

COURSE SYLLABUS

CMPT 116.3: INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING

Catalogue Description

Gives the fundamentals of programming, including functions, procedures and arrays. It introduces object-oriented programming and GUI components. Also some basic numerical methods and engineering applications are presented.

Prerequisite(s): Mathematics B30 or Foundations of Mathematics 30 or Pre-Calculus 30.

Website: <http://moodle.cs.usask.ca/>

Class & Instructor Information

See below for a separate list of laboratory times.

MWF 12:30p-1:20p

Physics 107

Jeff Long

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Spinks Lab, Tues 1pm-5pm, Fri 3pm-5pm

Learning Objectives

By the completion of this course, students will be expected to:

- Read and write simple algorithms using pseudo-code and flowcharts.
- Design and implement simple C programs from scratch.
- Test and debug simple C programs.
- Translate a simple pseudo-code or C program into a flowchart.
- Employ conditionals and loops in simple C programs.
- Employ variables, arrays and records in simple C programs.
- Define and call C functions in C programs.
- Design and implement simple recursive functions in C.
- Trace through the execution of simple C programs by hand.
- Compare and contrast linear search and binary search in terms of runtime and memory costs.
- Compare and contrast bubble sort, insertion sort, and selection sort in terms of runtime and memory costs.

Student Evaluation

Grading Scheme

Assignments (3% each)	27%
Midterm Exam (Oct 16)	25%
Lab exercises (1% each)	9%
Final Exam (date TBA)	39%
Total	100%

The midterm is scheduled for Thursday October 16, in the evening. The location will be announced on the course Moodle webpage (<http://moodle.cs.usask.ca>) closer to the actual date. The midterm will consist of multiple choice questions, some short answer questions and some programming questions.

Criteria That Must Be Met To Pass

Students must write the final exam. A student who does not write the final exam will receive a grade of at most 49 in the course.

Attendance Expectations

- Attend every class, and participate actively. There will be short reading assignments for all classes (see Moodle webpage <http://moodle.cs.usask.ca>), and students are expected to come to class having completed the readings. There is no penalty for missed lectures.
- Attend all laboratory (tutorial) sessions. These are opportunities to practice the course material with the guidance of a teaching assistant. There is no penalty for missed lab sessions, provided that the lab exercises (CodeLab) are completed by the due date (Fridays, 6pm).
- Attend the midterm examination. If you have part-time work, or other responsibilities, please try to make arrangements ASAP that will allow you to write the midterm. We will make alternative arrangements for students who cannot attend the evening seatings, but obviously, we would like to keep the special arrangements to a minimum. A missed midterm will be counted as a score of zero, excluding exemptions due to health or compassionate grounds.

Note: All students must be properly registered in order to attend lectures and receive credit for this course.

Final Exam Scheduling

The Registrar schedules all final examinations, including deferred and supplemental examinations. Students are advised not to make travel arrangements for the exam period until the official exam schedule has been posted.

Course Overview

This course is required for certain Engineering majors; it is equivalent in credit to CMPT 111.

Lectures will be opportunities to apply the concepts covered in the course, discuss them, as well as to ask questions and receive guidance; we will not waste class time reading PowerPoint slides to you. **Short readings** will be assigned before each class, and you will be expected to be prepared to discuss, ask questions, and participate. These readings are collected into a book-like document available on the Moodle webpage (<http://moodle.cs.usask.ca>) **Laboratory** times are listed below; these are your opportunities to put into practice the week's material using a computer under the guidance of a teaching assistant. We will have two **midterm** examinations (see above for the schedule). The **final examination** is scheduled by the university, and the exam schedule is usually released in October.

Assignments are weekly, to ensure that all the relevant material is put into regular, consistent practice. Some early assignments will seem easy, and later assignments will definitely challenge you. Even a simple assignment can turn into a time-consuming affair, if you get stuck on something that blocks your progress. Working at the last minute is a guaranteed source of stress and burn-out. To manage your workload you must learn effective time management. Start every assignment early, to allow yourself time to consult if you run into a problem.

Students who complete CMPT 116 with diligence will be able to:

- Apply their basic programming skills to build applications for practical situations.
- Extend their knowledge of the C programming language by self-study.

- Build on their knowledge of computer science to learn the basics of any other computer programming language.
- Continue their formal study of computer science in courses such as CMPT 106 and CMPT 115.

Please make use of the teaching resources (instructors' office hours, TAs, labs, lectures, discussion forums etc) available to you.

Textbook Information

Required Texts and Resources

- There is no required textbook for the course.
- CodeLab: Students are required to purchase access to CodeLab for CMPT 116. Please see CodeLab Setup section for instructions.
- Course Readings are provided free of charge, and are available on the CMPT 116 course Moodle webpage (<http://moodle.cs.usask.ca>).

Recommended Texts

- Cay Horstmann, C++ for Everyone 2nd Edition, Wiley 2011. ISBN: 978-0-470-92713-7

Lecture Schedule

The following schedule is approximate. Other topics may be added if time allows.

Topic	Details
Introduction (2hrs)	<ul style="list-style-type: none"> • Administrative details • Course Overview • What is Computer Science?
Algorithms (6hrs)	<ul style="list-style-type: none"> • What is an algorithm? • Pseudo-code and flowcharts • Encapsulation and abstraction • Atomic data, variables and types • Compound data
C++ Fundamentals (20hrs)	<ul style="list-style-type: none"> • Variables & Console IO • Expressions • Conditional branching • Functions • While loops • One-dimensional arrays • For-loops, and do-while loops • Multi-dimensional arrays • Records and record types • Recursion

Searching and Sorting (2.5hrs)	<ul style="list-style-type: none"> • Linear search, Binary search • Insertion sort, Selection sort, Bubble sort • Computational complexity
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A detailed course schedule is available on the course Moodle webpage (<http://moodle.cs.usask.ca>).

Laboratory sections

Laboratory sessions begin the week of September 15. See the detailed course schedule, which can be found on the course Moodle webpage (<http://moodle.cs.usask.ca>).

The lab sessions will be held in the teaching labs, located on the 3rd floor of the Spinks Addition of the Thorvaldson building.

Section	Day	Time	Room
L01	Tue	08:30am-09:50am	THORV S320
L03	Tue	01:00pm-02:20pm	THORV S320
L05	Thu	11:30am-12:50pm	THORV S320
L07	Thu	08:30am-09:50am	THORV S320
L09	Tue	05:30pm-06:50pm	THORV S320

The laboratory sessions will be guided by teaching assistants; the contact information for the teaching assistants will be made available on course Moodle webpage (<http://moodle.cs.usask.ca>).

A large open-access lab (on the 3rd floor of Spinks) is available for student use outside of lab time. Many TAs and instructors for several CMPT courses will hold office hours in the open lab. Don't be shy. If you see an instructor or TA who is not your TA or instructor in the lab, don't hesitate to call them over to help you.

CodeLab

CodeLab (turingscraft) is a web-based interactive programming exercise system for intro programming classes. We will be using it for all of your lab exercises. **You are required to purchase access to CodeLab to be able to complete all of the lab exercises.** The procedure for registering for CodeLab will be posted on the course Moodle webpage (<http://moodle.cs.usask.ca>).

Note that CodeLab is an external company that is not affiliated with the University of Saskatchewan. If you have troubles/problems with your CodeLab account, then you must contact CodeLab to have them resolved; your instructors are not able to assist with CodeLab account problems.

Registration for CodeLab will cost \$25 (US\$). This registration is NON-REFUNDABLE, so only register before Sept 16 if you are sure that you will not be withdrawing from CMPT 116 before then. If you do not have a credit card with which to purchase access, then you can purchase a pre-loaded credit card from most grocery stores in the city. We suggest purchasing a \$50 card if you have to use a prepaid credit card. Note: The balance on a prepaid credit card can be used at most/all local stores to partially pay for something; for example, if you have \$4.21 on a prepaid credit card, and buy something for \$10 then you can use the card to pay for \$4.21, and then pay the remainder by cash/debit/etc.

Policies

Late Assignments

Unless otherwise noted, all *lab assignments* are due Fridays at 6pm, and *regular assignments* are due Tuesdays at 6pm. Because of the weekly nature of assignments, late lab exercises or regular assignments cannot be accepted. Yes, that's harsh, but we have a schedule to keep. We may make exceptions, but only for emergencies or exceptional circumstances; please contact your instructor in such cases.

Missed Assignments

Students are expected to attempt (and hopefully complete!) all assignments, and all laboratory exercises. It's better to submit partially completed assignments than to submit nothing at all. A missed assignment will receive a score of zero.

If you miss an assignment for medical or compassionate reasons, contact your instructor as soon as possible.

Missed Examinations

1. "Students who have missed an exam or assignment must contact their instructor as soon as possible. Arrangements to make up the exam may be arranged with the instructor. Missed exams throughout the year are left up to the discretion of the instructor if a student may make up the exam or write at a different time. If a student knows prior to the exam that she/he will not be able to attend, they should let the instructor know before the exam."
2. "Final exams - a student who is absent from a final examination through no fault of his or her own, for medical or other valid reasons, may apply to the College of Arts and Science Dean's office. The application must be made within three days of the missed examination along with supporting documentary evidence. Deferred exams are written during the February mid-term break for Term 1 courses and in early June for Term 2 and full year courses."

(2007/08. <http://www.arts.usask.ca/students/transition/tips.php>)

Incomplete Course Work and Final Grades

When a student has not completed the required course work, which includes any assignment or examination including the final examination, by the time of submission of the final grades, they may be granted an extension to permit completion of an assignment, or granted a deferred examination in the case of absence from a final examination. Extensions for the completion of assignments must be approved by the Department Head, or Dean in non-departmentalized Colleges, and may exceed thirty days only in unusual circumstances. The student must apply to the instructor for such an extension and furnish satisfactory reasons for the deficiency. Deferred final examinations are granted as per College policy.

In the interim, the instructor will submit a computed percentile grade for the course which factors in the incomplete course work as a zero, along with a grade comment of INF (Incomplete Failure) if a failing grade. In the case where the instructor has indicated in the course outline that failure to complete the required course work will result in failure in the course, and the student has a computed passing percentile grade, a final grade of 49% will be submitted along with a grade comment of INF (Incomplete Failure).

If an extension is granted and the required assignment is submitted within the allotted time, or if a deferred examination is granted and written in the case of absence from the final examination, the instructor will submit a revised computed final percentage grade. The grade change will replace the previous grade and any grade comment of INF (Incomplete Failure) will be removed. For provisions governing examinations and grading, students are referred to the University Council Regulations on Examinations section of the Calendar.

(2011 University of Saskatchewan Calendar/Academic Courses Policy)

Academic Honesty – the University Policy

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behaviour that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct, <http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>, as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals, <http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>.

Academic honesty is also defined and described in the Department of Computer Science Statement on Academic Honesty:

<http://www.cs.usask.ca/undergrad/honesty.php>.

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at:

<http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf>

Examinations with Disability Services for Students (DSS)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check <http://www.students.usask.ca/disability/>, or contact DSS at 966-7273 or dss@usask.ca.

Students registered with DSS may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through DSS by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by DSS.

Version History

- 2013/08/25: initial version
- 2013/09/02: one midterm, tentatively scheduled