

Course Content	Hours
Unit-I: System Study and System Development Life Cycle	12 hrs
<ul style="list-style-type: none"> • System, System Types, System Characteristics, System Study, System Approach, Elements of System Analysis, Role and Attribute of System Analyst, Program Analyst, Designer, Information Analyst, Computer Based Information System. Why System Projects? • System Development Life Cycle <ul style="list-style-type: none"> • Understanding Activities of Each Phase • Outcome and Deliverable with Document name of each phase • Fact Finding Techniques in detail. 	
Unit- II: Designing the system with CASE & CAD tools.	
<ul style="list-style-type: none"> • Drawing design charts using MS Visio. • Structured Chart, Hierarchical Input Process Output Diagram • Understanding Concepts of UML and Designing charts (Class, Use Case and Activity) based on it. • Data Flow Diagram <ul style="list-style-type: none"> ○ Prepare prerequisite List (Process List, External Entities, List of Tables) ○ Context, 1st level and 2nd level diagram. • Drawing Table Structure of database and interrelation of tables Or prepare database including primary key and foreign key concepts using GUI interface of MySQL or Microsoft SQL Server. • Algorithms, Flow charts • User Interface Flow Diagram 	
Unit-III: Introduction of Software Engineering and Software Development Paradigm	12 hrs
<ul style="list-style-type: none"> • Software Engineering: A Layered Technology. • Software Process and Software Process Models. <ul style="list-style-type: none"> • Waterfall Model • Iterative Model • V-Model • Spiral Model • Big Bang Model • Prototyping Model 	
Unit-IV: Project Management with CAM tools& Capability Maturity Model	12 hrs
<ul style="list-style-type: none"> • Concept of Project Management • Timeline chart and Pert chart in MS Project. • Function Point and LOC based Metrics. • Concept of Project Scheduling and Tracking. • Capability Maturity Model (CMM) 	

Unit- V: Software Quality Assurance and Testing	12 hrs
<ul style="list-style-type: none"> • Introduction to software Testing • Software faults and failures • Bug/Error/Defect/Faults/Failures • Testing Artifacts: Test case, Test Script, Test Plan, Test Harness, Test Suite • Static Testing: Informal Review, Walkthrough, Technical Review, Inspection • Dynamic Testing, Testing Levels: Unit Testing, Integration and System Testing. • Automated Testing using (any freeware or open source) software testing tools. 	

Text books:

- James A. Senn, Analysis & Design of Information System, McGraw Hill
- Rajib Mall, Fundamentals of Software Engineering. Prentice Hall India Learning Private Limited.

Reference books:

- Pressman, R. S. Software Engineering: A Practitioner's Approach, McGraw-Hill Education
- Gooch, Object Oriented Analysis and Design.
- Priyank D. Doshi, SAD Software Quality Assurance and Testing, Bharat & Co., Rajkot.

Pedagogic tools:

- Chalk and Board
- Power point presentation
- Group Discussion
- Videos

Methods of Assessment & Tools:

Components of CIA: 30 marks

Sr. No.	Component	Content	Duration (if any)	Marks	Sub Total
A	Test 1	1 st & 2 nd units	1 ^{1/2} hours	5 (Set for 30)	20
	Test 2	All 5 units	3 hours	15 (Set for 70)	
B	Assignment	-	-	5 (Set for 20)	10
	Class activity	-	-	5 (Set for 20)	
Grand Total					30

Assignment	<ul style="list-style-type: none"> • Concept mapping • Student generated handbook • Essay writing & Similar activities • Reaction paper • Quiz • One-minute paper • Situation based question
Class activity	<ul style="list-style-type: none"> • Analysis and Design of any Business system* where student is frequently visiting and having prior knowledge or he can visit the business place to perform fact finding techniques. Student will prepare documentation including all diagram according unit 1 & unit 2 and submit to his subject teacher.

*Sample Topics for Class Activity for Analysis and Design	
1	“Hospital Management System.”
2	“Virani Science College Academic System”
3	“Vishal Travel Agency”
4	“Student having own Home Business they can select their appropriate topic and requirement.”
5	“Online Education System – LMS of any institute”

Note: Any other assessment tools or methods can be adopted as per requirement of the course.