Spring 2019

COSC 465

Aaron Gember-Jacobson
Colgate University, agemberjacobson@colgate.edu

Follow this and additional works at: https://commons.colgate.edu/syllabi

Part of the OS and Networks Commons

Note: This syllabus may not be applicable to the current semester. Be sure to verify content with the professor(s) listed in the document.

Recommended Citation
Gember-Jacobson, Aaron, "COSC 465" (2019). Faculty Syllabi. 124.
https://commons.colgate.edu/syllabi/124

This Syllabus is brought to you for free and open access by Digital Commons @ Colgate. It has been accepted for inclusion in Faculty Syllabi by an authorized administrator of Digital Commons @ Colgate. For more information, please contact seblack@colgate.edu.
Course Overview

This course focuses on common paradigms used in computer networks. Through a combination of activities, you will learn the theory and implementation of: wired and wireless transmission, reliable data delivery, addressing schemes, forwarding and routing algorithms, content delivery, network design and management, security threats and protections, and data censorship. You'll also learn about global societal challenges related to networking, and complete a networking-related research project of your choosing.

Instructor: Aaron Gember-Jacobson
Email: agemberjacobson@colgate.edu
Office: McGregory 310
Office Hours: Mondays 12:15pm-1:45pm, Wednesdays 1:15pm–2:45pm, or by appointment

Lab Instructor: Steve Van Wert
Email: svanwert@colgate.edu
Office: McGregory 319B

Meeting Times & Locations
Class: MWF 11:20am–12:10pm in McGregory 314
Lab: W 2:45pm–4:35pm in McGregory 315

Moodle Site: https://moodle.colgate.edu/course/view.php?id=10793
A schedule of topics, all assignments (including readings, pre-class questions, and projects), and other materials (including class notes and examples) will be posted on Moodle.

Learning Activities

Pre-class activities
Before each class you should read/watch the materials posted on Moodle and answer the accompanying questions. The questions will ask you to recall or reflect on parts of the material that are most relevant to the class learning goals. Thus, you should view the questions as a guide to what parts of the material are most important for you to remember/understand. Answering the pre-class questions will help ensure you are ready to engage in deeper learning and problem solving in class.

Class
Each class period will feature of a mix of interactive lecture and active problem solving (on your own and in small groups). You are expected to attend class, respond to questions, solve problems, and respect and support your fellow classmates. In exchange, I will strive to make class fun and engaging.

Labs
Labs will explore course topics through experimentation and implementation. The labs are designed to be completed with a partner during the approximately two-hour lab period. If you do not complete the lab during the lab period, you must complete the lab by Thursday at 11pm.

Programming Projects
Programming projects will require you to write code (in Python) that implements concepts discussed in class. There will be three programming projects during the first half of the semester. Programming projects must be
completed with a partner. You may switch partners between projects, but you must select a new partner at least one week before the project is due.

Research Project
During the second half of the semester, you will work in small groups to complete a networking-related research project of your choosing. Your project may focus on developing a novel solution to an open question in networking or reproducing the results of other networking researchers. You will be expected to read papers related to your topic, design a solution and/or conduct experiments, and present your findings in written and oral form. A list of potential topics, required milestones, and other details will be provided mid-semester.

Research talk reflections
This course deeply examines a specific subfield of computer science. To give you some insight into other subfields of computer science, you must attend two computer science research talks during the semester and submit a 300-word reflection on each talk. Your reflection should include a summary of the research problem(s) and solution(s) the speaker presented along with your own brief analysis of the research—e.g., questions you (would have) asked the speaker (and why), potential limitations of the solution(s) not mentioned by the speaker, potential future research not mentioned by the speaker, etc. Research talks given by CS faculty candidates, CS faculty from other institutions, or Colgate CS faculty are acceptable; if you are unsure whether a talk qualifies, please ask.

Exams
There will be two exams during the semester plus a cumulative final exam. The exams are scheduled for the following days:

- **Exam 1**: Wednesday, February 27 during the regularly scheduled lab time
- **Exam 2**: Wednesday, April 3 during the regularly scheduled lab time
- **Final Exam**: Thursday, May 11 noon–2pm

Please let me know in advance if you will be unable to take one of the exams on the scheduled day.

Policies

**Academic Honesty**
You are expected to abide by Colgate’s academic honor code ([http://colgate.edu/offices-and-services/deanofthecollege/academichonorcode](http://colgate.edu/offices-and-services/deanofthecollege/academichonorcode)). Pre-class questions should be completed on your own, programming projects and labs should be completed with a partner, and the research project should be completed with a small group.

In general, you may share ideas with other students, but you may not share code. If you discuss a problem with other students and you collectively agree on an approach for solving the problem, it is okay to write pseudo-code together (for example, on a whiteboard or paper), but the full code you submit must be your own. If you arrive at a solution as a result of discussing with others or doing some additional reading online, you must cite the source to remain in compliance with Colgate's Honor Code. An appropriate form of citation would be to include a comment at the top of the affected source code file(s) and briefly note (1) the source and (2) what information from the source was used.

I strongly discourage the use of Stack Exchange and similar sources for finding “answers” to problems. Even if cited properly, “answers” found through these sources tend to mislead more often than not. Come to office hours instead.

If you are unsure what constitutes plagiarism, please contact me as soon as possible.
Accommodations

If you have special circumstances that you believe may affect your learning and performance in this class, please contact me as soon as possible so appropriate arrangements can be made. You should also contact Lynn Waldman, Director of Academic Support and Disability Services (http://www.colgate.edu/cltr/academic-support-and-disability-services) who reviews documentation to determine and help coordinate reasonable and appropriate accommodations. Any information you share will be kept confidential.

Attendance

Attendance will not be taken. However, a significant portion of class time will be spent solving problems similar to exam questions, so attending and participating in class is in your best interest. Experience (and research\textsuperscript{1}) has shown that students who regularly attend class learn more and perform better.

If you miss class due to illness or other obligations, you should be sure to (1) read the relevant sections of the textbook and other materials posted on the course website, (2) ask a classmate for a copy of their notes, and (3) talk to me in-person to ask questions about things from class which are unclear.

You may miss one lab—due to illness or other obligations—without penalty. However, you must complete the lab \textit{on your own} by Thursday at 11pm, or you will receive a zero for the missed lab. You will automatically receive a zero for any subsequent missed labs.

Deadlines and Time Management

Pre-class questions must be completed by the start of each class period. You may not complete the questions later. There will be more pre-class questions offered than are required for full credit in this grading category, so you can still earn full credit even if you do not complete some questions.

Programming projects will typically be released two weeks before they are due. The research project will involve several milestones spread throughout the second half of the semester. Deadlines will be clearly noted on the course website and on the project description. Late programming projects and research project milestones will not be graded, unless you have made prior arrangements with me due to extenuating circumstances.

Time management is an important skill you’ll need to apply in this course. Programming projects will involve writing and debugging relatively large amounts of code, and the research project will involve a relatively large amount of reading, writing, programming, and running experiments. All of these tasks take time. I tend to make more mistakes when I am under pressure to meet a deadline. I expect you will do the same. Consequently, you should start programming projects and research paper milestones shortly after they are released, so you can work on them over multiple sessions and have an opportunity to ask questions if you get stuck.

Grading

Class

Your class grade will be determined as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-class questions &amp; research talk reflections</td>
<td>10%</td>
</tr>
<tr>
<td>Programming projects (3, weighted equally)</td>
<td>25%</td>
</tr>
<tr>
<td>Research project (including all milestones)</td>
<td>35%</td>
</tr>
<tr>
<td>Exams (3, weighted equally)</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Lab

Your lab grade will be separate from your class grade. All labs will be weighted equally.

Scale

Grading is on an absolute scale (i.e., no curve). Letter grades will be assigned as shown below. However, I reserve the right to make adjustments; any such adjustments will only raise your grade, never lower it.

<table>
<thead>
<tr>
<th>A+</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>D-</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥100</td>
<td>99-93</td>
<td>92-90</td>
<td>89-87</td>
<td>86-84</td>
<td>82-80</td>
<td>79-77</td>
<td>76-73</td>
<td>72-70</td>
<td>69-67</td>
<td>66-63</td>
<td>62-60</td>
<td>&gt;60</td>
</tr>
</tbody>
</table>

Getting Help

You are welcome to drop in during my office hours (noted at the top of this syllabus) or arrange an appointment with me—just send me an email (agemberjacobsen@colgate.edu) with a few times you’re available, and we’ll find a time that works well for both of us.

There are also many campus resources that can assist you with academic, personal, or other needs, including:

- **Administrative Dean** ([https://colgate.edu/offices-and-services/deanofthecollege/administrativeadvising](https://colgate.edu/offices-and-services/deanofthecollege/administrativeadvising)): Each student is assigned an Administrative Dean who can advise you regarding personal and/or academic matters. Administrative deans often assist students to understand policies and procedures, navigate personal challenges, work with faculty, and engage with parents. They have open office hours weekday afternoons (McGregory 116) or you can call (315-228-7368) to make an appointment.

- **NASC Liaison Group** ([https://colgate.edu/nasc](https://colgate.edu/nasc)): NASC liaisons are a group of natural science and mathematics faculty members dedicated to providing science-interested students from underrepresented groups with mentorship, motivation, and individualized support as they navigate their paths in the sciences at Colgate. NASC liaisons do not replace the role of an academic advisor or offer formal academic advising. Rather a NASC liaison may meet one-on-one with a student to give another perspective on their academic plan; give tips on effective studying; or introduce a student to upper-class peers, alumni, or other faculty members that might be able to help them. The roles of NASC liaisons will depend on students’ needs, and we encourage students to reach out for mentorship and moral support.

- **Counseling Center** ([https://colgate.edu/counseling](https://colgate.edu/counseling)): The counseling center 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** ([https://colgate.edu/offices-and-services/studenthealthservice](https://colgate.edu/offices-and-services/studenthealthservice)): Student Health Services provides 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) for assessment of minor injuries and illnesses.

- **Information Technology Service Desk** ([https://colgate.edu/offices-and-services/information-technology/getting-help/support-for-students](https://colgate.edu/offices-and-services/information-technology/getting-help/support-for-students)): Help desk consultants assist all students with problems concerning email, Portal, Moodle, and problems with your personal laptop. You can contact the Service Desk in person (3rd floor of Case-Geyer Library), by phone (315-228-7111), or by email (itshelp@colgate.edu). Contact me if problems with your personal computer are affecting your ability to get your work done.