

## System Analysis and Design

**Course Title:** System Analysis and Design  
**Course No:** CSC315  
**Nature of the Course:** Theory + Lab  
**Semester:** V

**Full Marks:** 60 + 20 + 20  
**Pass Marks:** 24 + 8 + 8  
**Credit Hrs:** 3

**Course Description:** This course familiarizes students with the concepts of information systems development including systems development life cycle, different approaches to systems development, project management, planning, analysis, design, implementation and maintenance. This course also covers some fundamental concepts of object oriented systems analysis and design.

**Course Objectives:** The main objective of this course is to provide knowledge of different concepts of system analysis and design so that students will be able to develop information systems using different methodologies, tools, techniques, and approaches.

### Course Contents:

#### Unit 1: Foundations for Systems Development (10 Hrs.)

- 1.1. The Systems Development Environment:** Introduction; A Modern Approach to Systems Analysis and Design; Developing Information Systems and the Systems Development Life Cycle; The Heart of the Systems Development Process and Traditional Waterfall SDLC; CASE Tools
- 1.2. Other Approaches:** Prototyping; Spiral; Rapid Application Development; Introduction to Agile Development
- 1.3. Managing the Information Systems Project:** Introduction; Managing the Information Systems Project; Representing and Scheduling Project Plans; Using Project Management Software

#### Unit 2: Planning (5 Hrs.)

- 2.1. Identifying and Selecting Systems Development Projects:** Introduction; Identifying and Selecting Systems Development Projects; Corporate and Information Systems Planning
- 2.2. Initiating and Planning Systems Development Projects:** Introduction; Initiating and Planning Systems Development Projects; Process of Initiating and Planning IS Development Projects, Assessing Project Feasibility; Building and Reviewing the Baseline Project Plan

#### Unit 3: Analysis (13 Hrs.)

- 3.1. Determining System Requirements:** Introduction; Performing Requirements Determination; Traditional Methods for Determining Requirements; Contemporary Methods for Determining System Requirements; Radical Methods for Determining System Requirements
- 3.2. Structuring System Process Requirements:** Introduction; Process Modeling; Data Flow Diagrams; Modeling Logic with Decision Tables, Decision Trees, and Pseudocodes
- 3.3. Structuring System Data Requirements:** Introduction; Conceptual Data Modeling; Gathering Information for Conceptual Data Modeling; Introduction to E-R Modeling

#### Unit 4: Design (7 Hrs.)

- 4.1. Designing Databases:** Introduction; Database Design; Relational Database Model; Normalization; Transforming E-R Diagrams Into Relations; Merging Relations; Physical File and Database Design; Designing Fields; Designing Physical Tables
- 4.2. Designing Forms and Reports:** Introduction; Designing Forms and Reports; Formatting Forms and Reports; Assessing Usability

**4.3.Designing Interfaces and Dialogues:** Introduction; Designing Interfaces and Dialogues; Interaction Methods and Devices; Designing Interfaces; Designing Dialogues; Designing Interfaces and Dialogues in Graphical Environments

**Unit 5: Implementation and Maintenance (4 Hrs.)**

**5.1.System Implementation:** Introduction, System Implementation, Software Application Testing, Installation, Documenting the System, Training and Supporting Users, Organizational Issues in Systems Implementation

**5.2.Maintaining Information Systems:** Introduction, Maintaining Information Systems, Conducting Systems Maintenance

**Unit 6: Introduction to Object-Oriented Development (6 Hrs.)**

Basic Characteristics of Object-Oriented Systems; Object-Oriented System Analysis and Design (OOSAD); Introduction to Unified Modeling Language, Structural and Behavioral Diagrams

**Laboratory / Project Work:** In the practical session, students will learn to use project management, CASE, and modeling tools. They also prepare a project report that includes at least analysis, design, and implementation phases of system analysis and design. The project can be done in groups with at most four members in each group using any suitable database, programming, and interfacing technologies.

**Text Books:**

1. Joseph S. Valacich and Joey F. George, *Modern Systems Analysis and Design*, 8<sup>th</sup> Edition, Pearson
2. Alan Dennis, Barbara Haley Wixom, and David Tegarden, *Systems Analysis and Design – An Object-Oriented Approach with UML*, 5<sup>th</sup> Edition, Wiley

**References Books:**

1. Kenneth E. Kendall and Julie E. Kendall, *System Analysis and Design*, 9<sup>th</sup> Edition, Pearson
2. Jeffrey Whitten and Lonnie Bently, *System Analysis and Design Methods*, 7<sup>th</sup> Edition
3. Scott Tilley and Harry J. Rosenblatt, *System Analysis and Design*, 11<sup>th</sup> Edition