Fall 2018

FSEM 136

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Course Overview
In our hyperconnected world, we expect the Internet, and its abundance of information, entertainment, social networking, e-commerce, and more, to always be accessible. Our expectations are usually satisfied thanks to a complex system of cables, specialized devices, and software. However, this infrastructure is susceptible to human error, cyber attacks, and censorship that compromise our ability to access (parts of) the Internet. In this course, we’ll examine how the Internet works and the ways in which it can malfunction or restrict access to content. Through a combination of readings, lecture, discussion, and experiments, we’ll explore flaws and limitations in the Internet’s design, and we’ll consider a variety of technology- and policy-based solutions for making the Internet more reliable and open.

Learning Goals
After completing this course, you should be able to:
- Explain the guiding principles scientists follow in designing the Internet and its constituent components
- Describe and apply scientific methods for analyzing and verifying how the Internet (mal)functions
- Illustrate the interplay between societal issues and the design of the Internet
- Summarize unaddressed problems in the current and future Internet
- Compose clear and engaging explanations of scientific ideas in written and oral form
- Practice academic honesty at Colgate

Class Time & Location: MWF 10:20am–11:10am in McGregory 315

Instructor
Aaron Gember-Jacobson
Email: agemberjacobson@colgate.edu
Office: McGregory 310
Office Hours: Mondays 12:15pm-1pm, Tuesdays 3pm-4pm, Thursdays 1pm–2:30pm, or by appointment

Links
Rohan Chaudhari (rchaudhari@colgate.edu)
Max Baron (mbaron@colgate.edu)

Moodle Site
A schedule of topics and all required coursework (including readings, pre-class questions, and writing assignments) will be posted on Moodle (https://moodle.colgate.edu/course/view.php?id=10329).

Learning Activities
Pre-class activities
One of the primary ways you’ll learn about the Internet is by reading scientific articles and watching talks given by scientists. **Before each class** you should read/watch the materials posted on Moodle and answer the accompanying questions—**due by 10am the day of class**. 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, discussion, and problem solving in class.
In-class activities
Class time will consist of lecture, discussion, short student-led presentations, and hands-on activities. You are expected to attend and actively participate in class by responding to questions, completing activities, and respecting and supporting your peers. Please do not use smartphones, laptops, or other electronics during class, unless explicitly required for an activity. In exchange, I will strive to make class fun and engaging.

Short essays
Throughout the semester, you’ll write several short essays that explain and reflect on course topics. These essays provide an opportunity for you to hone your writing skills and explore course topics in an independent and personalized way. The topics of the essays will be announced in class and posted on Moodle. Even though these essays are short, you should begin writing them several days before they are due. This will give you an opportunity to revise your writing, and, if necessary, get assistance from me or the writing center.

Research Paper
During the second half of the semester, you will write a paper that explores an Internet issue in depth. Your paper will discuss the issue and its relevance to society, ways to measure and understand its impact, and technical and non-technical strategies to address the issue. Expectations on the paper’s content and style, as well as expected pre-writing activities, will be provided during the semester.

Exams
There will be one midterm exam plus a cumulative final exam. The exams are scheduled for the following days:

- **Midterm exam**: Wednesday, October 17 during the regularly scheduled class time
- **Final exam**: Monday, December 17, 9am-11am

Please let me know in advance if you will be unable to take an exam on the scheduled day.

University colloquiums
One of the 13 goals of a Colgate education (https://colgate.edu/about/goals-of-a-colgate-education) is to “Conduct interdisciplinary inquiry: synthesize viewpoints from multiple disciplinary perspectives so as to overcome the limitations of any one perspective.” To start you on the path toward achieve this goal, you are expected to attend three division or department colloquiums during the semester. The events may be hosted by any division or department but must be academic in nature. Some colloquiums you may consider are:

- Division of Natural Sciences & Mathematics (NASC) Colloquium Series  
  ([http://calendar.colgate.edu/search/events?order=date&search=nasc+colloquium](http://calendar.colgate.edu/search/events?order=date&search=nasc+colloquium))
- Division of Arts & Humanities (AHUM) Colloquium Series  
  ([http://calendar.colgate.edu/search/events?order=date&search=art+and+humanities+Colloquium](http://calendar.colgate.edu/search/events?order=date&search=art+and+humanities+Colloquium))
- Computer Science Department Teas  
  ([https://cs.colgate.edu/cs/events](https://cs.colgate.edu/cs/events))
- Events related to the summer reading, *The Refugees*  
  ([http://calendar.colgate.edu/search/events?order=date&search=the+refugees](http://calendar.colgate.edu/search/events?order=date&search=the+refugees))

For each event, write a 150-200 word reflection that summarizes what you learned and/or discusses your perception of the topic/presentation. Submit a hard copy of each reflection in class or during office hours. You must attend and submit a reflection for the first event by fall break (Friday, October 5), the second by Thanksgiving recess (Friday, November 16), and the third by the last day of class (Friday, December 14).

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)). You should complete pre-class questions on your own and your short
essays and research paper should be your own writing (with proper citations). We will spend some time during the semester discussing the honor code. If you’re having trouble with an assignment, struggling to meet a deadline, or 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
Discussion and hands-on activities are a fundamental part of the learning process in this course, and many other courses at Colgate. Consequently, attending and participating in class is part of your course grade. You may miss class up to three times—due to illness or other obligations, no questions asked—without any impact on your grade. If you need to miss additional classes due to extenuating circumstances, please contact me and your administrative dean as soon as possible.

If you miss class due to illness or other obligations, you should be sure to: (1) read/watch the materials posted on Moodle, (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.

Deadlines
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 a few sets of questions.

Deadlines for short essays, the research paper (and associated pre-writing activities), or other activities will be clearly noted on the course website. Late essays, papers, or other assignments will not be graded, unless you have made prior arrangements with me due to extenuating circumstances.

Technology
Please do not use smartphones, laptops, or other personal electronics during class, unless explicitly required for an in-class activity. These devices detract from your learning and disrupt your peers.

Grading
Your class grade will be determined as follows:

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<table>
<thead>
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<tbody>
<tr>
<td>Pre-class questions</td>
<td>10%</td>
</tr>
<tr>
<td>In-class activities (discussions, labs, presentations, etc.)</td>
<td>15%</td>
</tr>
<tr>
<td>Short essays</td>
<td>20%</td>
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<tr>
<td>Research paper (and associated milestones)</td>
<td>20%</td>
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<tr>
<td>Exams (midterm and final, weighted equally)</td>
<td>30%</td>
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<tr>
<td>Colloquium reflections</td>
<td>5%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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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>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A+</td>
<td>≥ 100</td>
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<tr>
<td>A</td>
<td>99-93</td>
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<tr>
<td>A-</td>
<td>92-90</td>
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<tr>
<td>B+</td>
<td>89-87</td>
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<tr>
<td>B</td>
<td>86-83</td>
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<tr>
<td>B-</td>
<td>82-80</td>
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<tr>
<td>C+</td>
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<td>C</td>
<td>76-73</td>
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<td>C-</td>
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<td>D+</td>
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<td>D</td>
<td>66-63</td>
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<td>D-</td>
<td>62-60</td>
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<td>&gt; 60</td>
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Getting Help

Starting college is a big transition. There are many great resources on campus that can assist you with academic, personal, or other needs, including:

- **Me (your academic advisor and FSEM professor):** You can drop in during my office hours (noted at the top of this syllabus). I’m also around 9am-4pm most weekdays (aside from teaching and meetings), or you can email me (agemberjacbson@colgate.edu) to arrange an appointment. If I’m unable to address your needs, I can help connect you with someone on campus who can assist you.

- **Administrative Dean** ([http://colgate.edu/offices-and-services/deanofthecollege/administrativeadvising](http://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.

- **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.

- **Haven** ([https://colgate.edu/sexual-violence-support-resources](https://colgate.edu/sexual-violence-support-resources)): 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.

- **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) during normal business hours for assessment of minor injuries and illnesses.

- **Information Technology Services** ([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, or 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.

- **Writing and Speaking Center** ([https://colgate.edu/writingcenter](https://colgate.edu/writingcenter)): Regardless of ability, all writers benefit from having someone else read their essays and offer feedback. Writing consultants can help native and non-native speakers alike with a written paper’s focus, development, organization, clarity, citations, or grammar. If you’re preparing an oral presentation, speaking consultants can help you organize your content and improve your delivery to an audience. All meetings are private, and you may visit at any stage of your process. You can make an appointment online or by phone (315-228-6085).

- **Office of the Chaplains** ([https://colgate.edu/campus-life/religious-life/officeofthechaplains](https://colgate.edu/campus-life/religious-life/officeofthechaplains)): You can visit in-person (Garden Level of Memorial Chapel) or contact them via phone (315-228-7682) or email (chaplainsoffice@colgate.edu).