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

1. **Course:** CPSC 335: Intermediate Information Structures
   Lecture Sections:
   L01, TR 12:30-13:45, Jon Rokne, ICT 714, 220-6016, rokne@ucalgary.ca
   Office Hours: W 10:00-12:00

   Course Website: http://pages.cpsc.ucalgary.ca/~rokne/CPSC335/top_level_335.htm

   Computer Science Department Office, ICT 602, 220-6015, cpsc@cpsc.ucalgary.ca

2. **Prerequisites:** CPSC 319 or 331
   (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:

Assignments	30%
Midterm	30%
(In-Class Thursday February 16th, 2017)	
Final Exam	40%

   This course **will** have a Registrar's Scheduled Final Exam.

   Special Regulations affecting Final grade: Each of the above components will be given a percentage grade. The final grade will be calculated, weighted by the percentage given above and then converted into a final letter grade using the attached cut-offs. In order to obtain a final grade of C- or better, and to pass the course, a student must achieve a weighted overall average of C- or better in the Assignment component.

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 theirself 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:**
   None.
   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. 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 SU Faculty Rep (403) 220-3913 science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca, Student Ombuds Office: (403) 220-6420 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). 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 335 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 335 Syllabus

Tentative Topics Covered:

A continuation of CPSC 331. Collision resolution in hash tables, search algorithms, advanced tree structures, strings. Advanced algorithmic tools for storing and manipulating information.

Learning Outcomes:

.By the end of the course, students will:

- The students will be presented with an introduction to modular arithmetic as a tool for information structure algorithms
- They will get a basic introduction to computations using modular arithmetic.
- The students will acquire a firm understanding of hashing as a device for mapping a subset of a large set into a smaller set. They will understand the problem of collision resolution in hashing. They will learn a variety of hashing techniques such as basic hashing using modular arithmetic, coalesced hashing, extensible hashing, dynamic hashing and virtual hashing. They will understand perfect hashing and the technique for perfect hashing developed by Chichelli.
- The students will learn about coding schemes and how they apply to computer science problems.
- The students will be introduced to search strategies and how trees structures apply to search strategies.
- The students will learn about information structures in general and be exposed to applications of information structures several kinds in computer science.
- The students will learn about dynamic programming as a technique for solving certain computer science problem. They will understand how dynamic programming is applied to the chain matrix multiplication problem.
- The students will understand the concept of a tree structure. They will gain a firm understanding of general trees, 2-3 trees, B-trees, height balanced trees and AVL trees. Suffix trees will be discussed.
- The students will learn about specific applications of information structures in areas such as quicksort, randomized algorithms, web search engines and the computation of page rank.

Allowable Sources:

No restrictions on source materials.

Cited Sources:

If you use an article, book, function or algorithm that you did not create for the 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 that 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.