CS105: Introduction to Computer Science

Dr. Patrick Young

Spring 2021

Welcome to CS105

Dear CS105 Student:

I know that circumstances this year are rather difficult. I want you to know that the Teaching Staff and I are committed to making this work and providing all of you with a very positive learning experience. Computer science and computing and network technology are a critical part of modern life. We can see this more than ever in the present circumstances where computers and the Internet provide a lifeline allowing friends and family far from one another to communicate, allow many to work from home, and let our students continue to learn even though they may be far from our dear Stanford campus.

I am deeply aware that many of you are stressed, that you may be providing support not just for yourself, but for siblings, parents, grandparents, and friends; or that you may be alone in an apartment with no direct contact other than brief excursions to get groceries. We are absolutely committed to getting you through this quarter and giving you a solid foundation in Computer Science. If you find that due to our unusual circumstances you are having trouble making homework deadlines, do let us know. We will work with students to get them through the class.

In this class you’ll delve into computing technology and the Internet. You’ll come out of the class with a much better understanding of the digital world; how it works, what its strengths and limitations are; and what are some areas of concern where computer technology could lead our society into rather dark places. Along the way, you’ll learn how to make some very cool webpages and get a chance to explore computer programming.

I love teaching Computer Science to non-techies, and we’re not going to let the Coronavirus get in the way of having fun and learning about computer science.

Take care, I’ll be seeing all of you soon,

Patrick
Course Staff

All e-mail addresses listed in this section are @stanford.edu unless otherwise marked.

Lecturer: Dr. Patrick Young
e-mail: patrick.young@

Note: please identify yourself as a CS105 student when sending me e-mail.

Teaching Assistants:
Lisa Liao, lcliao@
Michael Lin, mlin4@
Gita Krishna, gitakris@

The fastest way to get a hold of us will be to make a post on Piazza, as all of us will be monitoring it. You can use it for administrative issues, such as requests for additional late days, by making a private post on Piazza.

Course Materials

This quarter all material needed for the course will be posted on Canvas. We will not be using a Course Reader this quarter.

Lectures

All lectures will be pre-recorded. In general, I’m going to try to break the lectures down into short 10-15 minute segments. While the segments will follow on each other, you should feel free to watch a segment, take a break, watch the next segment later in the day, and so on. I don’t think watching 50 straight minutes of video is the best way to maintain concentration when learning remotely.

Lectures will be posted in the Panopto Course Videos section of Canvas. There will also be a corresponding folder in the Files section of Canvas that will contain outlines of the videos or other supporting material. You will occasionally see temporary folders in the Course Videos section, you can ignore these, they are a byproduct of the limitations of Canvas Videos – any folders and videos you need to pay attention to will be clearly labelled.

Lectures should be posted at least a half-hour ahead of the official lecture time 2:30pm PDT. I’ll try to get them out earlier, but no promises.

Discussion

Discussion
We will be running an optional discussion section starting second week (shortly after the first HW assignment goes out). These should appear in the Zoom section of Canvas. We are currently not planning to record these, as we believe students will feel more open to asking questions if they know they aren’t being recorded for posterity.
Piazza

We will be using the Piazza discussion system.

https://piazza.com/stanford/spring2021/cs105

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>67.5%</td>
</tr>
<tr>
<td>Project</td>
<td>22.5%</td>
</tr>
<tr>
<td>Take-Home Quiz</td>
<td>10%</td>
</tr>
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We will be handing out a website project midway through the quarter. This will be due during 10th week.

In addition we’ll be giving you a “Take-Home Quiz” during the last week of the quarter. You’ll have 72 hours to complete it and will be able to review your notes or lookup answers on the Internet. The exam is meant to be low stress, but to also give students an incentive to review and consider the material that we’ve been covering in class.

CS105 is targeted to non-technical students, and we’ve found that letting in a large number of students with more advanced computer science skills is detrimental to the class. Therefore we will be allowing in only a limited number of students who have taken CS106A. Students who have taken classes higher than CS106A may not take the class. Students with Prior CS experience should consider taking CS106E instead.

Students who have already taken CS106 (or its equivalent at another university) please email cs105-admin@cs.stanford.edu for permission to take the class.

Teaching Assistant Assignment

After the first assignment, each student will be assigned a TA or grader. This TA will be responsible for grading all your assignments. Grading issues should be directed to your assigned TA. You are welcome to come to any TA for office hours or discussion.

Grades on Canvas

We will be posting your grades on the Canvas website (see below). Please make sure you check your grades as soon as they are posted. Any missing grades or grading errors must be reported within one week of the posting date. *All grades will become final, one week after they are posted.*

Course Assignments

Unfortunately mastering computer languages requires extensive practice. Because of this, CS105 will require some fairly extensive class assignments. In order to compensate for the time and effort you will put into this class, CS105 is a 5-unit class. *(Please note that only grad students are allowed to take the class for fewer than 5-units).* Be prepared to put in a considerable amount of time for the class, particular in the later assignments.

*Homework will generally go out on Wednesday and be due the following Wednesday. There will be no assignment given out the first week of classes.*
Late Policy
Assignments must be submitted by the start of Wednesday lecture. Assignments turned in late will be penalized 10% for each 24-hour period which has passed since the original due date and time. No assignment may be turned in more than a week after its original due date.

I realize that you do have other classes. You have a late allowance of four late days which can be used to excuse late assignments. This allowance may be used for a single assignment or it may be divided for use on multiple assignments. For example, if you turn in one assignment four days late, you’ve just used up your entire late allowance. However, if instead you turn in the assignment two days late you still have two additional late days which you can use for another assignment. To take advantage of this, simply submit your assignment late on Coursework. There is no need to notify us.

Please remember that you are working under the Stanford Honor Code. If you are working on a late assignment you must not discuss the assignment with other students and you may not look at any published solutions until after the assignment is turned in. You should also excuse yourself from discussion class, as necessary, to avoid seeing assignment solutions.

Working Together
You have the option of working with a partner on each assignment. You may switch partners between assignments, but should only have a single partner for any given assignment. Assignments will be turned in with a coversheet. If you work with a partner, make sure your coversheet includes both your name and your partner’s name. Details on the cover sheet will be provided with the first assignment. For most assignments we will grade assignments done by partners the same as those done alone. Assignment handouts will be explicitly marked if work done with a partner will be graded harder than assignments done without a partner.

You should not receive assistance on your assignments from anyone other than your assignment partner (if any) or a member of the CS105 teaching staff. While I certainly expect students to discuss the class amongst themselves, please be very careful about providing assistance with the assignments. For the purposes of this class, if someone looks at your HTML, CSS, or PHP code, or if you look at another student’s HTML, CSS or PHP code, you have received too much assistance.

Programming can be a frustrating experience. If you absolutely get stuck and are unable to figure out what is wrong, you may ask someone to help. However, you must document that you have received assistance, and you may be penalized up to 50% for each part of the assignment for which you have received help.

At the University, receiving proper credit for creating academic work is extremely important—it determines, for example, which professors receive tenure vs. which ones lose their jobs. Please be very careful to give proper credit as necessary. For example, if you work on part of an assignment with another CS105 student, you must turn in your work together as partners.

If you are having trouble getting the assignments done, please talk to one of the TAs or to me. Any assistance provided by the class teaching staff is, of course, exempt from any penalties.

HTML Editors
A number of word processors and other editors (e.g., Microsoft Word, Adobe Dreamweaver) can store formatted text as HTML. While you are certainly free to experiment with them, you may not use them for any of the Web assignments in this class.
Use of Copyrighted Material

While copying of material is rampant on the Internet, copyright laws still apply and threats of lawsuits are fairly common. I recommend that you use caution in copying or presenting material on the Internet.

I realize that you all have very limited access to computerized pictures for use in class assignments. You may copy graphics off the Internet for the class assignments, as long as the source of your graphics is explicitly documented when you turn in the assignment. I believe that this use of graphics is covered under the educational fair use clause of copyright law as long as (1) you document your sources and (2) you use the graphics for class assignments only and do not publish your material on the Internet.

For more information on copyright the Stanford libraries have an excellent copyright law website at http://fairuse.stanford.edu/

Software

Unfortunately different World Wide Web browsers treat both HTML and CSS differently. For this class, please use Mozilla Firefox. You may use Mozilla Firefox on either the Macintosh or on Microsoft Windows. The TAs will be grading your assignments using Mozilla Firefox exclusively, and I will do my best to make sure my examples run on Mozilla browsers. You can get a free copy of Firefox from:

http://www.mozilla.com/

Make sure you get the latest copy of Firefox. Older versions will not support some of the webpage elements we will be using.

The Class Web Site

We will be using Canvas for our class website. You can access Canvas at:

http://canvas.stanford.edu/

Students with Documented Disabilities

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Student Disability Resource Center (SDRC) located within the Office of Accessible Education (OAE). SDRC staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the SDRC as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 650-723-1066)

CS105 Class Schedule

Homeworks will generally go out on Wednesday and will be due the following Wednesday. There will not be an assignment given out the first week of classes.

This is a tentative schedule of what we will be covering.

Lecture 1: Representation of Information (Week 1, March 29)
Lecture 2: Digital Images (March 31)
Lecture 3: Digital Music (April 2)
Lecture 4: Computer Hardware (Week 2, April 5)
Lecture 5: Computer Networks (Hardware) (April 7)
Lecture 6: Computer Networks and the Internet (April 9)
Lecture 7: Intro to HTML (Week 3, April 12)
Lecture 8: Intro to CSS (April 14)
Lecture 9: Exploring HTML and CSS (April 16)
Lecture 10: Short Examples and Working with Web Servers (Week 4, April 19)
Lecture 11: Webpage Layout (April 21)
Lecture 12: Reproduction of Part of the NY Times Homepage (April 23)
Lecture 13: Reproduction of Part of the Washington Post / Introduction to Forms (Week 5, April 26)
Lecture 14: Responsive Web Design and Other Advanced Techniques (April 28)
Lecture 15: Website Design (April 30)

Holiday (Week 6, May 3)
This is normally when we would give the midterm. Instead I’m going to give everyone the day off.
Lecture 16: Introduction to Python (May 5)
Lecture 17: Python Conditionals (May 7)
Lecture 18: Python Lists and Loops (Week 7, May 10)
Lecture 19: Python Files and Storage (May 12)
Lecture 20: Computer Security (Overview and Mechanisms) (May 14)
Lecture 21: Computer Security (Attacks) (Week 8, May 17)
Lecture 22: Computer Security (Defense) (May 19)
Lecture 23: Privacy and Big Data (May 21)
Lecture 24: Artificial Intelligence (part 1) (Week 9, May 24)
Lecture 25: Artificial Intelligence (part 2) (May 26)
Lecture 26: Cloud Computing and Internet of Things (May 28)

Memorial Day (Week 10, May 31)
No Lecture.

Lecture 27: Graphics (Week 10, June 2)
Lecture 28: Last Meeting (June 4)

The Stanford Honor Code

The standard of academic conduct for Stanford students is as follows:

A. The Honor Code is an undertaking of the students, individually and collectively:
(1) that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading;

(2) that they will do their share and take an active part in seeing to it that others as well as themselves uphold the spirit and letter of the Honor Code.

B. The faculty on its part manifests its confidence in the honor of its students by refraining from proctoring examinations and from taking unusual and unreasonable precautions to prevent the forms of dishonesty mentioned above. The faculty will also avoid, as far as practicable, academic procedures that create temptations to violate Honor Code.

C. While the faculty alone has the right and obligation to set academic requirements, the students and faculty will work together to establish optimal conditions for honorable academic work.