

Branch Name:	BCA (Bachelor of Computer Application)
Program Code:	CS101
Course Title:	System Analysis and Design
Course Code:	23-CAM203-2C
Pre-requisite Course:	Basic knowledge of Fundamentals of Computers and Programming Concepts.

Course Objective:

This course is intended to make the students:

Basic knowledge of Fundamentals of Computers and Programming Concepts.

- To introduce fundamental concepts of systems, system components, and SDLC.
- To develop understanding of system analysis techniques including fact-finding and decision tools.
- To impart knowledge of system design concepts such as code, input, output, and form design.
- To train students in using modeling tools like DFD, flowcharts, and documentation techniques.
- To apply system analysis and design concepts to real-life case studies.

Teaching and Examination Scheme:

Teaching Scheme (Hours. per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	
2	-	2	3	09	25	09	25	-	-	09	25	75

Course Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1.	Introduction of System: System definition, Element and General Model of System, Characteristics of System, Types of Systems, Types of Users, System Development Strategy (SDLC). System Analysis: Role of System Analyst, System Investigation: Fact Finding Techniques, Tools for Documenting Procedures & Decision: Decision Tree, Decision Table.	12	25
2.	Code Design: Principles of Code Design, Types of Code. Form Design: Types of form, Principles of Form Design, Form Design Steps.. Input Design: Data Capture, Steps of Data Capture, Data Validation. Output Design: Objective of Output, Principles of Output Design, Types of Output, Output Considerations.	12	25
3.	Data Flow Diagram: Symbols of DFD, Rules for to Draw a DFD, Physical and Logical DFD, Types of DFD (Zero Level DFD, First Level DFD, Second Level DFD), Data Dictionary. System Engineering: Design of Software, Software design and documentation tools Structure Flowchart, HIPO Chart, Warnier /Orr Diagrams.	12	25
4.	Case Studies: (Input, Output, DFD): Inventory / Stock System · Library System Online Shopping System · College Admission and Enrollment System · Student Attendance and Evaluation System.	12	25

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

1. **CLO1:** Understand basic system concepts, types of systems, users, and SDLC process.
2. **CLO2:** Analyze system requirements using fact-finding techniques and decision tools like decision tables and trees.
3. **CLO3:** Design system components including code design, input/output design, and form design.
4. **CLO4:** Develop system models using DFD, data dictionary, and documentation tools like flowcharts and HIPO charts.
5. **CLO5:** Apply system analysis and design concepts to real-world problems through case studies.

List of Textbooks:

1. System Analysis and Design is written by Elias M. Awad, published by Galgotia Publications Pvt. Ltd. in 1998.
2. Systems Analysis and Design is written by Kenneth E. Kendall and Julie E. Kendall, published by Pearson Education in 2019.
3. Modern Systems Analysis and Design is written by Jeffrey A. Hoffer, Joey F. George, and Joseph S. Valacich, published by Pearson Education in 2020.
4. Systems Analysis and Design is written by Alan Dennis, Barbara Haley Wixom, and Roberta M. Roth, published by Wiley India Pvt. Ltd. in 2018.
5. Systems Analysis and Design Methods is written by Jeffrey L. Whitten and Lonnie D. Bentley, published by McGraw-Hill Education in 2007.
6. Systems Analysis and Design (Shelly Cashman Series) is written by Gary B. Shelly and Harry J. Rosenblatt, published by Cengage Learning in 2012.

List of Reference Books:

1. System Analysis and Design is written by S. Parthasarathy and B. W. Khalkar, published by Master Academy Publication in 2010.
2. Analysis and Design of Information Systems is written by James A. Senn, published by McGraw-Hill Education in 2004.
3. Introduction to Systems Analysis and Design is written by I. T. Hawryszkiewicz, published by Prentice Hall in 2001.
4. System Analysis and Design: An Object-Oriented Approach with UML is written by Arlow Jim and Neustadt Ila, published by Addison-Wesley in 2005.
5. Object-Oriented Analysis and Design with Applications is written by Grady Booch, published by Pearson Education in 2007.

E-Resource / Web Links:

1. https://www.tutorialspoint.com/system_analysis_and_design/index.htm
2. https://www.tutorialspoint.com/system_analysis_and_design/system_analysis_and_design_quick_guide.htm
3. <https://www.geeksforgeeks.org/system-design-tutorial/>
4. <https://www.javatpoint.com/system-analysis-and-design>
5. <https://www.w3computing.com/systemsanalysis/>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Practical List:

1. Study and identify components, inputs, outputs, and users of a real-life system (e.g., shop, library, college).
2. Prepare a chart showing phases of SDLC with explanation using a simple system example.
3. Conduct fact-finding using interview and questionnaire methods and prepare a report.
4. Perform feasibility study (technical, economic, operational) for a small system.
5. Draw Decision Table and Decision Tree for a given problem.
6. Design different types of codes (numeric, alphabetic, alphanumeric) for a system.
7. Design a form (e.g., student registration form) using principles of form design.
8. Design input screens with validation rules for a system.
9. Design output reports (e.g., marksheet, sales report).
10. Draw Data Flow Diagram (DFD) – Level 0 and Level 1 for a system.
11. Prepare Data Dictionary for the designed system.
12. Draw flowcharts for processes like ATM or online shopping system.
13. Prepare HIPO Chart / Structure Chart for a system.
14. Develop a mini case study including input, output, DFD, and documentation.

Mapping of CLO, PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	M	L	L	H	L	L	L	L	L	L	L	M	M	L	L
CLO2	M	M	L	M	L	M	H	M	L	M	L	M	M	M	L
CLO3	M	M	L	M	M	H	M	H	M	M	M	M	H	M	M
CLO4	M	M	L	H	M	H	H	H	M	M	M	M	H	M	M
CLO5	H	M	M	M	L	M	H	H	M	H	M	H	H	H	H

H: High, M: Medium, L: Low