

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: SYSTEMS ANALYSIS AND DESIGN

CODE NO.: EDP108 SEMESTER: THREE

PROGRAM: COMPUTER PROGRAMMER

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PREVIOUS OUTLINE DATED: SEPTEMBER, 1993

New: \_\_\_\_\_ Revision: X

APPROVED: DEAN, SCHOOL OF BUSINESS & HOSPITALITY \_\_\_\_\_  
DATE

Total credit time: 60 hours

Prerequisites: EDP100

**I PHILOSOPHY/GOALS:**

This course introduces the student to the total information system environment and to the analysis and design of information system development. Students will make a systems presentation of a typical information system.

**II STUDENT PERFORMANCE OBJECTIVES:**

Upon successful completion of this course, the student will be able to:

1. examine and interpret the concepts, philosophies and trends of Systems Analysis and Design
2. demonstrate skills in use of Systems Analysis tools and techniques
3. demonstrate skills in use of Systems Design tools and techniques

**III TOPICS TO BE COVERED**

1. The Modern Systems Analyst
2. Information Systems Building Blocks
3. A Systems Development Life Cycle
4. Systems Development Techniques and Methodologies
5. Computer-Aided Systems Engineering
6. Systems Planning
7. Systems Analysis
8. Data Modeling
9. Process Modeling
10. Network Modeling
11. Using a Project Repository
12. Systems Design
13. Data Analysis
14. Project Management
15. Fact-Finding Techniques
16. Feasibility Analysis
17. Interpersonal Skills
18. Introduction to Computer Assisted Systems Engineering (CASE), using Excelerator

IV LEARNING ACTIVITIES

1. The Modern Systems Analyst

Learning Activities

- . define and discuss the systems analyst's role and responsibilities in a typical organization
- . differentiate among the types of work done by a Systems Analyst and other computer professionals
- . define the five principle activities performed by the systems analyst

learning resource Ch 1

2. Information Systems Building Blocks

Learning Activities

- . describe an information system
- . describe information workers, and their interaction with information systems
- . describe five categories of information systems users and their data and information needs
- . describe the difference between data and information
- . Describe four views of the DATA, ACTIVITIES, NETWORKS, and TECHNOLOGY building blocks
- . describe six information functions commonly provided by information systems
- . explain why networks have become an important building block in information systems

learning resource Ch 2

3. A Systems Development Life Cycle

Learning Activities

- . explain eight basic principles of systems development
- . discuss origins of systems development projects
- . define and categorize problems, opportunities and directives
- . identify and explain systems development phases, including the purpose, input and output for each phase
- . discuss overlapping activities of the life cycle

learning resource Ch 3

4. Systems Development Techniques and Methodologies

Learning Activities

- . describe, compare and contrast the life cycle, techniques and methodologies
- . describe several popular systems development techniques
- . explain desirability of using a combination of methodologies, instead of using one methodology
- . describe the common characteristics of a commercial methodology

learning resource Ch 4

5. Computer-Aided Systems Engineering

Learning Activities

- . define CASE in its broadest context of automating or assisting the entire systems development life cycle
- . analyse upper, lower and cross life cycle CASEs
- . describe various CASE tools
- . differentiate among application programmers' workbenches, component generators and code generators
- . differentiate between reengineering and reverse engineering
- . describe CASE in terms of repositories and facilities
- . differentiate between local and centralized repositories, and their workings
- . describe three ways to integrate CASE
- . explain benefits and cost of CASE, and justify the cost

learning resource Ch 5

6. Systems Planning

Learning Activities

- . define systems planning, relating it to study and definition phases
- . describe the role of a depository in systems planning
- . describe the study, definition and analysis phases in terms of information systems building blocks, objectives, activities, roles, inputs and outputs
- . differentiate between "business area" and "systems" analysis
- . explain the use of business areas and their analyses
- . describe system modeling and matrix analysis techniques and their roles

learning resource Ch 6

7. Systems Analysis

Learning Activities

- . define systems analysis and relate the term to the survey, study, definition, and selection phases of the life cycle
- . analyze the survey, study and definition phases in terms of information system building blocks, objectives, activities, roles, inputs and outputs
- . describe system modeling techniques and their roles in systems analysis
- . describe and demonstrate the use of PIECES problem solving technique

learning resource Ch 7

8. Data Modeling

Learning Activities

- . define and differentiate among essential, implementation, current and proposed system models
- . define data modeling and explain its importance
- . read and interpret a Peter Chen - style data model
- . identify fundamental, associative, supertype and subtype data entries
- . describe simple and complex relationships and describe their cardinality and ordinality
- . describe similarities between various data modeling notations
- . explain the use of data modeling
- . draw an entity relationship data model depicting data entries and natural relationships among those data entries
- . identify data attributes describing data entities

learning resource Ch 8

9. Process Modeling

Learning Activities

- . define process modeling and explain its importance
- . explain the uses of process modeling
- . factor a system into component subsystems, functions and tasks using a decomposition diagram, and document their interactions using data flow diagrams
- . explain the relationship between process models (DFDs) and data models (ERDs)

- . differentiate between the explosion and expansion approaches for drawing data flow diagrams
  - learning resource Ch 9
- 10. Network Modeling
  - Learning Activities
  - . describe network modeling and its uses and importance
  - . factor systems locations into component locations using a location decomposition diagram
  - . document the connections and essential data flows between locations using location connectivity diagrams (LCD)
  - . explain relationships among network (LCD), process (DFD) and data (ERD) models
    - learning resource Ch 10
- 11. Using a Project Repository
  - Learning Activities
  - . describe the need for a project repository
  - . define the contents of data entities, data flows and data stores in terms of restricted data structures consisting of data attributes
  - . create complete project repository entries for data entities, data flows, data stores and locations
  - . create project repository entries for data attributes and their codes
  - . differentiate between a policy and a procedure
  - . describe problems encountered in documenting procedures, particular with the English language
  - . construct a decision table, describing policies in terms of conditions and actions
  - . write procedure specifications using structured English
    - learning resource Ch 11
- 12. Systems Design
  - Learning Activities
  - . define the systems design process in terms of the selection, acquisition and design and integration phases of the life cycle
  - . describe selection, acquisition and design and integration phases in terms of such concepts as information building blocks, objectives, activities
  - . describe and compare traditional and prototyping approaches to systems design
    - learning resource Ch 12

13. Data Analysis

Learning Activities

- . Explain the need to analyze a data model for simplicity, redundancy, flexibility and adaptability
- . describe a step-by-step approach to performing data analysis
- . explain the need to analyze business events and their impact on a system's data

learning resource Ch 13

14. Project Management

Learning Activities

- . describe project management
- . describe and construct PERT charts and Gantt charts

learning resource Module A

15. Fact-Finding Techniques

Learning Activities

- . sample existing documentation, forms and files for facts
- . describe research and conduct site visits
- . conduct observations of work environments
- . set up, administer and interpret questionnaires
- . perform interviews
- . conduct Joint Application Design (JAD) sessions

learning resource Module B

16. Feasibility Analysis

Learning Activities

- . conduct feasibility evaluations at successive phases in the project
- . describe four tests for feasibility
- . perform cost-benefit analyses on systems

learning resource Module C

## Learning Activities

- . describe the procedures to communicate with people, conduct meetings, presentations and walkthroughs with the project team, end-users and management
- . write business and technical reports

learning resource Module D

18. Introduction to Computer Assisted Systems Engineering (CASE), using Excelerator.

## Learning Activities

- . describe uses of a CASE tool, Excelerator, in assisting in systems analysis and design
- . use Excelerator in a basic fashion

learning resource hand-outs

## V EVALUATION METHODS

Tests (3 @ 25%)	75%	
Term Project	20%	*explained on a following sheet
Participation	5%	
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	100%	

**Grading:**

A+	90 and over
A	80 and over
B	70 and over
C	60 and over
R	under 60

## VI PRIOR LEARNING ASSESSMENT

Currently, there are no challenge processes in place.

## VII REQUIRED STUDENT RESOURCES

Text: "SYSTEMS ANALYSIS AND DESIGN METHODS"  
 by Whitten, Bentley, Barlow Third Edition  
 1994  
 available in the Campus Shop

VIII SPECIAL NOTES

Term projects received after the due date are subject to a failing grade.

Students with special needs, such as physical limitations, visual impairments, hearing impairments, or learning disabilities, are encouraged to discuss required accommodations, confidentially, with the instructor.

Your instructor reserves the right to modify the course as is deemed necessary to meet the needs of students.