uOttawa

School of EECS   **École de SIGE**

SEG3101 – Software Requirements Analysis (3 units)
Fall 2024

Professor	Wassim El Ahmar
Email	welah096@uottawa.ca
Office hours	Friday, 1 :00PM – 2 :00PM, STE4063

1 – Course Description

Techniques for eliciting requirements. Languages and models for representing requirements. Analysis and validation techniques, including need, goal and use-case analysis. Requirements in the context of system engineering. Specifying and measuring external qualities: performance, reliability, availability, safety, security, etc. Specifying and analyzing requirements for various types of systems: embedded systems, consumer systems, web-based systems, business systems, systems for scientists and other engineers. Resolving feature interactions. Requirements documentation standards. Traceability. Human factors. Requirements in the context agile processes. Requirements management: Handling requirements changes.

2 – Learning Outcomes

After successfully completing this course, students will be able to:

- (GA7 a) Elicit requirements using various techniques such as brainstorming and interviews

- (GA3 g) Specify and measure quality attributes

- (GA2 g) Organize and prioritize requirements

- (GA2 e) Apply analysis techniques such as needs analysis, goal analysis, and use case analysis

- (GA5 b) Use UML and other modeling languages (including User Requirements Notation)

- (GA3 h) Validate requirements according to criteria such as feasibility, clarity, non-ambiguity, etc.

- (GA2 h) Represent functional and non-functional requirements for different systems using formal and informal techniques

- (GA2 d) Analyze client needs and determine requirements for a series of releases

- (GA5 j) Use tools to manage requirements (and traceability)

- (GA3 c) Detect and resolve undesirable interactions between services

- (GA7 g) Negotiate with different stakeholders to agree on a set of requirements

- (GA6 b) Work in a team on software engineering activities

And to a lesser extent:

- (GA2 c) Create simple formal specifications of low-level software modules, verify the validity of these specifications, and generate code from these specifications using appropriate tools.

- (GA1 b) Apply logic, discrete mathematics, linear algebra, and probability and statistics to software engineering problems

- (GA7 d) Communicate with clients on a regular basis

3 – Pre-requisites

SEG2105 – Introduction to Software Engineering

4 – Meeting Times

Lectures :	Mo 2:30PM - 3:50PM 55 Laurier (DMS) 1160
	Th 4:00PM - 5:20PM 55 Laurier (DMS) 1160
Labs:	Please check your registered lab session on uOzone
Tutorials :	Please check your registered tutorial session on uOzone

5 – Lecture Format

- Lectures, labs, and tutorials will be held in person, with mandatory attendance.
- Both midterm exams will take place in class.
- Zoom will also be used for some tutorials and labs, which are mandatory (and very useful!). Certain sessions will be dedicated to the project. Please download the Zoom client today. Your laptop (if you have one) might also be useful in tutorials (at HNN 013).
- Brightspace will be used for project and lab deliverables, assignments, and communication (chat/forum).
- Some videos must be watched in advance.

6- Teaching Assistants

- Jia Li, jli714@uottawa.ca
- Majid Moghaddam, mghos045@uottawa.ca
- Mikeli Habash, mhaba076@uottawa.ca
- Yashraj Motwani, ymotw080@uottawa.ca

7 – Textbook and Course Notes

No textbook is required. Class notes and presentations will be made available on Brightspace in PowerPoint format. However, the following books are recommended for further study:

- Karl Wiegers, Candase Hokanson, Software Requirements Essentials: Core Practices for Successful Business Analysis, Addison-Wesley Professional, 2023
- Philip A. Laplante, Requirements Engineering for Software and Systems, 4th Edition, CRC Press, 2022
- Karl E. Wiegers, Joy Beatty, Software Requirements, 3rd edition, Microsoft Press, 2013

8 – Tutorials and Labs

Week	Lab	Tutorial
September 2	None	None
September 9	Writing Requirements	Writing Requirements
September 16	Requirements Specification Inspection and Review	RFP Inspection and Review
September 23	Helix ALM Tutorial	Stakeholder Presentation for the Project + Q&A
September 30	Brainstorming/Design Thinking	Personas and User Stories
October 7	Interview with Project Stakeholder	Interview with Project Stakeholder
October 14	Study Week	Study Week
October 21	Questionnaires (SurveyMonkey)	Precise Domain Modeling
October 28	Process Modeling and Interaction Analysis	Process Modeling and Interaction Analysis
November 4	Product Family Modeling	Requirements from Social Media and ChatGPT
November 11	Helix ALM Tutorial	Helix ALM Tutorial
November 18	Project on Helix ALM	Project on Helix ALM
November 25	Project Validation Meeting	Project Validation Meeting
December 2	Project on Helix ALM	Review and Exam Preparation

There will be mandatory weekly tutorials and labs. The materials and instructions will be available on Brightspace. Five tutorials and labs (highlighted in green in the previous table) will require peer evaluation and responses to certain online questions, accounting for a total of 10% of the final grade.

9 – Assignments and Project

There will be 2 assignments (2 x 5%) and a project consisting of 3 deliverables (25%), to be completed in teams of 5 people (15 teams in total, with 2-3 teams having only 4 people). The project description will be made available online at the appropriate time on Brightspace. Peer evaluations will also be required at certain times and will influence each team member's grade for this component of the course.

10 – Evaluation

- Final Exams   35%
- Tests (10 October and 11 November)   20%
- Assignments   10%
- Labs (5x2%)   10%
- Project   25%
- Some bonus points will also be available.

11 – Passing Grade

The passing grade is 50% (D). Students must also achieve a passing grade (50% or higher) in the weighted average of their tests and final exam (as outlined in the previous section) to pass the course.

If a student misses a number of course deliverables, for any reason, such that it is not reasonably possible for the professor to assess the student understanding of the course material, an INC grade would be assigned as a final course grade.

12 – Attendance and classroom etiquette

- ***Attendance in both online courses and tutorials is mandatory. As per the academic regulations, any student who does not attend at least 80% of the course will not be permitted to take the final exam.***
- ***All students are expected to conduct themselves appropriately and professionally online, as specified here: https://saea-tlss.uottawa.ca/documents/168/Netiquette/258/Netiquette---Guidelines.pdf***

13 – Reminders

- All course components (such as lab reports, assignments, etc.) must be completed; otherwise, the student may receive an INC (Incomplete) as a final grade, which is equivalent to an F. This also applies to students retaking the course for a second time.
- Students must be familiar with the university's policy on academic integrity (https://www.uottawa.ca/current-students/academic-integrity). This policy will be strictly enforced in this course.
- Information about academic misconduct is available online: https://www.uottawa.ca/about-us/policies-regulations/academic-regulations/a-4-academic-integrity-academic-misconduct
- Students must be familiar with the Faculty of Engineering's regulations; you can refer to these if you miss an exam: https://www.uottawa.ca/faculty-engineering/leadership-governance/academic-regulations
- Important dates and deadlines for the academic year can be found at the following link: https://www.uottawa.ca/current-students/important-academic-dates-deadlines
- Library resources for engineering students can be found at: https://uottawa.libguides.com/computer-science
- When necessary, the instructor will communicate with students via their official University of Ottawa email address (username@uottawa.ca). If you prefer to use a personal email address, please set up an email forwarding address (https://www.uottawa.ca/about-us/information-technology/it-for-you/students). You are responsible for ensuring that you receive official course information effectively and on time.

14 – Other Information

- The University of Ottawa offers, upon request, appropriate academic accommodations for students with learning disabilities, health conditions, psychiatric challenges, or physical challenges. For more information, contact the Academic Accommodations Service (https://www.uottawa.ca/study/academic-support/accommodation-services-available), which provides various services to help you succeed.

- The University of Ottawa does not tolerate any form of sexual violence. Sexual violence refers to any act of a sexual nature committed without consent, such as rape, sexual harassment, or cyber-assault. Both the University and employee and student associations offer a range of resources and services that provide members of our community with confidential information and support, as well as procedures for reporting an incident or filing a complaint. For more information, visit:
https://www.uottawa.ca/about-us/respect/sexual-violence-support-and-prevention