CS 202 Computer Science II

Spring 2017 Syllabus and Information

General Information

Contact Your Instructor

Name: Jeff Kinne
Email: jkinne@cs.indstate.edu
Phone: 812-237-2136
Office: Root Hall, room A-120

Lecture, Exam, Office Hours

Lecture: Tuesday, Wednesday, Thursday, Friday from 8-8:50am in Root Hall, room A-017.

Exam: Friday May 12, 8-9:50am in A-017.

Instructor Office Hours: I am generally in my office and available most MWF's from about 8:30am-4pm except when in other meetings. My official office hours are Wednesdays 9-10am, 1-3pm.

GA Tutoring: We have a few student assistants who will be in the computer science unix lab, room A-015 in the basement of Root Hall, to provide some help on getting started with this and other "beginning" CS courses. The lab is traditionally open 9am-5pm Monday to Thursday and 9am-noon on Friday. For the up to date ours for the current semester check http://cs.indstate.edu/info/labs.html once classes have started. You can go to this lab to work on your programs. The computers are unix machines, and you can use the cs202xx login that will be sent to you during the first week of class to use them. Or, you can bring your laptop to work on. Either way, you can ask the student assistants to look at your programs, and you can work with any other CS 202 students that are there (you could use the lab as a regular meeting place to work with your classmates).

Website: this google doc, or find a link from kinnejeff.com

Prerequisites

CS 201 with a C or better.

Recommended text

There is no required text. The following will be used as references
- [The C Programming Language by Kernighan and Ritchie](#)
- [MIT course - Practical Programming in C](#)
- [CS 201 as taught by Jeff Kinne](#)
- [The C Book](#)
- [C Programming Wikibook](#)
- [How to Think Like a Computer Scientist C++ Verson](#)
- [cplusplus.com](#)
- [ACM Programming Contest Problems](#)

A good textbook to have as a supplement is [Introduction to Algorithms](#) by Cormen, Leiserson, Rivest, and Stein. The CLRS book includes most of the material from CS 202, 303, 420, and 458, and is a great reference to have. For the basics of C programming, [The C Programming Language](#) by Kernighan and Ritchie is the standard reference. Note that neither text is required, but are great leisure reading.

Course Announcements

Announcements regarding the course will be made both during class and via email to your @sycamores.indstate.edu email address. You should regularly check this email account or have it forwarded to an account that you check regularly. You can set the account to forward by logging into your indstate.edu email from Internet Explorer (the "light" version of the webmail client that opens up from Firefox or Chrome does not give the option to forward email).

Classroom conduct

You may not use cell phones, iPods/music players, etc. during class. You should be civil and respectful to both the instructor and your classmates, and you should arrive to class a few minutes before the scheduled lecture so you are ready for lecture to begin on time. You may use your computer during class if you are using it to follow along with the examples that are being discussed. You may not check email, facebook, work on other courses, etc. during class.

Course Description

The official description of this course from the catalog is

"This course is a continuation of CS 201. It involves a deeper study of programming languages, but emphasizes programming in a particular language. Topics include algorithm design and

analysis, data structures, recursion, threads, network programming, graphics, security, and ethics."

In brief, this course completes your introduction to C/C++ programming and data structures and algorithms (together with CS 151, 201, and 303). The course will be fairly heavy in programming, but we start to work on more and more non-trivial, interesting programs (that are more efficient than the program you would first think of).

Course Outline

We begin the course by following along with the outline for CS 201/202 put together by Geoff Exoo that is linked above. Along the way, we will get a view of each of the following topics.

1. C programming refresher with some interesting example and ICPC problems
2. C programming - anything you haven't seen yet?
    a. Review of all the keywords and symbols, what haven't you seen
    b. Review of commonly used libraries (I/O, math, string, time/date, …)
3. Editors, command-line tools, etc. - things that are useful for developers
    a. Editors - vim, emacs
    b. Command-line tools - man
4. C++ programming - object-oriented programming and C++ syntax
5. Basic algorithms/techniques
    a. Brute force
    b. Divide and conquer
    c. Dynamic programming
    d. Graph algorithms
6. Running time analysis of algorithms - big O and such, recursion trees
7. Basic data structures
    a. Arrays (fixed size, and that can grow)
    b. Linked Lists (and queues, stacks)
    c. Binary trees (unbalanced and balanced)
    d. Hash tables
    e. Heaps (aka priority queues)
    f. Adjacency matrix, adjacency list
    g. Maybe some others
    h. C++ versions of basic data structures
8. Something interesting and fun (network programming, graphics, threads, extremely large number arithmetic, …)
9. Maybe - compiling/designing programs in IDEs (Eclipse, MS Visual Studio)

Grading and Assignments

The students of this course have the following responsibilities: read assigned readings before lecture, attend lecture, complete homework assignments, take in-class quizzes, take exams, and complete a project. The final grade consists of:

- **Project: 15%** of the final grade.

- **Homeworks and Quizzes: 30% total**. Most weeks there will be at least one homework assignment or quiz.

- **Exams: 45% total**. There will be 3 exams. The total exam grade will be calculated as max((.1 * exam1 + .15 * exam2 + .2 * exam3) / .45,
        (.15 * exam2 + .2 * exam3) / .35,
        exam3)

- **Class Participation: 10% total**. The participation grade will be assigned at the end of the semester based on how attentive you were in class throughout the semester.

CS Course Policies

Note that this course follows all standard CS course policies. In particular, (a) cheating/plagiarism by graduate students (for courses with graduate students) results in an F in the course, (b) missing 20% of the classes results in an F for any student, and (c) there will be no makeup exams. See http://cs.indstate.edu/info/policies.html for details.

Late Homeworks

All homework assignments will be given a preferred due date. Assignments can be turned in past the preferred due date, but any assignments turned in late will have their value multiplied by 80% (so the highest grade you can get on a late assignment is 80%). Each assignment will have a "final due date" past which no credit will be given.

Start Homeworks Early

I suggest attempting a homework assignment the day it is given, or the day after, so that if you have a problem you can ask early. If you continue to have problems in trying to complete the assignment, you will have time to ask again. Many of the homework assignments require thought and problem solving, which takes "time on the calendar" not just "time on the clock". By that I mean that spending an hour on 3 consecutive days is likely to be more productive than trying to spend 3 hours at once on the assignment.

Expected Amount of Work

My expectation is that an average student will spend about 4-6 hours OUTSIDE of class each week (that is in addition to class time) WORKING PRODUCTIVELY/EFFICIENTLY (not just staring at the computer) to complete their coursework for this class. Some students may spend less time than this, and some students will spend more.

Note - this is your most important class, by far (for CS majors). Also, your classes should be more important than your part-time job.

Grade Cutoffs

I will design homework assignments and exams so that a standard cutoff for grades will be close to what you deserve. After the first exam I will create a grade in Blackboard called "Letter Grade" that is what your letter grade would be if the semester ended today. Initially, I will assign the following grades: 93-100 A, 90-93 A-, 87-90 B+, 83-87 B, 80-83 B-, 77-80 C+, 73-77 C, 70-73 C-, 67-70 D+, 63-67 D, 60-63 D-, 0-60 F

My goal is that the different grades have the following rough meaning.

A+/A
You understand everything and probably could teach the course yourself.

B+/A-
You understand nearly everything, and should be all set to use this knowledge in other courses or in a job.

C/C+/B-/B
Some things you understand very well and others you don't (more towards the former for a B and more towards the latter for a C).

D-/D+/C-
You did put some effort in, and understand many things at a high level, but you haven't mastered the details well enough to be able to use this knowledge in the future.

F
Normally, students that get an F simply stopped doing the required work at some point.

Blackboard

The course has a blackboard site. Click here to go to blackboard. You should see this course listed under your courses for the current term. The blackboard site is only used for giving you your grades (go to the course in blackboard, then click "My Tools", and then "My Grades"). All course content, schedule, etc. is kept in this google doc (which you are currently viewing).

Academic Integrity

Please follow these guidelines to avoid problems with academic misconduct in this course:

- **Homeworks:** You may discuss the homework assignments, but should solve and finish them on your own. To make sure you are not violating this, if you discuss with someone, you should DESTROY any work or evidence of the discussion, go your separate ways, SPEND at least an hour doing something completely unrelated to the assignment, and then you should be able to RECREATE the program/solution on your own, then turn that in. If you cannot recreate the solution on your own, then it is not your work, and you should not turn it in.

- **Note on sources:** if you use some other source, the web or whatever, you better cite it! Not doing so is plagiarism.

- **Exams:** This should be clear - no cheating during exams. The exams will be closed-book, closed-notes, no computer, and no calculator.

- **Projects:** You should not copy from the internet or anywhere else. The project should be your own work. It will be fairly obvious to me if you do copy code from the internet, and the consequences will be at the least a 0 on the project.

If cheating is observed, you will at the least receive a 0 for the assignment (and may receive an F for the course), and I will file a Notification of Academic Integrity Violation Report with Student Judicial Programs, as required by the university's policy on Academic Integrity. A student who is caught cheating twice (whether in a single course or different courses) is likely to be brought before the All-University Court hearing panel, which can impose sanctions up to and including suspension/expulsion. See the Student Code of Conduct and Academic Integrity Resources for more information.

Please ask the instructor if you have doubts about what is considered cheating in this course.

Special Needs

If you have special needs for the classroom environment, homeworks, or quizzes, please inform the instructor during the first week of classes. If you have any such needs, you should go to the Student Academic Services Center to coordinate this. See [Student Academic Services Center - Disabled Student Services](#) for more information.

Disclosures Regarding Sexual Misconduct

Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual misconduct are encouraged to contact confidential resources listed below. To make a report or the Title IX Coordinator, visit the Equal Opportunity and Title IX website: http://www.indstate.edu/equalopportunity-titleix/titleix.

The ISU Student Counseling Center – HMSU 7th Floor | 812-237-3939 | www.indstate.edu/cns
The ISU Victim Advocate – Trista Gibbons, trista.gibbons@indstate.edu
                                    HMSU 7th Floor | 812-237-3939 (office) | 812-230-3803 (cell)
Campus Ministries - United Campus Ministries | 812-232-0186
                            http://www2.indstate.edu/sao/campusinistries.htm
                            www.unitedcampusministries.org | ucmminister2@gmail.com
                            321 N 7th St., Terre Haute, IN 47807

For more information on your rights and available resources
http://www.indstate.edu/equalopportunity-titleix/titleix