THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: **ACS-2913-052**
Course Name: **Software Requirements Analysis & Design**
Course Webpage: **https://nexus.uwinnipeg.ca/d2l/home/67572**

Instructor Information

Instructor: Victor Balogun
E-mail: vi.balogun@uwinnipeg.ca
Office Hours: Tue 12:00pm – 1:00 pm **3D18**

Class meeting time: Wed 6:00 PM - 9:00 PM **3D04**

Important Dates

1.	First Class:	Wednesday, January 8, 2025
2.	Reading Week (no classes):	February 16 – 22, 2025
3.	Midterm Exam:	Wednesday, February 26, 2025
4.	Final Withdrawal Date w/o academic penalty*:	Friday, March 14, 2025
5.	Last Class:	Wednesday, April 2, 2025
6.	Final Exam (Comprehensive):	Date **TBD**
7.	University closures: Louis Riel Day	Monday, February 17, 2025
	Good Friday	Friday, April 18, 2025

*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 the 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

Note*: The use of any AI tool (e.g., ChatGPT, Bing, Notion AI) is prohibited in this course for completing any of the following assessments*:

1. **Assignments (18%)**
   - There will be 3 Assignments, worth 6% each.
   - Individual due dates of assignments will be posted on Nexus.

Assignments Submission:
All assignments are due 11:59pm on the due date and are to be submitted electronically via Nexus. As a rule, you **WILL NOT** be able to submit your assignments **LATE** on Nexus, unless you have received an approval to do so before the due date due to documented extenuating circumstances, such as a medical situation, that prevented the timely completion of the work. You can upload your assignments as either a **PDF** file or in **Microsoft Word** format. Further details and submission procedure will be posted on Nexus.

2. **Quizzes** (3 quizzes, to be done in class. Each quiz worth 4%) **12%**

3. **Midterm Exam** (**20%**) – *February 26, 2025*
   - During the regular class time
   - Missed exams will receive a mark of zero, unless a medical certificate is provided, no accommodation is made for missed exams.

4. **Group Discussion and Reflection (10%):**

5. **Final Exam (40%) -** Date **TBD**

- Cumulative

- Students are responsible for backing up and protecting their assignments.

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

Test / Exam Requirements

- Photo ID is required for mid-term exam and the final exam. Students must be prepared to present their student ID.
- Midterms might be delivered via Nexus and proctored via Respondus. Students must have video capability and video must be turned on for the duration of the exam for proctoring.
- The final exam will be delivered in-person at an examination venue to be determined.
- Mid-term and final exams are **Closed** book.

Students should contact the instructor as soon as possible if extenuating circumstances require missing a lab, assignment, test or examination. A medical certificate from a practicing physician may be required before any adjustments are considered.

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 2024-25 Undergraduate Academic Calendar online at
http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf

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).

Regulations, Policies, and Academic Integrity

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).

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

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/policies/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/policies/docs/procedures/academic-misconduct-procedures.pdf
- About Academic Integrity and Misconduct, Resources and FAQs: https://library.uwinnipeg.ca/use-the-library/help-with-research/academic-integrity.html

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.

Academic Integrity and AI Text-generating Tools: The use of any AI tool (e.g., ChatGPT, Bing, Notion AI) is prohibited in this course for completing any of the assessments. Students will face an allegation of academic misconduct if using them to do assignments. In rare cases when the professor explicitly permit the use of AI tools, students must cite them. According to the MLA (https://style.mla.org/citing-generative-ai/), writers should

- Cite a generative AI tool whenever you paraphrase, quote, or incorporate into your own work any content (whether text, image, data, or other) that was created by it
- acknowledge all functional uses of the tool (like editing your prose or translating words) in a note, your text, or another suitable location

- take care to vet the secondary sources it cites

Non-academic misconduct: Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered "non-academic" misconduct. More detailed information can be found here:

- Respectful Working and Learning Environment Policy https://www.uwinnipeg.ca/respect/respect-policy.html,
- Acceptable Use of Information Technology Policy
- https://www.uwinnipeg.ca/policies/docs/policies/acceptable-use-of-information-technology-policy.pdf
- Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/policies/docs/policies/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/policies/docs/procedures/student-non-academic-misconduct-procedures.pdf

Copyright and Intellectual Property: Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. 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, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor's intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy:
https://copyright.uwinnipeg.ca/basics/copyright-policy.html

Privacy

Students have rights in relation of the collecting of personal data the University of Winnipeg

- Student Privacy: https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html
- Zoom Privacy: https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html

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 Nexus.

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 the 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.

Respondus Privacy and Security

The University of Winnipeg Information and Privacy Office has reviewed Respondus' privacy and security information. The Respondus Privacy Notice is posted on the University's website and can be viewed at: https://www.uwinnipeg.ca/privacy/respondus-privacy-notice.html

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

8. Modern Approaches to Managing Software Projects
9. The Roles of System Analysts

***Note**: A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.*