devices. A computer system means a digital processing device. It is a collection of technologies to serve the users based on the set of requirements. For example, in a computing system, social networking applications like Instagram, Netflix are considered as a system. In real life, hotels, homes, buildings etc. are considered as a system. All systems have some components that works together to serve the user to fulfill the requirements.The followings are the components of a computer system:

i) Input
ii) Processing
iii) Output
iv) Memory
v) Communication devices

The above-mentioned components of a computer system have their purposes, and they are used to serve the requirements of a user. The input components such as keyboard, mouse, etc. are used to put the input to the computer system. Like, processing components process the input parameters to produce the output and display the same in the output devices, printer, monitor, etc. Communicating devices send the information from one device to another or the other components of the computer system. The term design denotes the process of selecting the parameters to design the computer system, the interaction process, etc.To design a system, the followings parameters are required to satisfy the requirements of a system

i) Architecture
ii) Product design
iii) Interfaces
iv) Data

1.4 CHARACTERISTICS OF SYSTEM

A system is a combination of different components. A complete system must have the following characteristics.

a) **Organization**: It defines the structural representation of the components of a system to achieve a goal based on the user

Course Code:PG CA S2-05(DSE)

Two Year Post Graduate Programme

System Analysis and Design

Second Semester
Discipline Specific Elective Course

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

Hiranya Chandra Bhuyan School of Science and Technology

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Subject Experts

Prof. Anjana Kakoti Mahanta, Gauhati University
Prof. Hiren Kumar Deva Sarma, Gauhati University
Dr. Lipi B Mahanta, IASST, Guwahati
Dr. Sanjib Kr. Kalita, Gauhati University

Course Co-ordinator :

Dr. Sruti Sruba Bharali, KKHSOU

SLM Preparation Team

UNITS	CONTRIBUTORS
1, 11, 15	**Dr. Utpal Barman**, GIMT, Guwahati
2	**Dr. Tapashi Kashyap Das**, KKHSOU
3,4,5	**Mr. Saurabh Sutradhar**, Royal Global University
6,7, 8	**Dr. Gautam Chakraborty**, NERIM
9, 10, 12	**Mrs. Shrabani Medhi**, GIMT, Guwahati
13, 14	**Mr. Adarsh Pradhan**, GIMT, Guwahati

Editor

Content: Dr. Ridip Dev Choudhury, KKHSOU
Structure, Format & Graphics: Dr. Ridip Dev Choudhury, KKHSOU

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City Centre: NH 37, Khanapara, Guwahati-781022; Web:www.kkhsou.in

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UNIT 1: SYSTEM CONCEPT

UNIT STRUCTURE

1.1 Learning Objectives
1.2 Introduction
1.3 System Definition
1.4 Characteristics of System
1.5 Elements of System
1.6 Types of System
1.7 Let Us Sum Up
1.8 Further Reading
1.9 Answer to Check Your Progress
1.10 Model Questions

1.1 LEARNING OBJECTIVES

After going through this unit, you will be able to –

- define a system
- understand the characteristics of a system
- describe the elements of a system
- describe different types of a system

1.2 INTRODUCTION

This is the first unit of the block for the course “System Analysis and Design”. This unit covers topics like system definition, characteristics of system, elements and types of system in detail. The next unit will explore the topics related to system development life cycle.

1.3 SYSTEM DEFINITION

A system is a group of related modules or parts or elements that work together. Interacting, interrelated and interdependent elements are combinedly known as system. In computer science, a system is a set of components such as input, output, process, memory and communicating

Unit 10: Input/Output and Form Design
Understand how to design inputs, outputs, and forms for your system effectively.

Unit 11: Database Design
Discover the importance of organizing data in a structured way and learn about different types of databases.

Unit 12: System Testing
Explore the critical phase of testing a system to ensure it works as expected.

Unit 13: Quality Assurance
Learn about maintaining the quality of the system through proper documentation.

Unit 14: Implementation
Explore how to turn your system into reality, including data conversion and training.

Unit 15: Project Scheduling
Understand the importance of planning and managing a project using tools like Gantt charts and PERT.

By the end of this course, you'll have a solid understanding of how to analyze, design, and build systems that can make a real impact in various fields. So, let's embark on this learning journey together and become skilled System Analysts and Designers!

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY
System Analysis and Design

DETAILED SYLLABUS

		Pages
UNIT 1 :	**System Concept** System definition, Characteristics of a system: Organization, Interaction, Interdependence, integration, Elements of a system: inputs and outputs, Processors, control, feedback, environment, boundaries and interface, Types of systems: Physical or abstract system, open or closed system.	**7-14**
UNIT 2 :	**System Development Life Cycle** Introduction, Recognition of need, Feasibility study, Analysis, design, implementation, post implementation and maintenance, consideration for candidate system, prototyping	**15-31**
UNIT 3 :	**Role of System Analyst** Introduction, Interpersonal skill, academic and professional qualification, multifaceted role of the analyst, analyst/user interface, conflict resolution, place of analyst in the MIS organization	**32-44**
UNIT 4 :	**System Planning and Initial Investigation** Introduction, bases for planning in system analysis, dimensions of planning, strategic MIS planning, Managerial and operational MIS planning, initial investigation, needs identification, determining the user's information requirements, background analysis, fact finding, review of written documents, on site observations.	**45-54**
UNIT 5 :	**Information Gathering** Introduction, types of information needed, information about the organization, information about user staff, information about work flow, origin of information, review of literature, procedures and forms, interviews and questionnaires	**55-61**
UNIT 6 :	**Tools of Structured Analysis** Introduction, Data flow diagram (DFD), DFD symbols, constructing a DFD, data dictionary, structured English, decision tree, decision table	**62-86**
UNIT 7 :	**Feasibility Study** Introduction, system performance definition, statements of	**87-101**

constraints, identification of specific system objectives, feasibility consideration: economic feasibility, technical feasibility, behavioral feasibility, steps in feasibility analysis, feasibility report

UNIT 8 : Cost/Benefit Analysis **102-113**

Introduction, data analysis, cost and benefit categories, procedure for cost/benefit determination

UNIT 9 : The Process and Stages of System Design **114-133**

Introduction, The process of design : Logical and physical design, design methodologies, structured design, functional decomposition, Forms driven methodology, HIPO and IPO chart

UNIT 10 : Input/Output and Form Design **134-156**

Introduction, Input design, input data, source data, input media and devices, online data entry, formatted form, screen design, output design, form design, requirements of form design, types of form, box design

UNIT 11 : Database Design **157-175**

Introduction, objective of database, key terms in database, Logical and physical views of data, schemas and subschemas, Types of relationships, Types of data structure : hierarchical, network, relational, entity and attributes, role of dataset administrators, Normalization

UNIT 12 : System Testing **176-196**

Introduction, Need for system testing, nature of test data, test plan, activity network for system testing, types of system test

UNIT 13 : Quality Assurance **197-220**

Introduction, quality factor specification, levels of quality assurance, software requirement specification, software design specification

UNIT 14 : Implementation **221-231**

Introduction, conversion, activity network for conversion, file conversion, creating test files, training aids

UNIT 15 : Project Scheduling **232-242**

Introduction, reason for system failure, project management, Planning tools: Gantt charts, program evaluation and review techniques (PERT), project management software.

COURSE INTRODUCTION

Welcome to the world of System Analysis and Design! This course is all about understanding how systems work, planning them effectively, and making them better. We'll break down complex concepts into simple language, so you can learn step by step.

In this course, you'll explore the following key areas:

Unit 1: System Concept
We'll start by defining what a system is and its characteristics. You'll learn how systems are organized, how they interact, and why they are essential in today's world.

Unit 2: System Development Life Cycle
Discover the journey a system goes through, from recognizing the need for it to maintaining it after it's built. We'll also talk about prototyping, a creative way to design systems.

Unit 3: Role of System Analyst
Explore the role of a system analyst and how they help bridge the gap between technology and people. Learn about the skills and qualifications needed for this important job.

Unit 4: System Planning and Initial Investigation
Understand the planning phase, where we figure out why a system is needed and what it should do. We'll also delve into initial investigations and identifying user requirements.

Unit 5: Information Gathering
Discover how to collect the right information to build an effective system. We'll cover various methods, including interviews and questionnaires.

Unit 6: Tools of Structured Analysis
Learn about essential tools like Data Flow Diagrams (DFD) and Decision Trees that help visualize and design systems.

Unit 7: Feasibility Study
Find out how to determine if a system idea is feasible by looking at its economic, technical, and behavioral aspects.

Unit 8: Cost/Benefit Analysis
Explore how to analyze the costs and benefits of a system to make informed decisions.

Unit 9: The Process and Stages of System Design
Dive into the design process, including logical and physical design, methodologies, and more.