

# COURSE SYLLABUS

## CSCI 375: INTRODUCTION TO SYSTEM ANALYSIS AND DESIGN, S24

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### Class Time and Locations

Section	Schedule
S24N01	Lecture: 460/324 Tue 14:30–16:00 Lab: 315/115 Tue 9:30–10:30
S24N02	Lecture: 460/324 Thu 14:30–16:00 Lab: 315/115 Fri 13:30–14:30

The Lectures and Labs will be in-person and face-to-face. Classes start January 8, 2024. There are no labs scheduled for the first week of classes. Labs begin the week of January 15, 2024. It's important to attend the first week of classes to secure your seat if you're already registered. If you're on the waitlist, attendance will signal your interest in potential registration. If you have a valid reason for being unable to attend, please inform me via email.

### Instructor Information

<b>Instructor:</b>	Dr. Ajay Shrestha
<b>Office:</b>	Bldg 315 Room 206
<b>Phone:</b>	250-753-3245 Ext 2326
<b>E-mail:</b>	ajay.shrestha@viu.ca
<b>Office Hours:</b> (By appointment Only)	Mondays: 14:00 – 14:30 Wednesdays: 16:00 – 16:30

I aim to reply to your emails within 24 hours, excluding holidays and weekends. Important announcements will primarily be posted on VIULearn, though occasional class-wide emails may be sent. Ensure you're subscribed to the VIULearn announcement channel and check your email frequently. Office hours will be available in both in-person and remote formats via Zoom Meetings. If you require additional support, you can also schedule meetings at other convenient times.

### Course Website/Learning Management System

Access at: [VIU Learn](#)

Faculty Webpage: <http://csci.viu.ca/~shresthaa>

### Course Prerequisites

Min. "C" in CSCI 162 and CSCI 265.

### Course Objective

To introduce the methods and methodologies used in analyzing and designing various types of systems. Topics include project definition, CASE tools, data gathering, structured analysis and design, human-machine interface, database design, system controls, hardware selection and system testing, implementation, and operation. Students are assigned to a project team involved in a system study as part of the course.

## Topics

1. Introduction to Systems Analysis and Design
2. Systems Design Life Cycles (SDLC)
3. Project Management
4. Requirements Gathering
5. Use Cases and Activity Diagrams
6. Domain Modeling
7. Data Modeling
8. Data and Dataflow Modeling
9. Database design and OO Design
10. Architectural Design
11. Deployment and Testing

## Course Learning Outcomes

Upon completion of the course, students will be able to:

- Choose and implement a suitable system development life cycle for a project, considering the project's nature, and utilize this information to formulate a feasible project plan.
- Evaluate and adjust a project plan by establishing and monitoring clear, measurable metrics throughout the project lifecycle.
- Collect information on stakeholder needs, employing appropriate data-gathering techniques to formulate system requirements.
- Translate system requirements into Analysis Models, effectively communicating them to diverse stakeholders through models tailored to each audience.
- Evaluate and refine a system's design by soliciting and interpreting stakeholder feedback on various analysis and design models throughout the project lifecycle.
- Transform analysis models into design models by applying software design principles, ensuring the deployed system meets user requirements and is both maintainable and well-structured.
- Implement system modules and data stores by translating design models into code and other tangible implementations.
- Monitor and document the progress of contributions to the development process using version control systems such as a git repository.

## Reference Books:

1. Systems Analysis and Design in a Changing World. (6th or 7th Edition). Satzinger, Jackson, Burd.

## Student Evaluation

### Grading Scheme:

Attendance and participation	10%
Lab Project (multiple deliverables)	50%
Final Exam (date TBD)	40%
<b>Total</b>	<b>100%</b>

NOTE: Students must receive a passing mark ( $\geq 50\%$ ) on both Lab and Lecture portions separately in order to pass the course. The lecture component includes attendance and final examinations. Lab component includes attendance and project.

## Project

Each team will, over the course of the term, work on a project that has several deliverables. Details of each deliverable and their deadlines can be found on VIU Learn.

- To receive full marks, all deliverables must be received before their due date and time.
- Submissions later than 2 working days late will not be accepted and will receive a mark of 0.
- Students must participate in all team presentations and demonstrations in order to be eligible for a portion of the team grade for that presentation or demonstration.

Students who are unable to contribute to a team deliverable for a valid reason, such as illness, and who communicate this reason in a timely manner to the instructor and team will be given an option to alter how the student's participation or assessment for that deliverable is undertaken. When considering how this will be done, the instructor will take into consideration the impact on the instructor, team, and individual, and attempt to find a solution that is fair for everyone.

## Evaluation of Academic Achievement

### Late Policy & Other Assessment Policies

#### Late Work Policy

Late project submissions will be penalized 25% for the first day, and 100% on the second day unless previously approved by the course instructor. Personal extensions will be granted only in extenuating circumstances (e.g. illness) with clear and timely communication to the instructor about the reason.

#### Team participation

This course will use a Team-based learning approach, and as such all students will be assigned a team with which to work. Assessment will be a mix of individual and team assessment.

#### Lab participation

Lab attendance is required. Lab time will include team presentations and scheduled team meetings with the instructor. All team members are expected to attend and engage.

For final grading, the following scale will be used. The instructor reserves the right to lower the numerical score required for a particular letter grade if that seems appropriate, but the same conversion will be applied to all persons in the class. Under no circumstances will the numerical score required for a particular letter grade be raised.

Grade	Percentage
A+	90-100%
A	85-89%
A-	80-84%
B+	76-79%
B	72-75%
B-	68-71%
C+	64-67%
C	60-63%
C-	55-59%
D	50-54%
F	0-49%

## Institutional Grade Scale

Grade Scale: University, Career/Technical, Adult Basic Education Programs

### Grade Descriptors

A+, A, A-	Outstanding performance and exceptional work. Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; evidence of extensive knowledge base.
B+, B, B-	Good performance and work have no major weaknesses. Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues.
C+, C, C-	Satisfactory performance and adequate work. Shows fair comprehension of the subject matter and the ability to develop solutions to simple problems.
D	Marginal performance demonstrating a minimally acceptable familiarity with subject matter, critical and analytical skills.
F	Failing work – unsatisfactory performance or failure to meet course requirements.

### Regrade policy

At times, you may feel that marks were unfairly deducted during an assignment or a test. In this situation, you can submit your work for a regrade.

We will only take regrades if they are submitted within 7 days of the marks for that coursework being released.

Also, note that we reserve the right to regrade the entirety of any assignment submitted. When requesting a regrade, your old grade will be removed, and your new grade could be higher or lower.

### Final Exam Scheduling

The Registrar schedules all final examinations, including deferred and supplemental examinations. Students are advised not to make travel arrangements for the exam period until the official exam schedule has been posted.

***Note: All students must be properly registered in order to attend lectures and receive credit for this course.***

### Academic Integrity Statement

It is expected that students will know and abide by the VIU's policy on Student Academic Code of Conduct (Policy 96.01)

### Standards of Academic Integrity

Include, but are not limited to:

- Independently producing work submitted under their own name
  - All graded work needs to be written independently, unless expressly instructed to collaborate
- Properly and appropriately referencing all work
- Identifying all collaborators in work
- Completing examinations without giving or receiving assistance, except for those students requiring assistance due to a documented accessibility issue

- The use of tutorial services, including online sites, to solve graded work is strictly prohibited
- The use of online sites and apps for solving mathematical problems on graded work is strictly prohibited
- Respecting the integrity of examination materials and/or the examination process; and respecting the integrity of computer security systems, software copyrights and file privacy of others

Any academic misconduct will be dealt with in accordance with policies in effect at VIU (96.01) and may result in a final grade of “F”, a report to the Dean and a permanent record in the student’s academic file. Multiple records may result in suspension from the University.

[Academic Integrity](#)

[Student Academic Code of Conduct](#)

[Policy 96.01](#)

## **Lab & Lecture Pass Requirement**

Students will receive a single, final grade assessing their performance in the lab and lecture components combined. Students must achieve separate passing grades in the laboratory component and in the lecture component of the course in order to be able to earn an overall passing grade in the course.

As per Policy 95.05, if all laboratory grades are known prior to the final examination, students who have not obtained a grade of at least “D” may not be permitted to write the examination.

[Laboratory Work](#)

[Policy 95.05](#)

## **Attendance Requirement & Absenteeism**

Students are expected to attend scheduled laboratories, field trips, seminars, examinations, practical and work experience. The University reserves the right to cancel registration in any course or program because of lack of attendance (where attendance is deemed by the Department to be important).

VIU reserves the right to cancel any student’s registration in a course if the student does not attend the first scheduled session of a course and does not notify the instructor or area secretary.

## **Absenteeism**

Students are responsible for all material presented and discussed in lecture, in addition to assigned readings and homework problem. It is entirely the students' responsibility to recover any information or announcements presented in lectures from which they were absent by speaking to their fellow students.

Students who are absent should contact their instructors as soon as possible and report to their instructors again on return to classes. Extended absence from courses or program should be discussed with each instructor or program coordinator involved. Students are responsible for contacting their instructors, either directly or through the assistance of staff in the office of the appropriate Dean, as soon as an extended absence becomes apparent.

Specific regulations exist for absences due to illness, death in the family, religious observances, and VIU official sporting teams. In cases of religious observance and sporting events, discussion on the impact of your absence with your instructor needs to occur at least two weeks in advance of the absence.

This is a team-based course, and the absence of a team member impacts the rest of the team. Students must be able to attend at least 75% of lectures, and must participate in all team deliverables and presentations unless a valid reason is given, such as illness or personal emergency. If the absence of a team member might cause hardship to the rest of the team, the instructor reserves the right to redistribute tasks or assign alternate assessments as needed.

[Attendance and Absences](#)  
[Policy 96.05](#)

### **Student Code of Conduct/Conduct in Class**

It is expected that students will always treat one another and the instructor with respect and dignity. Alcohol and drug use is prohibited during any course period, and in the hours prior to any laboratory/field/practicum period where impaired functioning is a safety hazard.

[Student Code of Conduct \(Non-Academic\)](#)  
[Policy 32.05](#)

### **EDI Statement**

VIU values human diversity in all its dimensions and is committed to achieving and ensuring learning and working environments that are equitable, diverse and inclusive. For this course, students are expected to treat each other with kindness and respect, and we will strive for an equitable and inclusive learning environment.

[Academic Plan](#)   [EDI Action](#)   [Accessibility Services](#)

### **Other Supports (Advising, Counselling, Writing Center, Math Learning Centre, Accessibility Services)**

VIU hosts numerous Learning Supports for student success and you are encouraged to take advantage of them. Links to each can be found on the [Resources for Students page](#). Students are strongly encouraged to review the information provided by Accessibility Services, Advising, Counselling, Math Learning Centre, the Office of Indigenous Education and Engagement, and the Writing Center.

### **Changes to the Syllabus**

There may be revisions to the outline that are required once the semester begins. If this happens, the syllabus will be updated, and students will be notified of the revision promptly. If a revision is made to the syllabus, the intent is that the modification will be advantageous to the student.

### **Land Acknowledgement**

We acknowledge and thank the Snuneymuxw, Quw'utsun and Tla'amin, on whose traditional lands we teach, learn, research, live and share knowledge. We pay our respect to the First Nations ancestors of this place and reaffirm our relationship with one another.

## Course Schedule

The approximate course schedule is given below.

Weeks	Topics	Notes
Jan 8 – 14	<ul style="list-style-type: none"> <li>• Syllabus</li> <li>• Overview of Systems Analysis</li> <li>• Overview of Project</li> <li>• Form teams</li> </ul>	Review the Project Overview Review the P1: Team Formation
Jan 15 – 21	<ul style="list-style-type: none"> <li>• Project Management</li> <li>• Systems Development Lifecycles</li> <li>• Cost Benefit Analysis</li> <li>• Risk and Feasibility</li> <li>• Project Planning and Monitoring</li> </ul>	Review the P2: Project Plan Review the Git Submit process Project Activities <ul style="list-style-type: none"> <li>○ Create Team Contract</li> <li>○ P1: Team Formation Jan 15(N01)/ Jan 18 (N02)</li> <li>○ Present Team Formation in Lab</li> <li>○ Submit Timesheets and Contributions files Jan 15/ Jan 18</li> </ul>
Jan 22 – 28	<ul style="list-style-type: none"> <li>• Requirements Gathering</li> <li>• Stakeholders</li> <li>• Overview of Modelling for Systems Analysis and Desing</li> </ul>	Project Activities <ul style="list-style-type: none"> <li>○ P2: Project Plan Due Jan 22/25</li> <li>○ Present Project Plan in Lab</li> <li>○ Submit Timesheets and Contributions files Jan 22/25</li> </ul>
Jan 29 – Feb 4	<ul style="list-style-type: none"> <li>• Use Cases: User Goal Technique</li> <li>• Use Cases: Event Decomposition Technique</li> <li>• Use Cases and User Stories</li> <li>• Use Case Diagrams</li> <li>• Activity Diagrams</li> </ul>	Review the P3: Requirements Gathering
Feb 5 – 11	<ul style="list-style-type: none"> <li>• Introduction to Domain Modelling</li> <li>• Domain Class Diagrams</li> <li>• ER Diagrams</li> <li>• State Machine Diagrams</li> </ul>	Review P4: Analysis Models Project Activities <ul style="list-style-type: none"> <li>○ P3: Requirements Due Feb 5/8</li> <li>○ Present Requirements in Lab</li> <li>○ Submit Timesheets and Contributions files Feb 5/8</li> </ul>
Feb 12 – 18	<ul style="list-style-type: none"> <li>• Use Case Descriptions</li> <li>• Activity Diagrams (again)</li> <li>• System Sequence Diagrams</li> <li>• Data Flow Diagrams</li> </ul>	

Feb 19 – 25	Reading Break, no classes or labs	
Feb 26 – Mar 3	<ul style="list-style-type: none"> <li>• Intro to Systems Design</li> <li>• Security and Control</li> <li>• OO Design: Introductions</li> <li>• CRC Card Technique</li> <li>• Database Design</li> </ul>	Review P5: Design Models Project Activities <ul style="list-style-type: none"> <li>○ P4: Analysis Models Due Feb 26/Feb 29</li> <li>○ Present Analysis Models in Lab</li> <li>○ Submit Timesheets and Contributions files Feb 26/Feb 29</li> </ul>
Mar 4 – 10	<ul style="list-style-type: none"> <li>• Architectural Design Intro</li> <li>• Describing the Environment</li> <li>• Designing Application components</li> </ul>	Review P5: Design Models
Mar 11 – 17	<ul style="list-style-type: none"> <li>• Systems Deployment</li> <li>• Integration Testing</li> <li>• Stress and Smoke Testing</li> <li>• User Acceptance Testing</li> <li>• Deployment</li> </ul>	Review P6: Final Project Project Activities <ul style="list-style-type: none"> <li>○ P5: Design Models Due Mar 11/14</li> <li>○ Lab presentations of Design Models</li> <li>○ Submit Timesheets and Contributions files Mar 11/14</li> </ul>
Mar 18 – Apr 7	<ul style="list-style-type: none"> <li>• Project work</li> </ul> <p>Over the next 3 weeks, teams will work in class and lab on their project in preparation for the final presentation and demos. Teams are expected to attend all classes and labs during this time, and make use of peer and instructor feedback. All development work from this point on should be done on the department Linux machines (remotely or in person), and teams are expected to use git to track all work. Individuals should pull, add, commit, and push. The final project should be able to run on the Team Linux account. Teams should commit frequently, and push on a regular basis. During this time, teams will be expected to:</p> <ul style="list-style-type: none"> <li>○ Develop Tests</li> <li>○ Convert Design models into implementation</li> <li>○ Test and Deploy</li> <li>○ Create final documentation</li> <li>○ Develop demo video</li> </ul>	Project Activities <ul style="list-style-type: none"> <li>○ P6: Final Project Due April 6</li> <li>○ Submit Timesheets and Contributions files April 6</li> </ul>
Apr 8 – Apr 12	Final Presentations and Demos	