

CS 5303 – Introduction to Programming and Problem Solving

Fall 2010

TENTATIVE OUTLINE

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PLEASE NOTE: The Midterm and Final Exams are handwritten and given live on the Brooklyn and Melville campuses. For students who are out of state, you will be asked to arrange with the ePoly staff to have your live exam proctored. These exams are closed book exams, no notes, no computers, no compilers. The TIMES and LOCATIONS will be assigned individually to each student. I will be asking you for the days and times that you are available and your choice of campus, later in the term.

Course Information

Course level

Graduate – Bridge Course

Prerequisites

Graduate status or Permission of the instructor

General content

This course provides an introduction to discrete mathematics, computers and programming; running C/C++ programs under UNIX; algorithmic language; pseudocode; problem solving and program structure. Topics covered include constants, variable, data types, assignments, arithmetic expressions, input and output; object-oriented and top down design and procedures, selection and loops; functions; enumerated types ; arrays, structs and searching and sorting.

Objectives

To learn Computer Programming techniques that can be applied to the graduate computer science curriculum:

- Understanding of computers
- Programming in the C/C++ programming languages under UNIX
- Algorithmic language
- Pseudocode
- Problem solving and program structure
- Constants, variable, data types, assignments, arithmetic expressions, input and output; object-oriented and top down design and procedures, selection and loops; functions; enumerated data type; arrays, structs, and searching and sorting.

Methods of instruction

The primary method of instruction is **on line** lectures supplemented with related readings from the text and supplemental notes that I have made up, programming assignments, weekly quizzes and exams.

Textbook

[Problem Solving with C++](#), 7th Edition,
Walter Savitch, Addison Wesley
ISBN 0-321-53134-5

Course Policies

This is NOT a self-paced course. Students are expected to keep up with the course syllabus and observe the due dates. I do not give “I” grades (incompletes) for this course, except for extreme cases. (These cases must be back-up with official documentation.) I also do not negotiate grades. You get the grade you deserve based on your average.

I expect everyone to check their e-mail at least once a day and to respond to my e-mails promptly

Exams

A LIVE midterm and a final exam will be given. They are 3 hour exams. The midterm exam covers the material from the beginning of the course up to the exam. The final exam covers the entire course with an emphasis on the material covered since the midterm. Exam questions are based on material from the text, my supplemental notes, homeworks, quizzes and lectures. **These exams are live, handwritten, closed book, no notes, and without the use of compilers or computers.** The Midterm and Final Exams are given live on the Brooklyn and Melville campuses. For students who are out of state, you will be asked to arrange with the ePoly staff to have your live exam proctored. The TIMES and LOCATIONS will be assigned individually to each student. I will be asking you for the days and times that you are available and your choice of campus, later in the term. **Absence** from exams will be accepted **only** if the student has notified me prior to the exam with an acceptable reason.

Homework Assignments and Quizzes

Roughly 15 homework assignments will be assigned with a due date. One of the main goals of this course is to enhance your ability as a programmer and the homework assignments are designed with this goal in mind. Programming is not a spectator sport. It is unlikely that your ability to program will improve substantially just by listening to the lectures. It is important that you master the material covered in the homeworks **BEFORE** you take the quizzes and exams on that material. **It is highly recommended that you start the homework assignments as soon as you can.** This will enable you to ask me a question if you get stuck and to fully test and debug your program. You can ask questions

at any time via e-mail. It's best to ask me a question via e-mail rather than submitting the assignment in the dropbox with a question attached. I check my e-mails several times a day; I check the dropbox, only when I actually am grading the assignments.

Some students actually send me their code when they get stuck, so that I can give them a hint! There is no penalty for this...in fact, I strongly encourage it. Just don't wait until the last minute. I can also meet individuals in the chat room at a specific time- you just need to give send me an e-mail in advance and see that I confirm it. Short extensions on the due date for assignments will be given..but you need to formally ask me for my permission.

There will also be roughly 12 on-line quizzes given via the automated "exam feature" on the Blackboard website. Each weekly quiz will cover the previous week's material. You will be able to log on anytime during the week and take the quiz for that week. **There are no makeups for missed quizzes.** You can check the syllabus in advance to see what each quiz will cover...this information can also be found in the weekly "TO DO LIST" on the website.

Note: Homeworks and quizzes count for a substantial percentage of your overall grade (40%). Furthermore, if you do not do the homework problems, it is unlikely that you will understand the material and thus unlikely that you will do well on the exams. In some homework assignments you will re-use code written in early assignments, so it is important to keep up.

Academic dishonesty

Plagiarism, cheating, sharing of examination questions and answers, submitting work done by others as your own, and all other forms of deception proscribed in University rules are forbidden. For the sake of your own dignity and self-esteem, it is better to get a low grade than to engage in dishonesty. This is a graduate course and I expect everyone to be professional and to do their own work. **Any student caught cheating on an exam or quiz will face a potential grade of 'F' for this course and possible expulsion from Polytechnic University. This policy is STRICTLY enforced.**

All exams are closed book. When you enter the exam room, you should put any materials you brought with you, up against the wall on the other side of the classroom, where you will not have access to them. Once the exam starts, you should not leave the room for any reason, so plan properly in advance.

If you are caught cheating, you will receive a zero for the exam. This is not open to negotiation.

For quizzes and homeworks, the work you must should be your own. If I detect that you're submitting somebody else's work, the first time this happens you will receive a zero for that quiz or homework, and the second time will result in a grade of F for

the course. This may seem harsh, but keep in mind what I stated earlier: the quizzes and homeworks are designed to be preparation for the major exams, and it critical that you get this practice to do well on the exams.

Grading Policy

The final grade will be based on the quizzes, homework, the midterm and the final. They will be weighted roughly as shown in the chart below.

I have been told that there is a new grading system for graduate courses that the school has approved starting Fall 2010, although I have not seen it in writing. The new grades that I can give for the course are A, A-, B+, B, B-.C+, C and F. This is based on tentative information that I have received.! If it turns out that this information is incorrect, I will follow Poly's current grading policy. I suspect that the old grades of A,B,C,F are the only grades I can give out for students completing I grades from previous semesters.

I do not give "I" grades (incompletes) for this course, except for extreme cases. These cases must be back-up with official documentation. I also do not negotiate grades. You get the grade you deserve based on your overall class average.

Midterm Examination	30%
Homework Assignments and Quizzes	40%
Final Exam	30%

Withdrawal

You must formally withdraw from this course to avoid a failing grade by the last to withdraw date. Information about formal withdrawal and the tuition consequences is contained in the Schedule of Classes Note that this involves contacting the registrar to officially withdraw! If you need help with this you can also contact the ePoly staff for assistance.

Please note that in the sixth edition of the text...the author has interchanged the order of many of the chapters, which is why the online lectures are not done in order. I personally like the new order and covered the material in this order when I used to teach the course live. I've indicated the old chapter numbers in the calendar below.

Please note: There are .pdf files of the on-line lecture slides under the Lecture Notes-pdf version Tab. This will allow you to print them out and jot down comments when you actually view them.

Course Calendar – Fall 2010

<p style="text-align: center;">Week 1 9/7/10 – 9/12/10</p>	<p><i>Introduction to Computers</i></p> <ul style="list-style-type: none"> • Read the WELCOME document which can be found under the Welcome tab • Read the handouts under the GETTING STARTED tab. • Complete and submit my “CS5303 Questionnaire I” so I can get computer accounts for (Open the .doc file...complete it and submit it back to me...see the handout HOWTO SUB tab.) • Get the textbook; • Read chapter 1 in the text; • Read my supplemental notes that I will e-mail to you. • View on-line lecture 1 which can be found under the LectureNotes tab. • Note there is a .pdf file of the slides for the online lecture located under the LectureNotes tab. you can print out a copy of the slides.I’ve set it up so that it prints 4 slides per page on these printouts as they view the actual slides. • Do Homework #1 to test out the system. • Homework 1 is due and should be submitted by Tuesday 9/14/10 at midnight. (See GETTING STARTED tab)
<p style="text-align: center;">Week 2 9/13/10 – 9/19/10</p>	<p><i>Variables, assignment statements and expressions; Input/Output</i></p> <ul style="list-style-type: none"> • Read sections 2.1 – 2.3 in the text; • View on-line lectures 2 and 3. • Read my supplemental notes that I will e-mail to you. • Read the “How to take a quiz” handout which can be found under the GETTING STARTED tab. • Take practice quiz. The actual quiz question has nothing to do with this course. It is just to see how the system works. Your grade does not count.! • Send me an e-mail when you complete the quiz with the title, CS5303 Practice Quiz- followed by your name. <ul style="list-style-type: none"> • Homework #2 is due Tuesday 9/21/10 at midnight.
<p style="text-align: center;">Week 3 9/20/10 – 9/26/10</p>	<p><i>Boolean expressions, if statements, While Loops</i></p> <ul style="list-style-type: none"> • Finish reading Chapter 2 of the text. • View on-line lectures 4 and 5. • Read my supplemental notes that I will e-mail to you. • Take Quiz # 1, it will cover up to section 2.3 • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 1- followed by your name. So that I can return your graded quiz to you. <ul style="list-style-type: none"> • Homeworks #3a and 3b which are due Tuesday 9/28/10 at midnight.
<p style="text-align: center;">Week 4 9/27/10 – 10/3/10</p>	<p><i>More Flow of Control - Nested If statements, switch statements</i></p> <ul style="list-style-type: none"> • Read chapter 3 sections 3.1, 3.2 of the text. (<i>In older editions, this is Chapter 7</i>) • View on-line lecture 16 . • Read my supplemental notes that I will e-mail to you.

	<ul style="list-style-type: none"> • Take Quiz # 2 on chapter 2. • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 2- followed by your name. • Homework #4 is due Tuesday 10/5/10 at midnight.
<p style="text-align: center;">Week 5 10/4/10 – 10/10/10</p>	<p>More Flow of Control (con't)- Nested loops, while loops, do loops, f</p> <ul style="list-style-type: none"> • Finish reading chapter 3 sections 3.3, 3.4 • View on-line lecture 17 . • Read my supplemental notes that I will e-mail to you. • Homework #5 is due Tuesday 10/12/10 at midnight. • Take quiz #3 on material up to and including 3.2. • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 3- followed by your name. • Arrange a time and location for the midterm exam. <p>The exams are given the week of 11/1/10 – 11/7/10. EVERYONE HAS TO TAKE IT TO GRADE AND RETURN IT BEFORE THE WITHDRAWAL DAY WHICH IS Tuesday. <u>Brooklyn and Melville students</u> I will be sending you an e-mail about your available dates for the exam. <u>Brooklyn and Melville</u> for the exam. When you get it, please respond promptly. <u>Out of state students</u> should arrange with the ePoly staff to have their exam proctored. Please try to schedule 3 hours for the exam. Please try to take it early in the week- to allow time to complete the exam, so that I can return the graded exam to you before the withdrawal day.</p> <ul style="list-style-type: none"> • Everyone should send me an e-mail with their postal address, so that I can
<p style="text-align: center;">Week 6 10/11/10 – 10/17/10</p>	<p>Top-down design, predefined functions, Programmer-defined functions</p> <ul style="list-style-type: none"> • Read sections 4.1 – 4.3 of the text. (<i>In older editions, this is chapter 3</i>) • View on-line lectures 6 and 7. • Read my supplemental notes that I will e-mail to you. • Take Quiz # 4 on chapter 3 • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 4- followed by your name. • Homework #6 is due Tuesday 10/19/10 at midnight
<p style="text-align: center;">Week 7 10/18/10 – 10/24/10</p>	<p>Global and local variables, Procedural Abstraction</p> <ul style="list-style-type: none"> • Finish reading Chapter 4 of the text. (<i>In older editions, this is chapter 3</i>) • View on-line lectures 8 and 9. • Read my supplemental notes that I will e-mail to you. • Take Quiz # 5 on 4.1 – 4.3 <ul style="list-style-type: none"> • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 5- followed by your name. • Homework #7 is due Tuesday 10/26/10 at midnight
<p style="text-align: center;">Week 8 1/25/10 – 10/31/10</p>	<p>Pass by value vs. pass by reference parameters</p> <ul style="list-style-type: none"> • Read chapter 5 of the text. (<i>In older editions, this is Chapter 4</i>) • View on-line lecture 10. • Read my supplemental notes that I will e-mail to you. • Take Quiz # 6 on Chapter 4 <ul style="list-style-type: none"> • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 6- followed by your name. • Homework #8 is due Tuesday 11/2/10 at midnight

<p style="text-align: center;">Week 9</p> <p style="text-align: center;">Midterm Exam Week</p> <p style="text-align: center;">11/1/10 – 11/7/10</p>	<p>THIS WEEK IS THE MIDTERM EXAM.</p> <p>I made it a little later in the semester than usual, so you have time to absorb the material. The Midterm exam covers Chapters 1-4.</p> <p>It is closed book, no notes, no calculator, no computers, no compilers. Please remember!</p> <p>The supplemental notes that I have been e-mailing you together with the quizzes and homework should tell you what I think is important! If you have not done so already, please send me an e-mail so that I can return your graded exam to you.</p> <p>By now everyone should know when and where they are taking the exam</p> <p>NOTE: The last day to withdraw with a W grade from the course is Tuesday 11/16/10.</p>
<p style="text-align: center;">Week 10</p> <p style="text-align: center;">11/8/10 – 11/14/10</p>	<p>Input and output streams and formatting, Character input and output</p> <ul style="list-style-type: none"> • Read chapter 6 of the text. (Skip the section on inheritance) (<i>In older editions, this is Chapter 5</i>) • View on-line lectures 11 and 12. • Read my supplemental notes that I will e-mail to you. • Take Quiz # 7 on Chapter 5. • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 7- followed by your name. • Homeworks # 9, 10 are due on Tuesday 11/16/10 at midnight <p>NOTE: The last day to withdraw with a “W” grade from the course is Tuesday 11/16/10.</p> <p>If you do decide to withdraw from the course- please make sure to do the following:</p> <p>Send me an e-mail</p> <p>Send ePoly (Crystal Chavis) an e-mail</p> <p>Notify the registrar that you are dropping the course. The registrar is the only one who can give you a “W” grade</p>
<p style="text-align: center;">Week 11</p> <p style="text-align: center;">11/15/10 – 11/21/10</p>	<p>Arrays</p> <ul style="list-style-type: none"> • Read chapter 7.1 – 7.3. (<i>In older editions, this is Chapter 10</i>) • View on-line lectures 18. • Read my supplemental notes that I will e-mail to you. (actually the notes are for this week) • Homework #11 is due on Tuesday 11/23/10 at midnight. • Take Quiz # 8 on Chapters 6. • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 8- followed by your name. • Arrange a time and location for the final exam. It is a 3-hour exam. The ePoly staff will be sending the Brooklyn and Melville students a questionnaire about the location for their exam. When you get it, please respond promptly to the ePoly staff to have their exam proctored at a location near them. Please send me an e-mail so that your exam to be mailed back to me.
<p style="text-align: center;">Week 12</p> <p style="text-align: center;">11/22/10 – 11/28/10</p> <p style="text-align: center;">SHORT WEEK</p>	<p>Arrays (Cont’d)</p> <ul style="list-style-type: none"> • Finish reading chapter 7 of the text. (<i>In older editions, this is Chapter 10</i>) • View on-line lectures 19. • Take Quiz # 9 on the first part of arrays • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 9- followed by your name. • Homework #12 is due Thursday 12/2/10 (extended due to Thanksgiving holiday).

<p style="text-align: center;">Week 13 11/29/10 – 12/5/10</p>	<p><i>Using Strings, Multidimensional Arrays</i></p> <ul style="list-style-type: none"> • Read 8.1 – 8.2 of the text. (<i>In older editions, this is 11.1, 11.2</i>). • View on-line lectures 21, 22.. • Read my supplemental notes that I will e-mail to you. • Homework #13 is due Tuesday 12/17/10 • Take Quiz # 10 on arrays and functions. • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ 10- followed by your name
<p style="text-align: center;">Week 14 12/6/10 – 12/12/10</p>	<p>Structures, Classes, Constructors and abstract data types</p> <ul style="list-style-type: none"> • Read chapter10 of the text. (In older editions this is Chapter 6). • View on-line lectures 13,14,15,20 . • Read my supplemental notes that I will e-mail to you. I cover classes in detail in CS540...so for now concentrate on the structs portion and cover • Take Quiz # 11 Strings • Send me an e-mail when you complete the quiz with the title, CS5303 QUIZ11- followed by your name • Homework #14 is due Tuesday 12/14/10 at midnight • BY NOW EVERYONE SHOULD KNOW WHERE AND WHEN THEIR FINAL IF YOU DON'T, PLEASE CONTACT ME IMMEDIATELY.
<p>12/13/10- 12/15/10 Catch-up days</p> <p>Final Exam Week 12/16/10 – 12/22/10</p>	<p>THIS WEEK IS THE FINAL EXAM.</p> <p>Everyone should know the exact day and time and location of their final exam by now. It will be closed book, no notes, no compilers, no computers and will cover the entire course on material that was introduced after the midterm.</p>