SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Object Oriented Systems Analysis & Design

CODE NO. : CSD307 **SEMESTER:** V

PROGRAM: Computer Programmer Analyst

AUTHOR: Douglas McKinnon

DATE: September 2007 **PREVIOUS OUTLINE DATED:** August 2006

APPROVED:

_____   _____
                                DEAN   **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S): CSD202

HOURS/WEEK: 4

Object Oriented Systems   CSD307
Analysis & Design

I.   COURSE DESCRIPTION:

In this course students will learn how to: produce various, detailed, object models and designs from system requirements; apply the modeling concepts and constructs provided by the Unified Modeling Language (UML); identify use-cases and expand them into full behavioural designs; and ultimately transform their analytic discoveries into a system design that is well documented and ready for implementation.

Students will work individually and within a simulated project team to develop their project management, interpersonal, communication, analytic, design, and presentation skills.

Students will also learn to use Computer Aided Software Engineering (CASE), tools for project management and UML modeling deliverables.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1.   **Describe the evolution of System Development Methodologies**

Potential Elements of the Performance:

- Compare the classical system development life cycle (SDLC) with OO and RAD methodologies
- Understand the evolution of systems development methodologies
- Understand the basic characteristics of Object Oriented systems
- Understand the benefits of using the Unified Modeling Language (UML) in object-oriented systems analysis and design
- Be familiar with the roles and responsibilities of the project team members.

2.   **Understand the project initiation process and standard project evaluation calculations**
Potential Elements of the Performance:

- Understand the importance of linking the information system to business objectives.
- Be able to create a system request.

- Assess technical, economic and organizational feasibility.
- Perform feasibility analysis including project costs and benefits. Differentiate between tangible and intangible costs and benefits. Assign monetary values to costs and benefits, determine cash flow, return on investment, net present value, and total cost of ownership.

3. **Understand the Project Management process**

Potential Elements of the Performance:

- Be able to create a project work plan.
- Identify tasks associated with the project work plan.
- Become familiar with how to staff a project and allocate appropriate tasks.
- Become familiar with estimation of time and costs at the task level.
- Understand how computer aided software engineering, standards, and documentation improve the efficiency of a project.
- Work with an implementation of project management software.
- Understand how to identify and reduce risk on a project.
- Effectively participate and communicate with project team members.
- Illustrate the ability to control, direct and participate in all aspects of the project .

4. **Apply Object Oriented Analysis Techniques**

Potential Elements of the Performance:

- Understand the rules and style guidelines for use-cases and use-case diagrams.
- Understand the process used to create use-cases and use-case diagrams.
- Be able to create use-cases and use-case diagrams with a UML modeling tool.
- Understand the rules and style guidelines for creating Class-Responsibility-Collaboration (CRC) cards, class diagrams, and object diagrams.
- Understand the process used to create CRC cards, class diagrams, and object diagrams.
- Be able to create CRC cards, class diagrams, and object

diagrams
- with a UML modeling tool.
- Understand the relationship between the structural and use-case diagrams.
- Understand the rules and style guidelines for sequence, collaboration, and state-chart diagrams.
- Understand the process used to create sequence, collaboration, and state-chart diagrams.
- Be able to create sequence, collaboration, and state-chart diagrams with a UML modeling tool.
- Understand the relationship between the behavioral, structural and use-case models.

5. **Apply Object Oriented Design Techniques**

Potential Elements of the Performance:

- Understand the transition from analysis to design.
- Understand the use of factoring, partitions and layers.
- Be able to create package diagrams.
- Develop Infrastructure design.
- Develop Network model.
- Develop Hardware/Software Specifications.
- Develop Security, disaster recovery, and contingency plans.

Understand User Interface design principles.

III.   TOPICS:

1. System Development Methodologies
2. Project Initiation Processes
3. Standard Cost/Benefit Analysis
4. Project Management processes and deliverables
5. Object Oriented Analysis Techniques
6. Object Oriented Design Techniques

Object Oriented Systems   CSD307
Analysis & Design

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

Textbooks:

1. **Systems Analysis and Design with UML Version 2.0 - An Object Oriented Approach (2nd edition)**

Author(s): Dennis, Wixom & Tegarden
Publisher: John Wiley & Sons Inc.
ISBN-10: 0-471-34806-6

2. **Course ILT: Project 2003: Basic, 2nd Edition**

Author(s): N/A
Publisher: Thomson - Course Technology
ISBN-10: 1-4239-1374-4

(both textbooks are available in the campus bookstore)

a) Instructor's handouts, guidance, and material as it relates to the individual topics, assignments and/or laboratory exercises
b) Additional reference material will be provided to students, placed in the library for the student use, or referenced on-line

Object Oriented Systems   CSD307
Analysis & Design

V.   EVALUATION PROCESS/GRADING SYSTEM:

Theory tests, practical tests and quizzes   35%
Assignments and lab work   30%
Semester Project   35%

The tentative breakdown is as follows:

  3   Formal Theory Tests
  2   Practical Tests
  12 Assignments/Quizzes/Lab work
  1   Semester Project

Some minor modifications to the above percentages may be necessary.

The instructor reserves the right to adjust the overall mark up or down 5% based on participation and whether the student illustrates an improving trend.

The instructor reserves the right to adjust the overall mark down 3% per instance based on attendance to regularly scheduled lecture and lab periods.   Absenteeism will affect the student's ability to succeed, and to interact with project members. Absenteeism should be discussed with your Professor, in advance if possible, in all cases.

The student must achieve a passing grade in all major evaluation and grading system components to achieve an overall passing grade in the course.

Quizzes may be administered without prior notice to students.

The following semester grades will be assigned to students:

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)   Credit for diploma requirements has been
                 awarded.

Object Oriented Systems   CSD307
Analysis & Design

S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI.   SPECIAL NOTES:

<u>Special Needs</u>:
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 703 so that support services can be arranged for you.

<u>Retention of Course Outlines</u>:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

<u>Communication</u>:
The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Object Oriented Systems   CSD307
Analysis & Design

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII.   DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.