SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

## COURSE OUTLINE

**COURSE TITLE:** SYSTEMS ANALYSIS AND DESIGN

**CODE NO.:** EDP 108      **SEMESTER:** THREE

**PROGRAM:** BUSINESS PROGRAMMER

**AUTHOR:** FRAN DEW

**DATE:** SEPTEMBER, 1995

**PREVIOUS OUTLINE DATED:**

New:_____     Revision:_____ X

**APPROVED:**_____      _____
       **DEAN, SCHOOL OF BUSINESS &**        **DATE**
            **HOSPITALITY**

| SYSTEMS ANALYSIS AND DESIGN | EDP 108 |
|---|---|
| **COURSE NAME** | **COURSE CODE** |

Total credit time:   60 hours

Prerequisites:  EDP100, EDP111

## I   PHILOSOPHY/GOALS:

This is an introductory course to make the student aware of the total data processing environment and of the concepts involved in the top-down design approach to system development.  Students will follow a typical system design from inception to completion and will be required to make a systems presentation.

## II   STUDENT PERFORMANCE OBJECTIVES:

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

1.   discuss and compare the concepts, philosophies and trends of Systems Analysis and Design

2.   develop skills in use of Systems Analysis tools and techniques

3.   develop skills in use of Systems Design tools and techniques

## III   TOPICS TO BE COVERED

1.   Assuming the Role of the Systems Analyst
2.   Understanding Organizational Style and Its Impact
3.   Determining Feasibility and Managing Activities
4.   Sampling and Investigating Hard Data
5.   Interviewing
6.   Using Questionnaires
7.   Observing Decision-Maker Behaviour and Office Environment
8.   Prototyping
9.   Using Data Flow Diagrams
10.   Analyzing Systems using Data Dictionaries

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## III TOPICS TO BE COVERED – Cont'd.

11. Describing Process Specifications and Structured Decisions
12. Analyzing Semistructured Decision Support
13. Preparing the Systems Proposal
14. Writing and Presenting the Systems Proposal
15. Designing Effective Output
16. Designing Effective Input
17. Designing the File or Database
18. Designing the User Interface
19. Designing Accurate Data–Entry Procedures
20. Quality Assurance through Software Engineering
21. Successfully Implementing the Information System
22. Introduction to CASE (Computer Assisted Systems Engineering)

## IV LEARNING ACTIVITIES

1. Assuming the Role of the Systems Analyst
   Upon successful completion of this unit, the student will be able to
   a    discuss Systems Analysis and Design concepts
   b    discuss and compare Systems Development Life Cycles (SDLC)
   c    Explain the seven phased SDLC
   d    define productivity enhancement and improved analyst–user communication through the use of CASE tools

   Reference: text pp 1–26

2. Understanding Organizational Style and Its Impact
   Upon successful completion of this unit, the student will be able to
   a    define the underlying concepts of business organizations
   b    discuss and demonstrate the context level flow diagram
   c    utilize ENTITY–RELATIONSHIP diagrams

   Reference: text pp 27–46

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## IV  LEARNING ACTIVITIES – Cont'd.

3.  Determining Feasibility and Managing Activities
    Upon successful completion of this unit, the student
    will be able to
    a    discuss how projects are initiated, through
         problems, opportunities or directives
    b    identify and discuss technical, economic and
         operational feasibilities
    c    schedule activities
    d    use Gantt charts and PERT (Program Evaluation and
         Review Techniques) charts
    e    discuss how to manage team members

    Reference: text pp 47–78

4.  Sampling and Investigating Hard Data
    Upon successful completion of this unit, the student
    will be able to
    a    discuss and analyze sampling concepts
    b    compare convenience, purposive, simple random, and
         complex random sampling
    c    examine and discuss types of data gathered from
         quantitative documents, qualitative documents,
         memos and manuals

    Reference: text pp 79–108

5.  Interviewing
    Upon successful completion of this unit, the student
    will be able to
    a    analyze the five interview preparation steps,
         which   are reading background material,
         establishing interviewing objectives, deciding who
         to interview, preparing the interviewee, and
         deciding on question types and structure
    b    select question types and create questions for an
         effective interview
    c    analyze and compare pyramid, funnel and diamond–
         shape interviewing structures to collect data
    d    interpret the interview to get meaningful data
    e    discuss the uses of JAD (Joint Application
         Development) design, along with design and
         benefits

    Reference: text pp 109–146

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**IV   LEARNING ACTIVITIES** – Cont'd.

6.   Using Questionnaires
Upon successful completion of this unit, the student
will be able to
a   create questions for an effective questionnaire
b   use questionnaires to collect data
c   interpret the questionnaire results to get
meaningful data

Reference: text pp 147–174

7.   Observing Decision–Maker Behaviour and Office
Environment
Upon successful completion of this unit, the student
will be able to
a   observe people and the physical environment in
information–gathering
b   apply the technique called STROBE (Structured
Observation of the Environment)

Reference: text pp 175–197

8.   Prototyping
Upon successful completion of this unit, the student
will be able to
a   define and compare "patched–up", "nonoperational",
"first–of–a–series" and "selected features"
prototyping
b   discuss and develop an example of prototyping
c   analyze the user's involvement in prototyping

Reference: text pp 198–227

9.   Using Data Flow Diagrams
Upon successful completion of this unit, the student
will be able to
a   develop DFDs (Data Flow Diagrams) to graphically
depict data processes, data stores, entities and
data flows in a business system
b   compare and contrast logical and physical data
flow diagrams
c   partition data flow diagrams, and discuss the six
reasons for doing so

Reference: text pp 229–289

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## IV   LEARNING ACTIVITIES – Cont'd.

10. Analyzing Systems using Data Dictionaries
    Upon successful completion of this unit, the student
    will be able to
    a    discuss and compare the data dictionary and the
         data repository
    b    create and use a data dictionary to help catalogue
         data processes, flows, stores, structures, and
         elements

    Reference: text pp 291–334

11. Describing Process Specifications and Structured
    Decisions
    Upon successful completion of this unit, the student
    will be able to
    a    set up process specifications for a small system
    b    apply structured English to analyse the decision
         process
    c    use decision tables to interpret the process of
         decision making in the business
    d    set up and analyse a decision tree
    e    compare structured English, decision tables and
         decision trees
    f    demonstrate how a data flow diagram is transformed
         into process specifications, and how process
         specifications balance and correct a data flow
         diagram

    Reference: text pp 335–379

12. Analyzing Semistructured Decision Support
    Upon successful completion of this unit, the student
    will be able to
    a    analyse and discuss analytical and heuristic
         decision making
    b    discuss the three problem solving phases, which
         are intelligence, design and choice
    c    use multiple–criteria methods to solve
         semistructured problems

    Reference: text pp 381–409

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**IV   LEARNING ACTIVITIES** – Cont'd.

13.  Preparing the Systems Proposal
     Upon successful completion of this unit, the student
     will be able to
     a    identify and forecast hardware and software needs
          based on the user's information needs
     b    identify and forecast costs and benefits
     c    explain and compare tangible and intangible
          benefits
     d    explain and compare tangible and intangible costs
     e    explain and compare costs and benefits

     Reference: text pp 411–442

14.  Writing and Presenting the Systems Proposal
     Upon successful completion of this unit, the student
     will be able to
     a    organize the contents of a systems proposal into
          the ten main sections for logical and visual
          effectiveness
     b    write a professional report using tables, graphs,
          charts, Gantt charts and PERT charts, where
          appropriate
     c    orally present a proposal, using a presentation
          package, PowerPoint

     Reference: text pp 443–479
                handouts on MicroSoft PowerPoint

15.  Designing Effective Output
     Upon successful completion of this unit, the student
     will be able to
     a    discuss various techniques to display information

     Reference: text pp 481–526

16.  Designing Effective Input
     Upon successful completion of this unit, the student
     will be able to
     a    discuss the steps in setting up meaningful input
          forms and display terminal screens

     Reference: text pp 527–573

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IV   LEARNING ACTIVITIES – Cont'd.


   17. Designing the File or Database
       Upon successful completion of this unit, the student
       will be able to
       a     discuss the criteria for effectively designed
             files and databases

       Reference: text pp 575–633


   18. Designing the User Interface
       Upon successful completion of this unit, the student
       will be able to
       a     discuss interfaces that help users and businesses
             get needed information into and out of the system
       b     examine and discuss ergonomics and productivity

       Reference: text pp 635–687


   19. Designing Accurate Data–Entry Procedures
       Upon successful completion of this unit, the student
       will be able to
       a     discuss the necessity of efficient and accurate
             data
       b     discuss techniques to validate data

       Reference: text pp 689–729


   20. Quality Assurance through Software Engineering
       Upon successful completion of this unit, the student
       will be able to
       a     discuss design and documentation tools
       b     discuss how to test, maintain and audit data

       Reference: text pp 731–802


   21. Successfully Implementing the Information System
       Upon successful completion of this unit, the student
       will be able to
       a     Discuss the establishment of an Information Centre
             to assist employees
       b     set up employee training
       c     implement a system conversion, with attention paid
             to conversion strategies, security, equipment
             purchases and conversion personnel

       Reference: text pp 803–830

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## IV   LEARNING ACTIVITIES – Cont'd.

22. Introduction to CASE (Computer Assisted Systems
    Engineering), using Excelerator
    Upon successful completion of this unit, the student
    will be able to
    a    examine and discuss the uses of a CASE tool,
         Excelerator
    b    set up DFDs using Excelerator

    Reference: handouts and demonstrations

## V   EVALUATION METHODS

| | |
|---|---|
| Tests (3 @ 25%) | 75% |
| Term Project | 20% |
| Participation | 5% |
| | ---- |
| | 100% |

| Grading: | | |
|---|---|---|
| | A+ | 90 and over |
| | A | 80 and over |
| | B | 70 and over |
| | C | 60 and over |
| | R | under 60 |

## VI   REQUIRED STUDENT RESOURCES

Text:    "SYSTEMS ANALYSIS AND DESIGN"
          by  Kendall and Kendall  Third Edition
            1995
            ISBN 0-13-148883-X

          available in the Campus Shop

Other References:    various texts and manuals in Library
                       handouts concerning Excelerator
                       handouts concerning PowerPoint

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## VII  SPECIAL NOTES

Assignments received after the due date are subject to a 10% per day penalty.

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.

## VIII PRIOR LEARNING ASSESSMENT

Currently, this course is not PLA able / challengeable.