



UNIVERSITY OF CALGARY
 FACULTY OF SCIENCE
 DEPARTMENT OF COMPUTER SCIENCE
 COURSE OUTLINE

1. **Course:** CPSC 531, Systems Modelling And Simulation -- Fall 2017

Lecture 01: (TR, 09:30-10:45 in MS211)

Instructor Name	Email	Phone	Office	Hours
Carey Williamson	carey@cpsc.ucalgary.ca	220-6780	ICT 736	Monday 1:00pm-3:00pm

Course Site:

<http://www.cpsc.ucalgary.ca/~carey/CPSC531>

D2L: CPSC 531 L01-(Fall 2017)-Systems Modelling And Simulation

Department of Computer Science: ICT 602, 403 220-6015, cpsc@cpsc.ucalgary.ca

2. **Prerequisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Computer Science 457 and one of Mathematics 321 or Statistics 205 or 211 or 213 or 321.
 Mathematics 321 is recommended over STAT 205 or 211 or 213 as preparation for this course. Computer Science 441 is also recommended as preparation for this course.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %
Assignments (4)	40%
Midterm (in class on October 26)	20%
Final Exam	40%

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows;

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum Percent Required	92	88	84	80	76	72	68	64	60	55	50

4. **Missed Components of Term Work:**

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.3](#) of the University Calendar

5. **Scheduled out-of-class activities:**

There are no out-of-class activities scheduled for this course.

6. Course Materials:

Discrete-Event Simulation: A First Course, by L. Leemis and S. Park, Pearson Prentice Hall, 2006.

7. Examination Policy:

No aids are allowed on tests or examinations, other than a simple hand-held calculator.

Students should also read the Calendar, [Section G](#), on Examinations.

8. Approved Mandatory and Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course

9. Writing across the Curriculum Statement:

See Section E.2 of the University Calendar.

10. Human studies statement:

Students will not participate as subjects or researchers in human studies.

11. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- a. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties.
- b. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- c. **Academic Accommodation Policy:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at [procedure-for-accomodations-for-students-with-disabilities_0.pdf](#).

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Undergraduate Affairs of the Department of Computer Science, Nathaly Verwaal by email nmverwaa@ucalgary.ca or phone 403-220-8485.

- d. **Safewalk:** Campus Security will escort individuals day or night (www.ucalgary.ca/security/safewalk/). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- e. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see also www.ucalgary.ca/legalservices/foip.
- f. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvsaca@ucalgary.ca. SU Faculty Rep. Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca; Student Ombudsman, Email: suvsaca@ucalgary.ca
- g. **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy, you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these Surveys.
- i. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).

Course Outcomes

1. Classify and describe different types of simulations including Monte Carlo and discrete-event simulation.
2. Solve simple optimization problems or numerical integrations using Monte Carlo simulation.
3. Develop a computer program to simulate a discrete-event system. This includes implementing events, event scheduler, event lists and time advance algorithm.
4. Develop a computer program to generate random numbers for simple probability distributions using the inverse transform technique.
5. Explain the difference between transient and steady state behavior of a system and how to estimate the steady-state performance parameters such as mean and variance.
6. Compute confidence intervals for a given sample of data and interpret the meaning of the computed confidence intervals.
7. Conduct a goodness-of-fit test using Chi-square hypothesis testing to decide if a given distribution fits a sample of data.
8. Analyze the performance of a single queue or a queuing network using basic queuing theory results.