DEPARTMENT OF COMPUTER APPLICATIONS
NATIONAL INSTITUTE OF TECHNOLOGY,
TIRUCHIRAPPALLI – 620 015
TAMILNADU, INDIA

1. Course Outline			
Course Title	Software engineering		
Course Code	CA725		
Department	MCA	**No. of Credits**	3
Pre-requisites Course Code	CA711	**Faculty Name**	Dr N.P.Gopalan Ms K.Bakiya
Course Co-ordinator	Dr N.P.Gopalan& Ms K.Bakiya		
E-mail	npgopalan@nitt.edu	**Telephone No.**	0431-2503733
Course Type	Core Course		

2. Course Overview

The Software engineering deals with the software process models along with project metrices. Software project planning and development with risk management to be dealt with by software project management. The design and analysis part delivers in-depth knowledge about real time design principles and quality assurance. Testing involves with various types of testing strategies with their tools and Reengineering ensures the standards for industries also.

3. Course Objectives

To impart concepts of a comprehensive study on the theories, processes, methods, and techniques of building high-quality software in cost-effective ways.

4. Course Outcomes (CO)

- Ability to know the proven principles/techniques/tools, current standards, and best practices of Software Engineering.
- Ability to estimate cost, effort and risk involved in a project.
- Ability to choose a suitable design model for software development.
- Ability to derive test cases using various Testing methods along with appropriate tools.
- Get in-depth knowledge in Reengineering and reverse engineering concepts.

5. Course Outcome (CO)	Aligned Programme Outcome (PO)							
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
Ability to know the proven principles/techniques/tools, current standards, and best practices of Software Engineering.	S	H	A	H	H	H	A	H
Ability to estimate cost, effort and risk involved in a project.	S	H	A	H	H	H	A	H
Ability to choose a suitable design model for software development.	S	A	S	S	H	H	A	H
Ability to derive test cases using various Testing methods along with appropriate tools	S	M	H	S	S	H	A	H
Get in-depth knowledge in Reengineering and reverse engineering concepts	S	M	H	S	A	A	H	H

6. Course Teaching and Learning Activities

Week	No of Hours	Mode of Delivery	Topics covered
1.	Class-I	Chalk and Talk	Introductory concepts – The evolving role of software
	Class-II	Chalk and talk	Its characteristics, components and applications.
	Class-III	Power point presentation	A layered technology - the software process.
2.	Class-I	NPTEL Videos	Software process models
	Class-II	Chalk and talk	Software process and project metrics.
	Class-III	PPT, Chalk and talk	Calculation using formulae; measures, Metrics and Indicators.
3.	Class-I	Chalk and talk	Ethics for software engineers
	Class-II	Chalk and talk	Software project Planning
	Class-III	Chalk and talk	Software Project Planning – Project planning objectives.
	Class-IV	NPTEL Videos	Project estimation – Decomposition techniques.

Week	No of Hours	Mode of Delivery	Topics covered
4.	Class-I	Power point presentation	Empirical estimation models - System Engineering.
	Class-II	PPT, chalk and talk	System Engineering - - Risk management.
	Class-III	Chalk and talk	Literature survey and study on Empirical estimation models.
5.	Class-I	Power point presentation	Risk management techniques - Analysis and Design.
	Class-II	Power point presentation, NPTEL Material	Design concept and Principles - Literature study; Design concept of Methods for traditional, Real time of object oriented systems.
	Class-III	NPTEL Videos	Design concept of Methods for traditional, Real time of object oriented systems.
6.	Class-I	Power point presentation	Comparisons – Metrices.
	Class-II	Chalk and talk	Quality assurance.
	Class-III	Chalk and talk	Introduction of Various testing methods and their strategies.
7.	Class-I	Power point presentation	White box testing – Basis path testing.
	Class-II	Power point presentation	Control structure testing – Black box testing – Examples.
	Class -III	Chalk and talk	Strategies: Unit testing-integration testing – Examples.
8.	Class-I	Chalk and talk	Validation Testing – Example.
	Class-II	Chalk and talk	System testing.
	Class -III	Power point presentation	Art of debugging – Metrics, Testing tools.
9.	Class-I	Chalk and talk	Existing System; Formal Methods
	Class-II	Chalk and talk	Clean-room Software Engineering principles
	Class -III	Chalk and talk	Software reuse concepts
10.	Class-I	NPTEL Videos	Reengineering design concepts and basic principles.
	Class-II	Chalk and talk	Reverse Engineering design concepts and examples.

Week	No of Hours	Mode of Delivery	Topics covered
	Class -III	Power point presentation	standards for industry REFERENCES

The assessment in this course has periodical cycle tests, Assignments, seminars, and an end semester examination whose details are given in Table 7. The assessment in this course will be done for a total of 100 marks.

7. Course Assessment Methods – Theory

Sl. No.	Mode of Assessment	Week/Date	Duration	Weightage (%)
1.	Cycle Test – 1	4th week	60 Mins	20
2.	Cycle Test – 2	8th week	60 Mins	20
3.	Assignments & seminars	9th week	3rd week & 6th week	10
6.	End Semester Exam	-	90 Mins	50
			Total	100

8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

Text Books

1. Roger S. Pressman, "Software Engineering-A practitioner's approach", 6thEdition, McGraw Hill, 2001.

Reference Books

1. Rajib Mall, "Fundamentals of Software Engineering", 3rd Edition, PHI, 2009.
2. Ian Sommerville, Software engineering, 8thEdition, Pearson education Asia, 2007.
3. PankajJalote, "An Integrated Approach to Software Engineering", Springer Verlag, 1997.
4. James F Peters,WitoldPedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, 2000.
5. Ali Behforooz, Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, 2009.

which will be given in the class as well as during assessments also. If found to copy from internet/other students, zero marks will be assigned.

- **Attendance**
  100% is a must. However, relaxation upto 15% will be given for leave on emergency requirements (medical, death, etc.) and representing institute events.
- **Academic Honesty**
  i) Possession of any electronic device, if any, found during the test or exam, the student will be debarred for 3 years from appearing for the exam and this will be printed in the Grade statement/Transcript.
  ii) Tampering of MIS records, if any, found, then the results of the student will be withheld and the student will not be allowed to appear for the Placement interviews conducted by the Office of Training & Placement, besides (i).

For Senate's Consideration

Dr N.P.Gopalan & Ms K.Bakiya	Dr S.Suresh	Dr A.Vadivel
Faculty Name	Class Committee Chairperson	HoD