

Om Shri Ganeshaya Namah

Software Engineering & Information System Design

-----[BCSE-3402 & BCSE-3406]

General Instructions

Hi friends! This semester, RIT is proud to offer you Software Engineering and Information System Design as an integrated offering. It is 3+3=6 credits offered as a single integrated and interwoven course. **Welcome to the bread and butter of the software industry.** It is the most important theoretical and philosophical background without which **you cannot survive** in the software industry. Though you might be cursing yourself and us for not offering a problem oriented alternative instead, I am sure when you grow old, end up in a software career and do problem solving in a day-in-and-day-out manner, you will be in a position to **profusely thank yourself and your college** for having taken opportunity of selecting this highly conceptual course.

As this course is going to be a customized package composed of two courses, I deliberate here the scheme of things to come with a brand new chapterisation and intuitive study flow.

Integrated Course Flow with New Chapterisation [SE & ISD]

Chapter	Topics of SE	Topics of ISD
1	Evolution and Impact of SE	
	Emergence of SW Development	
2		Introduction and Overview of System Analysis and Design
		Categories of Information Systems
		System Development Strategies
		Implementation and Evaluation
		Tools for System Development
3		Information System Planning Methodologies
4	SW Lifecycle Models	
	Classical Waterfall Model	
	Iterative Waterfall Model	
	Evolutionary Model	
	Prototyping Model	
	Spiral Model	
5	SW Project Management	
		Managing Project Review and Selection

		Priliminary Investigation
		Project Feasibility
		Selecting the Project
		Development Strategy
6	SW Project Metrics	
	CoCoMo Basic	
	CoCoMo Intermediate	
	CoCoMo Complete	
7	Scheduling and Risk Management	
8	Requirement Analysis and Specification	Requirement Analysis and Determinations
		Activities in Requirements determination
		Fact Finding Techniques: Interview, Questionnaire, Record Review, Observation
		Tools for Documenting Procedures and Decisions
		Decision Trees, Decision Tables, Structured Analysis, Dataflow Analysis
		Tools for Dataflow Strategy
		Developing DFDs, leveling
	SRS	
9	Data Dictionary	-ditto-
CT-1		
10	Software Design	
		System Design
		Objectives, Features Selection
		Structure Chart
	Cohesion and Coupling	-ditto-
	Desired Behaviour,	
	Modularisation	-ditto-
	Function Oriented Design	
	Transactional Analysis	
		Structured FlowChart
		HIPO Chart
		Warnier Orr Diagrams
11	Detailed Design	
	Design Review	

12		Managing Design Process
		Managing End User Development
13	OO Design Process	
	UML	
	OOSD and Design Patterns	
	Modelling (Domain, Interaction)	
14		Prototyping
		Purpose, Steps, Use, Tools and Strategies
CT-2		
15		CASE Tools
		Benefits, Categories and Examples
	RAD Model	
	CRC and Goodness Criteria	
16		Design of Input Output and Control
	UI Design Concepts and Guidelines	
		Design of online Dialogue
	GUI, Windowing System and GUI-CUI Comparison	
	GUI Design Methodology Steps	
17		Design of Files and Databases
18	Coding and Coding Standard Review Convention	
19	Testing	
		Testing Strategies
	Unit, Blackbox, Whitebox, Regression	
20	Debugging Techniques and Analysis	
21		Software Documentation
CT-3		
22	Software Reliability	
		Designing Reliable and Maintainable Systems
		Assessing System Reliability
23	Quality Management	
		Software Engineering and Quality Assurance
		Managing Quality Assurance
24		Managing System Implementation

		Training Conversion Methods
		Data and File Preparation
		Post Implementation Review
25	Software Maintenance and Reverse Engineering	Maintenance and Support
26	Software Reuse	
27		Managing Information System Development
		Estimation and Management of Development time
		Personnel and Development Management
		Structured Walkthroughs
28		Selection of Hardware and Software
		Hardware Selection, Determining Size and Capacity requirements Computer Evaluation, plug-compatible equipment
		Financial Factors
		Software Selection

Books and References

For Software Engineering :-

1. Fundamental of Software Engineering by Rajib Mall PHI 2nd Edition

For Information Systems & Design :-

1. Analysis and Design of Information Systems, James A Senn Tata McGraw Hill

Other References

1. Software Engineering by Pankaj Jalote, Springer Publication
2. Software Engineering by Richard Fairley
3. Software Engineering by Hans Van Vliet
4. UML by Pierre Alain Muller
5. Software Engineering by Roger Pressman