

Concordia University
Concordia Institute for Information Systems Engineering
INSE 6421 Systems Integration and Testing
(Fall 2016)(4 credits)

1. General Information

- Course: INSE 6421/2 FF – Systems Integration and Testing (4 credits)
- Lectures: Mondays, 17:45 – 20:15, **FG B-055**
- Instructor: Jamal Bentahar, Ph.D., P.Eng., Concordia Institute for Information Systems Engineering, ENCS.
- Office: EV7.630, extension 5382, bentahar@ciise.concordia.ca
- Office Hours: Fridays from 10:30 a.m. to 11:30 a.m. or by appointment.
- Course Website: Moodle on myconcordia portal

You can use this web site to get lecture notes, useful links and other useful information. It is highly advised to visit the web site regularly.

2. Course Description

- Systems Integration is a multidisciplinary subject involving a combination of computer science, systems engineering and management disciplines. This course investigates issues related to the integration and testing of complex systems where components are interacting and could be intelligent and autonomous. It provides the foundation needed to plan and implement successful systems integration projects. Students will learn how to apply the fundamentals of project planning, process analysis, and design and modeling as well as the use of quality standards, tools and methodologies in systems integration projects. Students will also be exposed to issues related to the formulation of autonomous systems, systems architecture, abstract models, coalition formation, behavioral modeling and analysis methods leading to the composition of components and systems. Specific focus is given to modeling languages, interface description, management, testability, integration and interoperability testing. Management issues pertaining to integrated product teams, vendors and suppliers, and subcontractors are also addressed. A research project is also part of the course.
- Prerequisites: INSE 6400 or permission from the instructor. **Good knowledge of mathematics and logics will be very helpful**

3. Learning Outcomes

- By the end of this course, students should be able to:
 1. Understand various aspects of systems integration.

2. Formalize, model, describe and validate an integrated system at large.

4. Schedule

- Week 1: Introduction to Integration and Research Methods.
- Week 2: Research Methods and Peer Review System.
- Week 3: Systems Integration: Concepts and Challenges.
- Week 4: Systems Architecture
- Week 5: Systems Modeling.
- Weeks 6&7: Agent and Service-based Systems (Midterm).
- Weeks 8 & 9: Coalition Systems (Midterm).
- Weeks 10 & 11: Integration Testing
- Week 12: Student Presentations and Discussions.
- Week 13: Student Presentations and Discussions.

5. Course Materials

- Textbook:
 - **Lecture Notes + Research Papers**
- Readings:
 - Engineering Systems Integration: Theory, Metrics, and Methods
 - Author: Gary O. Langford.
 - Publisher: CRC Press, 2012, eBook ISBN 9781439852897.
 - Advanced Systems Thinking, Engineering and Management
 - Author: Derek K. Hitchins.
 - Publisher: Artech House, 2003, ISBN 1-58053-619-0
 - System Architecting
 - Author: Gerrit Muller
 - Publisher: Buskerud University College.
 - An online version is available

6. Assignments and Grading

1. Midterm Exam (closed book): 30%
2. One Individual Research Project (1 member, presentation + report) 30%
3. Final Exam (closed book): 40%

- **Details:**

1. Midterm Exam: will focus on the first 7 lectures.
2. Final Exam: will take place at the end of the semester. Students should not make any specific arrangements to leave the city until the final exam date is posted.

- **Failing Grade:**

Plagiarism, absenteeism, lack of preparation, and lack of effort will result in a failing grade.

7. Academic Code of Conduct

Academic Integrity

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behaviour related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion.**

As examples only, you are not permitted to:

- Copy from anywhere without indicating where it came from
- Let another student copy your work and then submit it as his/her own
- Hand in the same assignment in more than one class
- Have unauthorized material or devices in an exam. Note that you do not have to be caught using them – just having them is an offence
- Copy from someone's else exam
- Communicate with another student during an exam
- Add or remove pages from an examination booklet or take the booklet out of an exam room
- Acquire exam or assignment answers or questions
- Write an exam for someone else or have someone write an exam for you
- Submit false documents such as medical notes or student records
- Falsify data or research results

You are subject to the Academic Code of Conduct. Take the time to learn more at

<http://provost.concordia.ca/academicintegrity/>

8. Student's Responsibilities

- Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. Students are expected to read the assigned material and to actively participate in class discussions.
- Students are expected to be respectful of other people's opinions and to express their own views in a calm and reasonable way. Disruptive behaviour will not be tolerated.
- Students are expected to be familiar with the Code of Rights and Responsibilities:
<http://rights.concordia.ca>
- If you cannot attend class for any reason, unforeseen or not, you are to come and talk or write to me as soon as possible.

9. Student Services

- **Concordia Counselling and Development** offers career services, psychological services, student learning services, etc.

- <http://cdev.concordia.ca>
- **The Concordia Library Citation and Cycle Guides:**
<http://library.concordia.ca/help/howto/citations.html>
 - **Advocacy and Support Services:**
<http://supportservices.concordia.ca>
 - **Student Transition Centre:**
<http://stc.concordia.ca>
 - **New Student Program:**
<http://newstudent.concordia.ca>
 - **Office for Students with Disabilities:**
<http://supportservices.concordia.ca/disabilities/>
 - **The Academic Integrity Website:**
<http://provost.concordia.ca/academicintegrity/>
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