THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-2913-002
Course Name: **Software Requirements Analysis & Design**
Course Webpage: http://courses.acs.uwinnipeg.ca/2913-002/

Instructor Information

Instructor: Victor Balogun
E-mail: vi.balogun@uwinnipeg.ca

Office Hours:	Thursday	1:00pm – 2:00 pm	**Office:**	3D18
Class meeting time:	Mon/Wed	4:00 PM - 5:15 PM	**Room:**	3D01

Important Dates

1. First Class:		Monday, January 6, 2020
2. Reading Week (no classes):		February 16-22, 2020
3. Midterm Exam:		Wednesday, February 26, 2020
4. Final Withdrawal Date w/o academic penalty*:		Friday, March 13, 2020
5. Last Class:		Wednesday, April 1, 2020
6. Final Exam (Comprehensive):		Saturday, April 18, 2020 at 9:00 a.m. Room: TBA
7. University closures:	Louis Riel Day	Monday, February 17, 2020
	Good Friday	Friday, April 10, 2020

*A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before the voluntary withdrawal date.

Course Objectives / Learning Outcomes

This course is intended to introduce students to the requirements definition and design specification phases of software development. It aims to provide coverage of object-oriented approaches to requirements analysis and design of software in various applications. Models, notations and processes for requirements elicitation, representation, and design are treated in depth.
The specific objectives of this course are:

- To convey a thorough understanding of the requirements definition phase of software development

- To instill in students appreciation of the object-oriented approach to requirements analysis and design, and its current documentation tools.
- To provide a solid foundation for the application of techniques used in software requirements *gathering, modelling and design*

Outcomes:

To understand the different phases of a typical project using SDLC under an Agile approach

- To be able to apply specific techniques to gather software requirements
- To be able to create use case diagrams / descriptions and activity diagrams used in modelling software requirements
- To be able to create class diagrams
- To be able to create sequence diagrams
- To understand communication (Collaboration) diagrams
- To understand basic Object-oriented concepts and terminology
- To be able to model class packages

Evaluation Criteria

1. **Assignments (20%)**
   - Assignment 1 due *January 29, 2020*
   - Assignment 2 due *February 12, 2020*
   - Assignment 3 due March 11, 2020
   - Assignment 4 due April 1, 2020

All assignments due before the beginning of class. As a rule, late assignments will not be accepted, unless documented extenuating circumstances, such as a medical situation, prevented the timely completion of the work.

2. **Midterm Exam** (**25%**) – *February 26, 2020*
   - Missed exam will receive a mark of zero, unless a medical certificate is provided, no accommodation is made for missed exams.

3. **Final Exam (55%) -** Saturday, April 18, 2020

Please contact the instructor as soon as possible if extenuating circumstances require you to miss a class, assignment, test or examination.

Keep a copy of all class work handed back in case there is an error in recording of marks by the instructor.

Test / Exam Requirements

- Photo ID at exam is required.
- You are expected to write the test/exam on its given day.
- No electronic devices (e.g. cell/smart phone, laptop, scientific calculators, translators, etc.) are permitted.
- Midterm and final exams are closed-book.

- Unless a medical certificate is provided, no accommodation is made for missed exams.

Final Letter Grade Assignment

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90 – 100%	B+	75 – 79%	C	60 – 64%
A	85 – 89 %	B	70 – 74%	D	50 – 59%
A-	80 – 84%	C+	65 – 69%	F	below 50%

Required Text Book / Reading List

- We will use the following book as guide, supplemented with readings throughout the course: Systems Analysis and Design in a Changing World, (7th Edition). John Satzinger, Robert Jackson, Stephen Burd - Cengage Learning ISBN 978-1-305-11720-4
- Complementary Readings might be posted to the course website.

Prerequisite Information

(This information can be found in the UW Undergraduate Academic Calendar)

Prerequisites: A grade of at least C in ACS-1903(3) or ACS-1905(3).

Restrictions: Students cannot hold credit in ACS-2913(3) and ACS-2911(3) and/or ACS-2912(3).

Services for Students

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 204-786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
https://www.uwinnipeg.ca/accessibility-services.

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2019-20 Undergraduate Academic Calendar online at http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at https://www.uwinnpeg.ca/respect.

Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies.

Avoiding Academic Misconduct and Non-academic Misconduct. Students are encouraged to familiarize themselves with the Academic Regulations and Policies found in the University Academic Calendar at:
https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf
Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals) and 10 (Grade Appeals). Please note, in particular, the subsection of Student Discipline pertaining to plagiarism and other forms of cheating.

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf
- Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf

Misuse of Filesharing Sites. Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves "aiding and abetting" plagiarism. Students who do this can be charged with Academic Misconduct.

Avoiding Copyright Violation. Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor /presenter before photographing or recording slides, presentations, lectures, and notes on the board.

Class Cancellation, Correspondence with Students and Withdrawing from Course

When it is necessary to cancel a class due to exceptional circumstances, the course instructor will make every effort to inform students via uwinnipeg email (and/or using the preferred form of

communication, as designated in this outline), as well as the Departmental Assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.

Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or the course instructor**.**

Please let course instructor know if you plan on withdrawing from the course. Note that withdrawing before the VW date does not necessarily result in a fee refund.

Topics to be covered (tentative)

1. Overview of Systems Analysis and Design
    a) Systems Development Lifecycle
    b) Iterative Development
    c) Core process of systems development
2. System Requirements
    a. Definition
    b. Models and Modelling
    c. Information gathering techniques
    d. Workflows and activity diagrams

3. Use Case Analysis
    a. Use Cases and user Goals
    b. Event Decomposition
    c. CRUD Technique

4. Domain Modelling
    a. Entity-Relationship Diagrams
    b. Domain-Model Class diagram

5. Extended Requirements Modelling
    a. System Sequence Diagram
    b. State Machine Diagram
    c. Integrating Requirements Models

6. Object-Oriented design and Principles
    a. Object-Oriented Architectural Design
    b. Principles of Object-oriented design
    c. Design classes
    d. Class diagrams
    e. CRC Cards

7. Advanced OO Concepts
    a. Three Layer Design
    b. Design Patterns
    c. Sequence Diagrams
    d. Communication Diagrams
    e. Packages

Note that all topics listed may not be covered and may be offered in a slightly different time

order.