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Winter 2009 -2010
INDU 6311: Discrete System Simulation
(4 credits)

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Course Timings:

Days	Timings	Room	Location
Wednesday	17:45-20:15 pm	FG-B070	SGW

Office Hours: Thursdays, 11:00 am - 1:00 pm

Prerequisite: None

Textbook: Simulation modeling and Arena by Manuel D. Rossetti, Wiley Publications, 2010, ISBN: 978-0-470-09726-7.

Other References:
- Simulation modeling and Analysis by Averill M. Law, 4th edition, McGrawHill, 2007.
- Simulation with Arena by Kelton, Sadowski and Swets, 5th edition, McGrawHill, 2010.

Course Description: The objective of this course is to provide a theoretical and practical knowledge on discrete event simulation modeling to graduate students. The contents include introduction to simulation, statistical and queuing models, input modeling, random number generation, output analysis, verification and validation of simulation models, comparison of alternative configurations, variation reduction, experimental design, and simulation based optimization. Discrete event simulation software Arena will be used to demonstrate the practical applications of simulation in manufacturing and service. The lecture contents are organized as follows:

Week	Topics	Textbook Chapter
1	Introduction to simulation modeling, Simulation with Arena	Chapter 1, Chapter 2
2	Statistical and queuing models	Chapter 5
3	Input modeling	Chapter 3
4	Generating random numbers, random variates	Chapter 3, Handouts
Feb 3, 6:00 pm, Homework 1 submission deadline, Last date for selection of project topics		
5	Output analysis	Chapter 4
6	Verification and validation of simulation models	Handouts
Feb 17, 5:45 pm, Midterm Exam (Chapter 1- 5, Handouts)		

7	Comparison of alternative configurations	Chapter 4
8	Variance reduction techniques	Handouts
March 17, 6:00 pm, Homework 2 submission deadline		
9	Experimental design	Chapter 8, Handouts
10	Simulation based optimization	Handouts
11	Applications of simulation modeling, Inventory systems	Chapter 5
12	Advanced modeling with Arena	Chapter 6,7
April 7, 5:45 pm - 8:15 pm, Project Presentations with Report Submission		
Final Exam (Textbook Chapters 1-8, Handouts), TBA		

Course website: INDU 6311 on Moodle, Accessible through myconcordia portal

Grade Composition
Homework (2)   10%
Project   15%
Midterm Exam   25%
Final Exam   50%

Note:
1. There is no direct mapping between numerical percentage grades and final letter grades for the course.
2. The projects are to be done individually. Project reports should be submitted at the time of presentations.
3. There are two homework assignments. Assignments are to be done individually and submitted both in paper form and online via the electronic assignment submission system (https://fis.encs.concordia.ca/eas/) before the due dates. Late submissions will be penalized.
4. **The students should be present on the dates of project presentations, midterm and final exam**. Alternate date requests will not be entertained other than in health related emergency cases.

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

Academic code of conduct
Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behaviour related to the obtention of 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.** For **e**xample, 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/

Student Services
To know about the student services offered at Concordia University, visit the following links:
- **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/

Disclaimer
In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.