

COURSE PLAN – PART I			
Name of the programme and specialization	MSc., Computer Science		
Course Title	OBJECT ORIENTED SOFTWARE ENGINEERING		
Course Code	CAS775	No. of Credits	3
Course Code of Pre-requisite subject(s)			
Session	July, 2019	Section (if, applicable)	
Name of Faculty	Dr. C.Sivaraj	Department	Computer Applications
Official Email	sivaraj@nitt.edu	Telephone No.	7339431431
Name of Course Coordinator(s) (if, applicable)	Dr. Michael Arock		
Official E-mail	michael@nitt.edu	Telephone No.	
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
Syllabus (approved in BoS)			
<p>Introduction -What is software engineering? – Software Development Life Cycles Models - Conventional Software Life Cycle Models- What is Object Orientation? – Objects and Classes – Features - Object Oriented Software Life Cycle Models -Object oriented Methodologies – Object – Oriented Modeling –Terminologies.</p> <p>Software Requirements Elicitation and Analysis - Case Study: Library Management System-What is Software Requirement? – Requirements Elicitation Techniques – Characteristics of a good Requirement- Software Requirements Specification Document - Requirements Change Management - Object Oriented Analysis - Overview of Cost Estimation Techniques - Agile development – Classification of methods – The agile manifesto and principles – Agile project management Agile Methodology - Method overview – Lifecycle – Work products, Roles and Practices values – Process mixtures – Adoption strategies – Understanding SCRUM.</p> <p>Software Design - Object Oriented Design - What is done in object oriented design? – UML - Refinement of Use Case Description – Refinement of classes and relationships - – Construction of Details class diagrams - Development of Details Design and Creation – Generating Test cases from User Cases – Object Oriented Design principles for Improving Software Quality.</p> <p>Software Implementation - Quality and Metrics -Software Implementation – Tools and Techniques - What is software quality? – Software quality models - Measurement basic - analyzing the metric data - Metrics for measuring size and structure – Measuring software</p>			



quality object oriented metrics – Overview of Scala for Implementation.

Software Testing and Maintenance -What is software testing? – Software verification techniques – Checklist: a popular verification tool - Functional Testing – Structural Testing – Object Oriented Testing - Class testing – State based testing - Mutation testing - Levels of testing - Software testing tools - What is a software maintenance? - Categories – Challenges of software maintenance – Maintenance of Object oriented Software - Software rejuvenation -Estimation of maintenance efforts - Configuration management – Regression testing.

References:

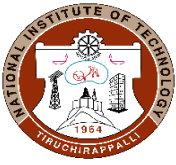
1. Yogesh Singh, Ruchika Malhotra, —Object-Oriented Software EngineeringII, PHI, 2012.
2. Timothy C. Lethbridge and Robert Laganieri, —Object-Oriented Software EngineeringII, McGraw-Hill, 2nd ed., 2004.
3. G. Booch, Benjamin/Cummings, —Object-Oriented Analysis and Design with ApplicationsII, 3rd Edition, Addison-Wesley, 2007.
4. Roger Pressman, —Software Engineering: A Practitioner's ApproachII, McGraw-Hill Higher Education, 2010.
5. S. Kenneth Rubin, —Essential Scrum: A Practical Guide to the Most Popular Agile ProcessII, Pearson Publication, 2012
6. Jason Swartz, —Learning Scala Practical Functional Programming for the JVMII, O'Reilly Media, December 2014

COURSE OBJECTIVES

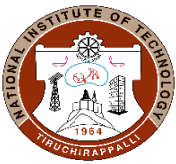
- To comprehend basics of the software engineering process life cycle.
- To be introduced to the object-oriented (OO) approach to software development, through OO principles.
- To be conversant with UML (Unified Modelling Language) and the benefits of visual modeling / diagramming.
- To get introduced to software engineering principles for both procedural and object oriented approaches.

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO)
1. Practice the application principles of object-oriented software development and various CASE tools.	1,3,4,8
2. Convey design decisions using UML.	1, 2,3



COURSE PLAN – PART II			
COURSE OVERVIEW			
This Course aims to give students an understanding of the object-oriented principles in the context of developing software that is well specified, designed and tested.			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1.	Week 1/ 3hrs	Software Engineering Introduction	Chalk and Talk, PPT
2.		Software Development Life Cycles Models	Chalk and Talk, PPT
3.		Objects and Classes	Chalk and Talk, PPT
4.	Week 2/ 3hrs	Object Oriented Software Life Cycle Models	Chalk and Talk, PPT
5.		Object oriented Methodologies	Chalk and Talk, PPT
6.		Oriented Modeling –Terminologies	Chalk and Talk, PPT
7.	Week 3/ 4hrs	Software Requirements Elicitation and Analysis	Chalk and Talk, PPT
8.		Case Study: Library Management System	Chalk and Talk, PPT
9.		Software Requirement	Chalk and Talk, PPT
10.		Characteristics of a good Requirement	Chalk and Talk, PPT
11.	Week 4/ 4hrs	SRS Document	Chalk and Talk, PPT
12.		Cost Estimation Techniques	Chalk and Talk, PPT
13.		Agile Methodology	Chalk and Talk, PPT
14.		Understanding SCRUM.	Chalk and Talk, PPT
15.	Week 5/ 3hrs	Software Design	Chalk and Talk, PPT
16.		Object Oriented Design	Chalk and Talk, PPT
17.		UML	Chalk and Talk, PPT
18.	Week 6/ 3hrs	Use Case Description	Chalk and Talk, PPT
19.		Refinement of classes and relationships	Chalk and Talk, PPT
20.		class diagrams	Chalk and Talk, PPT



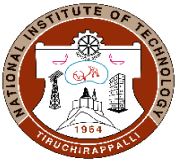
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21.	Week 7/ 4hrs	Generating Test cases from User Cases	Chalk and Talk, PPT
22.		OOD principles for Improving Software Quality	Chalk and Talk, PPT
23.		Software Implementation	Chalk and Talk, PPT
24.		Quality and Metrics	Chalk and Talk, PPT
25.	Week 8/ 3hrs	Tools and Techniques	Chalk and Talk, PPT
26.		Software quality models	Chalk and Talk, PPT
27.		Measurement basic	Chalk and Talk, PPT
28.	Week 9/ 4hrs	Metrics for measuring size and structure	Chalk and Talk, PPT
29.		Measuring software quality object oriented metrics	Chalk and Talk, PPT
30.		Scala for Implementation	Chalk and Talk, PPT
31.		Software Testing and Maintenance	Chalk and Talk, PPT
32.	Week 10/ 3hrs	Software verification techniques	Chalk and Talk, PPT
33.		verification tool	Chalk and Talk, PPT
34.		Software testing tools	Chalk and Talk, PPT
35.	Week 11/ 2hrs	software maintenance	Chalk and Talk, PPT
36.		Configuration management	Chalk and Talk, PPT

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.N o.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	As per schedule	60 mins	20
2	Cycle Test 2	As per schedule	60 mins	20
3	Assignment /Projects	7 th to 10 th week	-	20
CPA	Compensation Assessment*	12 th week		40
4	End Semester Exam	As per schedule		40



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COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

- The students through the class representative may give their feedback at any time to the course chairman which will be duly addressed.
- The students may also give their feedback during class committee meeting.
- Course Outcome Survey' form will be distributed on the last working day to all the students and the feedback on various rubrics will be analyzed.
- The COs will be computed after arriving at the final marks.

COURSE POLICY (including compensation assessment to be specified)

Students who are all absent for both the cycle test for a genuine reason may be given CPA and it will cover the portion of cycle test 1 and 2.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.


ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

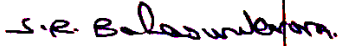
ADDITIONAL INFORMATION, IF ANY

The students can get their doubts clarified at any time with their faculty member with prior appointment

FOR APPROVAL


Course Faculty


CC- Chairperson


HOD