SYSTEMS (IT)
SEM III

I> Course Content

Semester	:	III-Core			
Title of the Subject / course	:	Software Engineering			
Course Code	:	MMSSC 305(RGCMS)			
Credits	:	4	Duration	:	40

Learning Objectives	
1	To understand the in details software development process with issues /challenges In analysis, design, implementation, maintenance etc.
2	Ability to analyze, design, verify, validate, implement, apply and maintain software systems.
3	To help students to develop skills that will enable to construct high quality software and reliability.

Prerequisites if any	Basic understanding of software Engineering
Connections with Subjects in the current or Future courses	Will connect conceptual framework to software engineering

Module

	Content	**Activity**	**Course Outcomes**
1	Exposure to software development process – Software Lifecycles such as Waterfall, Spiral, Prototyping, Rational Unified Process, Agile Methodologies – Various phases in each lifecycle model, and the pros and cons of these approaches to software development	Lecture	MMSSC 305.1
2	Analysis and Design of Information systems •Assessing the Feasibility of a system •Gathering detailed requirement •Use of Structured methods such as Data flow, Entity Relationship diagrams etc – •Use of Object Analysis and Design •Use Cases and visualization of the IT based solution •Design of Inputs , Outputs and other interfaces	Lecture & cases	MMSSC 305.2
3	Documenting Software requirements - various documents used at different stages of software development process – User Requirement Specifications	Lecture	MMSSC 305.3

4	Software Estimation – challenges in Estimation of software – methods of software estimation such as Line of Code, Function Point, COCOMO, COCOMO II, Use Case Point Method etc – Estimating a Coding Task versus non-coding activities such as Documentation etc	Lecture and cases	MMSSC 305.4
5	Software Quality and Testing – Need for testing, Quality assurance of software at each phase in the lifecycle, Various types of tests such as Black box v/s White box, Functional test, code reviews , Stress tests, load tests etc Use of Use Cases for functional testing, Preparing Test Data and Test Cases, overview of Automated methods for testing	Lecture and cases	MMSSC 305.5
6	Review of Student Presentations on exercise which requires them to analyse a business process, requirements, documentation and maintenance, Analysis and Conceptual design of the system, estimation of the software size	Individual Assignment	
7	Case Studies and Presentations	Group Discussions and Workshops	

II>Course Outcomes

Course Codes	**Course Outcomes** **Students will be able to…**	**Cognition**
MMSSC 305.1	CO1: Analyze the software development lifecycle process	Analyze
MMSSC 305.2	CO2: Understand the designing of Information systems	Understand
MMSSC 305.3	CO3: Understand documentation process of software requirements	Understand
MMSSC 305.4	CO4: Analyze cost estimation techniques for software development	Analyze
MMSSC 305.5	CO5: Create test cases for software testing	Create

Text books	
1	Software Engineering- A Practioners's Approach", 7th Edition , Pressman
2	Analysis and Design of Information Systems, by James Senn, TMH
3	Raising Enterprise applications – A software engineering perspective by Pradhan, Nanjappa & Nallasamy
4	Fundamentals of Software Engineering by Rajib Mall
5	Software Engineering by Ian Sommerville

Reference books	
1	Structured systems analysis and design: concise study Ed 2, Kelkar SA. Published by PHI Learning, 2009, ISBN 10: 812032451X / ISBN 13: 9788120324510
2	OOAD – 3rd Edition, Booch and others, Addison Wesseley
3	Beginning Software Engineering by Rod Stephens
4	Software Engineering by Waman Jawadekar,Tata McGraw Hill