INTRO TO COMPUTING II

Course Description and Goals

This course covers elements of advanced programming, including abstract data types, algorithms that manipulate ADTs and analysis of algorithms. Information hiding, data abstraction, and modular design are emphasized. They are exemplified by important ADTs—stacks, queues, lists, and binary trees—and algorithms—searching and sorting. Object-oriented programming, in Java, which is the learning focus of the first month of the course, is expanded throughout the course.

In projects students design and implement programs that illustrate the topics of the course. By the end of the course, students should be able to design and implement multi-module programs.

Goals

- Write good programs—programs that are correct, high quality, and use correct and appropriate Object Oriented Programming techniques
- Reuse classes and Application Programming Interfaces (APIs) developed by others, especially the standard library APIs
- Understand and recognize proper programming style and demonstrate making design decisions consistent with Object Oriented methodologies.
- Be able to read, understand, interpret and extend programs written by others in the same language
- Study several very important structures, and different implementation techniques
- Learn how to choose the “best” one
- Teach you how to modify standard structures for specific purposes, or create new ones

Prerequisite: COSC 101 or equivalent

This course does not require knowledge of Python, the programming language used in COSC 101. It does, however, assume knowledge of programming fundamentals in an imperative programming language, including the following concepts.

- Primitive and reference variables (including lists or arrays and strings).
- Looping (definite and indefinite).
- Conditionals.
- Functions and pass-by-value semantics for arguments.

Meeting times

<table>
<thead>
<tr>
<th>Section</th>
<th>Instructor</th>
<th>Room</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSC 102 A</td>
<td>Fourquet E.</td>
<td>MCGREG 314</td>
<td>MWF 12:20–1:10</td>
</tr>
</tbody>
</table>

Instructors

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Phone</th>
<th>Office</th>
<th>Office Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourquet E.</td>
<td>efourquet x 6033</td>
<td>MCGREG 309</td>
<td>M 1:30–3:00</td>
<td>W 2:00–3:30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>R 3:00–4:00</td>
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Open Lab

COSC tutors are available in MCGREG 329 during open lab hours. While lab tutors can help with labs and projects, the most important is for you to understand the course materials and topics. Get to know the lab tutors and learn from them. Your goal is to become independent! Open lab does not exist after 102…

Materials


Required Textbook    Building Java Programs: A Back to Basics Approach    BJP

Websites    Students are responsible for keeping up-to-date with content of the followings websites.
for course general information: lecture topics and readings, labs and projects.
Moodle    http://moodle.colgate.edu
for homework submissions and possible course section announcements, discussion and extra materials.

Software
All programming is done using Java. Classroom and lab computers have Java 7 and jEdit installed. Links under the Resources section on course webpage provide instructions for installation on personal computers.

Live Coding    CodingBat Java
CodingBat is a free website with live coding problems to build coding skill. The coding problems give immediate feedback, providing an opportunity to practice and solidify understanding of the concepts. By doing CodingBat problems students put reading concepts into practice.

Course Work

This course and its associated lab count for a total of 1.25 credits. Therefore, students are expected to spend an average of roughly 12.5 hours/week on this course.

Lab    To complete this course, students must also sign up for a 2-hour weekly laboratory section. Labs are designed to be completed during the lab period. The lab is a separate course with a separate grade. Students should come to the lab prepared by having done the required readings and practice exercises.

Attendance    It is mandatory to come to class and attendance will be taken regularly. Your final grade will be lowered significantly after 5 unexcused absences. Students are responsible for any material covered in class and in lab. Arriving late, stepping out of the classroom, using cell phone or not paying attention will negatively affect your participation & activities grade.
Readings/Exercises  Readings are assigned for each lecture. Students are required to complete them prior coming to the class. Lectures and discussions do not duplicate assigned material. Anything from the required readings, even if not directly discussed in class, is fair game for the homework, exams and reading quizzes. Reading quizzes will take the **first five minutes of class** so you need to **arrive on time** to successfully give your answers.

Participation  As learning cannot be passive, students’ active, informed and civil participation in class and on Moodle is essential. Participation counts toward the course grade.

In class students are expected to comment, to ask and answer questions about readings and lecture content and to collaborate with their peers on problem solving exercises. Students are expected to show a level of involvement that enhances everyone’s learning.

Moodle’s forum is used for class discussions outside of class. Students are encouraged to post general questions on the Moodle’s forum instead of emailing the instructor. Asking questions, replying or giving hints to classmates (including sharing links to documentation and tutorials) on Moodle’s forum benefit the entire class. Collaboration through Moodle is encouraged and doing so positively affects participation grade.

Projects  You will usually be working on a project. Each project takes the concepts covered in lectures and practiced in lab and pushes students to apply them to challenging context. Because projects are substantial and long they will have a milestone due date, sometimes requiring a demo in lab, which will be part of the project grade.

Exams  There will be four exams: three exams during the term and one final, in addition to the reading quizzes. All exams are to completed individually; absolutely no collaboration is allowed. **Exam dates will be posted on the course website.** Notify the instructor at least **one week prior to the exam** about scheduling conflicts.

Grading

The final grade for the class is calculated on the following weighting. Grading is on an absolute scale (i.e., no curve). Note that the lab grade is separate and will be provided in the lab syllabus.

<table>
<thead>
<tr>
<th>Coursework</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Reading quizzes &amp; hand-outs</td>
<td>10</td>
</tr>
<tr>
<td>Exams (3 x 8)</td>
<td>24</td>
</tr>
<tr>
<td>Final exam</td>
<td>22</td>
</tr>
<tr>
<td>Projects</td>
<td>40</td>
</tr>
<tr>
<td>Participation &amp; in class activities</td>
<td>4</td>
</tr>
</tbody>
</table>

To pass the course, you must pass the final exam. If your projects grade is more than one letter higher than the rest of the coursework, the final grade may be adjusted downward.

Final course grades are determined as follows. As a general rule, fractions are rounded down (e.g., an 89.9 is a B+, not an A-). A grade of A+ is awarded only when a student demonstrates truly exceptional performance and is not simply determined by having a high final course grade.

<table>
<thead>
<tr>
<th>Grade</th>
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<tbody>
<tr>
<td>A+</td>
<td>≥ 93</td>
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<tr>
<td>A</td>
<td>90-92</td>
</tr>
<tr>
<td>A-</td>
<td>87-89</td>
</tr>
<tr>
<td>B+</td>
<td>83-86</td>
</tr>
<tr>
<td>B</td>
<td>80-82</td>
</tr>
<tr>
<td>B-</td>
<td>77-79</td>
</tr>
<tr>
<td>C+</td>
<td>73-76</td>
</tr>
<tr>
<td>C</td>
<td>70-72</td>
</tr>
<tr>
<td>C-</td>
<td>67-69</td>
</tr>
<tr>
<td>D+</td>
<td>63-66</td>
</tr>
<tr>
<td>D</td>
<td>60-62</td>
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<tr>
<td>F</td>
<td>&lt; 60</td>
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Policies

**Academic honesty and collaboration** You are expected to abide by Colgate’s Code of Student Conduct and by Colgate’s Academic Honor Code. Collaboration (i.e., discussing the problem and possible solutions) while working on lab or project is fine, but the work you submit must be your own. Roughly speaking, it is okay to share ideas but it is not okay to share any artifacts (code, write-up, etc.). Here is a good way to think about it: you and a classmate can get together, discuss ideas, and even write some code. However, you are expected to leave that meeting with *nothing* – no notes and certainly no code – and write up *your own solution*. If someone helped you or you collaborated with peer(s) state it clearly with any submitted work: write down their names in the main header file or better in a *readme* file. *Failing to acknowledge your collaborators can be considered a violation of the honor code.*

**Late homework or missing work** Late projects are not generally accepted. Start project early and submit early and often. Missed work may receive a zero. Conflicts with in-class exams should be addressed well in advance.

**Unexpected circumstances** If unexpected circumstances arise that might compromise your performance in the course (inability to attend class, complete the homework on time, etc.), please let me know as soon as possible so that we may arrange appropriate accommodations. Usually these accommodations will be made in consultation with your administrative dean.

Getting Help

A key to your success at Colgate, and in life, is figuring out what resources are available and using them to help you achieve your goals. For any homework problems or other class-related questions that you have, there are several options for getting help. Please take advantage of these opportunities!

1. See instructor during office hours.
2. Post a question on the Moodle forum.
3. Form a study group with other students in the class and work together on a regular basis (note the collaboration policy above).
4. See CS student tutors during Open Lab hours.
5. Send us email.

In addition, please be aware of the great resources that Colgate provides.

**CS laptop** The department has a limited number of computers available for temporary loan. You must request and obtain permission to borrow equipment. Taking a laptop from the classroom without signing an official form is not permitted. If you are interested in borrowing a computer, please come talk to me.

**Tech Support for Students** The ITS Desk offers peer support and expertise related to computers and technology. Located in Case-Geyer the team assists with problems concerning email, internet, and public access computers on campus.

**Academic Support and Disabilities Services** If you feel you may need an accommodation based on the impact of a disability, you should contact your instructor privately to discuss your specific needs. If you have not already done so, please contact Lynn Waldman, Director of Academic Support and Disability Services at 315-228-7375 in the Center for Learning, Teaching, and Research. Ms. Waldman is responsible for determining reasonable and appropriate accommodations for students with disabilities on a case-by-case basis, and more generally, for ensuring that members of the community with disabilities have access to Colgate’s programs and services. She also assists students in identifying and managing the factors that may interfere with learning and in developing strategies to enhance learning.
Counseling Center  College life can sometimes get bumpy; if you are experiencing emotional or personal difficulties, the Counseling Center offers completely confidential and highly professional services. Their staff are trained to help students manage a wide array of emotions. The Counseling Center meets with over half the student body for clinical services at some point during their four years at Colgate. You can arrange an appointment online or by phone (315-228-7385). For emergencies, a counselor is available 24/7 by calling campus safety at 315-228-7333 and asking for the counselor on call.

Student Health Services  The services provide high-quality, accessible, convenient, cost-effective, non-judgmental, and confidential health care for all students. You can arrange an appointment at the main clinic (next to Community Memorial Hospital) by phone (315-228-7750), or visit the satellite walk-in clinic (lower level of Curtis Hall) during normal business hours for assessment of minor injuries and illnesses.

Haven  is a sexual violence response center that provides confidential care, support, advocacy, and trauma-informed clinical services for survivors of sexual assault, intimate partner violence, child/family abuse, stalking, and/or harassment. Haven works from a survivor-centric model that is intended to honor and empower individuals to define their experiences and healing process. Haven’s role is to provide options and facilitate finding support. You can call (315-228-7385) or visit (Garden Level of Curtis Hall) during business hours. After hours, call campus safety at 315-228-7333 and ask for the counselor on call; you can also go directly to the Community Memorial Hospital Emergency Room, and the attending nurse will contact an advocate from Help Restore Hope Center to discuss your options.