THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-2913-051
Course Name: Software Requirements Analysis and Design
Course Webpage: https://nexus.uwinnipeg.ca/d2l/home/67941

Instructor Information

Instructor: David Tenjo
E-mail: d.tenjo@uwinnipeg.ca
Office Hours: Mondays   5:00 - 6:00 pm   3C07C
Class meeting time: Mondays   6:00pm – 9:00 pm   2D12

Important Dates

1. First Class: Monday, January 6, 2025
2. Reading Week (No Classes):   February 16 – 22, 2025
3. Midterm Test: Monday, February 24, 2025
4. Final Withdrawal Date w/o academic penalty*:   Friday, March 14, 2025
5. Last Class: Monday, March 31, 2025
6. Final Exam (Comprehensive):   TBD
7. Final Exam Period: April 9-23, 2025
8. 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

Objectives:

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. 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 an 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%)**
   - 4 Assignments – worth 5 percent each
   - Due dates 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.
       - **Assignments MUST be submitted in PDF format**. Further details and submission procedure will be posted on Nexus.

2. **In-class quizzes (10%)**
   - There will be five ten-question multiple-choice quizzes
   - Quiz dates will be posted on Nexus

3. **Midterm Exam (25%)**
   During the regular class time (see Important Dates)

4. **Final Exam (45%)**

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

Test / Exam Requirements
- Photo ID is required for the final exam and midterm.
- The use of computers, calculators, phones, or other electronic devices is not permitted during exams.
- Midterm 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
- Textbook: Systems Analysis and Design in a Changing World, (7th Edition). John Satzinger, Robert Jackson, Stephen Burd - Cengage Learning ISBN 978-1-305-11720-4
- Additional Readings and class notes will be made available on Nexus.

Prerequisite Information
- ACS-1903 or ACS-1905 with a minimum grade of C
- 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: *Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). Use of AI Tools is prohibited in this course: students may face an allegation of academic misconduct if using them to do assignments.*

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 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

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.