



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

1. **Course:** CPSC 701.21: Advanced Topics in HRI

**Lecture Sections:**

L01, TR 12:30-13:45, Ehud Sharlin, MS 680G, 210-9404, [ehud@ucalgary.ca](mailto:ehud@ucalgary.ca)

Office Hours: By Appointment

**Course Website:** D2L

**Computer Science Department Office, ICT 602, 220-6015, [cpsc@cpsc.ucalgary.ca](mailto:cpsc@cpsc.ucalgary.ca)**

2. **Prerequisites:** Consent of Department

(<http://www.ucalgary.ca/pubs/calendar/current/computer-science.html#3620>)

3. **Grading:** The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Theme Study 20%

- Through research of an HRI subject, review of the related literature and current state-of-the-art
- Deliverables: Presentation and Report

Research Project 80%

- Design, implementation and evaluation of a novel human-robot interface
- Deliverables: Proposal, Prototype, presentation and Final Report

This course **will not** have a Registrar's Scheduled Final Exam.

Special Regulations affecting Final grade: Each of the above components will be given a percentage based mark (0-100%). The final grade will be calculated using the weighted percentage based marks and converted to a final letter grade using the official University grade point equivalents. Students must attempt and achieve a passing grade in all the course components to get a C- or better for an overall term grade.

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. Section 3.6. It is the student's responsibility to familiarize themselves with these regulations. See also Section E.6 of the University calendar.

5. **Scheduled Out-of-Class Activities:** REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME ACTIVITY. If you have a clash with this out-of-class activity, please inform your instructor as soon as possible so that alternative arrangements can be made.

6. **Course Materials:**

Designing Sociable Robots, Cynthia L. Breazeal, The MIT Press (Recommended)

**Online Course Components:**

None.

7. **Examination Policy:** Closed book. Students should also read the Calendar, Section G, on examinations.

8. **Approved Mandatory and Optional Course Supplemental Fees:** None.

9. **Writing across the Curriculum Statement:** In this course, the quality of the student's writing in the weighted components of the course will be a factor in the evaluation of these components. See also Section E.2 of the University Calendar.

10. **Human Studies Statement:** Students will be expected to participate as subjects or participants in projects. See also Section E.5 of the University Calendar.

11. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

- a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offense 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 which can be found in each classroom and building.
- c) **Student Accommodations:** 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 [http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-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 Computer Science.
- d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 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 <http://www.ucalgary.ca/secretariat/privacy>
- f) **Student Union Information:** VP Academic (403) 220-3911 [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca) SU Faculty Rep (403) 220-3913 [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca) and [science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca), Student Ombuds Office: (403) 220-6420 [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca), <http://ucalgary.ca/provost/students/ombuds>
- 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. All communications with other individuals via laptop computers, cell phones or other devices connectable to the internet in not allowed during 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) **U.S.R.I.:** At the University of Calgary feedback provided by students through the Universal Student ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses ([www.ucalgary.ca/usri](http://www.ucalgary.ca/usri)). Your responses make a difference – please participate in USRI surveys.

Department Approval \_\_\_\_\_ Date \_\_\_\_\_

Faculty Approval for  
out of regular class-time activity: \_\_\_\_\_  
Date: \_\_\_\_\_

Faculty Approval for  
Alternate final examination arrangements: \_\_\_\_\_  
Date: \_\_\_\_\_

\*A signed copy of this document is on file in the Computer Science Main Office\*

**CPSC 701.21 Percentage to Letter Grade Conversion Table**

A+	95-100
A	90-94
A-	85-89
B+	80-84
B	75-79
B-	70-74
C+	65-69
C	60-64
C-	55-59
D+	50-54
D	40-49
F	0-39

## **CPSC 701.21 Syllabus**

### Tentative Topics Covered:

- New themes in the design of robotic behaviors and morphology
- Studies of Human-Robot Interaction
- Social human-robot interaction
- Robotic interfaces in healthcare
- Androids Science
- Cyborgs
- Interaction with flying robots (drones)
- Domestic robotic interfaces
- Emotion theory and HRI
- Interaction between robots and animals
- Proxemics in HRI
- Science fiction influences on robotic research and development

### **Learning Outcomes:**

#### Learning Outcomes:

1. Practical and theoretical insight on the design of human-robot interfaces, the physical nature of robots, and the implications on the design of effective human-robot interfaces.
2. Approach and develop solutions to human-robot interaction (HRI) challenges using core concepts from design, psychology, and cognitive science – such as social HRI, situational awareness, zoomorphism, anthropomorphism, robotiquette, android science, and the uncanny valley.
3. Prototype a novel human-robot interface using low-level, mid-level, and high-fidelity prototyping techniques, implementing your design with advanced robotic technology (drones, humanoids and others).
4. Demonstrate advanced design communication skills to present user research and HRI design concepts to elicit criticism and feedback — including hand sketching, prototyping, scenarios, as well as verbal, written, and video presentation.
5. Demonstrate knowledge and insight from fields closely related to HRI, such as robotics, remote sensing, design, human factors, cognitive science, Computer-Supported Cooperative Work (CSCW) and psychology.

**Allowable Sources:**

No Restrictions on source material.

**Cited Sources:**

If you used an article, book, function or algorithm that you did not create for this course you must cite it. (This means you may have to cite yourself!) Use APA for citations in a report, paper or in the header documentation of computer code you submit. If citing a website, make sure you include the date you accessed the website. Don't forget to cite code that you used, even if you modified the code.

**Level of Collaboration between Students:**

You may discuss the assignments with other students in the class but do NOT share any code, do not ask others to provide you with code and do not show code that you have created for assignments to other students.

**Disclosure Policy**

If you discuss the assignments with others, make sure to cite these discussions.