007.

Other readings and relevant websites

S.No.	**Link of Journals, Magazines, websites and Research Papers**
1.	http://en.wikipedia.org/wiki/List_of_UML_tools
2.	http://argouml.tigris.org/
3.	Rational Rose (www.rational.com) by IBM
4.	http://nptel.ac.in/downloads/106105087/

1. Course Plan

Lecture Number	Date of Lecture	Topics	Web Links for video lectures	Text Book / Reference Book / Other reading material	Page numbers of Text Book(s)
3-4		**Introduction**		TB1, RB3	1-8
		Introduction: S/W Engineering Discipline- Evolution and Impact, Program vs S/W Product, Emergence of S/W Engineering.	http://nptel.ac.in/downloads/106105087/		
Tutorial - 1					
6-8		Software Life Cycle Models		TB1, RB3	9-45
		Software Life Cycle Models : Waterfall, prototyping, Evolutionary, Spiral models and their comparisons	http://nptel.ac.in/downloads/106105087/		
Tutorial – 2, Assignment I					
8-10		Software Project Management		TB1, RB3	46-69
		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	http://nptel.ac.in/downloads/106105087/		
Tutorial - 3					
8-10		Software Design		TB1, RB3	70-140
		Object Oriented Software Development: Design Patterns, Object- Oriented analysis and Design Process, OOD Goodness Criteria.	http://nptel.ac.in/downloads/106105087/		
8-10		Coding, Code Review, Testing, unit Testing, Black Box Testing, White- Box Testing, Debugging, Program	http://nptel.ac.in/downloads/106105087/		

		Analysis Tools, Integration Testing, System Testing, General Issues			

1. **Evaluation Scheme:**

Component 1	Mid Semester Exam	20
Component 2	Assignment Evaluation	10
Component 3**	End Term Examination**	70
	Total	**100**

****** The End Term Comprehensive examination will be held at the end of semester. The mandatory requirement of 75% attendance in all theory classes is to be met for being eligible to appear in this component.

SYLLABUS

Topics	No of lectures	Weightage
Introduction: S/W Engineering Discipline-Evolution and Impact, Program vs S/W Product, Emergence of S/W Engineering.	3	4%
Software Life Cycle Models : Waterfall, prototyping, Evolutionary, Spiral models and their comparisons	4	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 Management, S/W Configuration Management.	6	10%
Requirements Analysis and Specification: Requirement Gathering and Analysis, SRS, Formal System Development Techniques, Axiomatic and Algebraic Specification.	2	5%
Software Design : Overview, Cohesion and Coupling, S/W Design Approaches, Object- oriented vs. Function Operated Design	3	8%
Function- Oriented S/W Design: SA/ SD Methodology, Structured Analysis, DFDs, Structured Design, Detailed Design, Design Preview.	3	7%
Object Modelling using UML: Overview, UML, UML Diagrams, Use Case Model, Class Diagram etc.	4	8%
Object Oriented Software Development: Design Patterns, Object- Oriented analysis and Design Process, OOD Goodness Criteria.	3	6%
User Interface Design : Characteristics, Basic Concepts, Types, Components Based GUI Development, User Interface Design Methodology	2	6%
Coding and Testing : Coding, Code Review, Testing, unit Testing, Black Box Testing, White- Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing,	5	12%

General Issues		
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.	3	6%
Computer Aided Software Engineering: CASE and its Scope, Environment, Support, Other Characteristics.	2	6%
Software Maintenance: Characteristics, S/W Reverse Engineering, S/W Maintenance Process Models, Estimation of Maintenance Cost.	3	8%
Software Reuse: Basic Issues, Reuse Approach, Reuse at Organization Level.	2	4%

This Document is approved by:

Designation	**Name**	**Signature**
Course Coordinator	RAJEEV RANJAN	
H.O.D	SAHAB SAQUIB	
Principal	Dr. KUMAR SURENDRA	
Date		

Evaluation and Examination Blue Print:

Internal assessment is done through quiz tests, presentations, assignments and project work. Two sets of question papers are asked from each faculty and out of these two, without the knowledge of faculty, one question paper is chosen for the concerned examination. Examination rules and regulations are uploaded on the student's portal. 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 evaluations along with their weightage followed by the University is given below

Attendance	05%
Mid-Semester Examination	20%
Assignments/Quiz Tests/Seminars	05%
End term examination	70%