

CPSC 229 Foundations of Computation

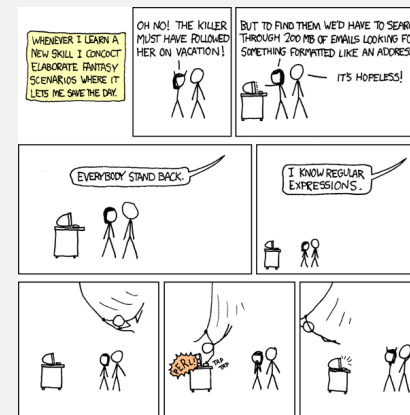
Foundations of Computation

- basic mathematical concepts
 - logic and proof
 - sets and functions
- theoretical foundations of computer science
 - regular expressions and finite automata
 - grammars
 - Turing machines and computability
- specific applications of these concepts

Why Study This?

- for a foundational understanding of the principles...
 - ...governing how computers work and what they can and cannot do
 - ...underlying the concept of efficiency
 - ...underlying programming languages and compilers – how languages are structured and how they can be processed by machines
- for skills in logical reasoning and algorithmic thinking
 - essential for constructing and debugging programs, as well as problem solving more generally
- as preparation for topics such as AI, machine learning, cryptography, programming languages and compilers, ...

Or, The Real Reason...



<https://xkcd.com/208/>

Course Materials

<http://math.hws.edu/bridgeman/courses/229/s24/>

CPSC 229: Foundations of Computation Spring 2024

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Office Hours study session (229-specific): TBD
drop-in office hours: TBD or by appointment ([schedule](#))

Class Hours and Meeting Place lecture MWF 9:40-10:40am - Stern 304

Course Links

- [Schedule](#)
(the course schedule, including links to handouts, assignments, reading material...pretty much everything you want on a daily basis is here)
- [Course Information](#)
(course description, textbook information, required materials and software, assignments and evaluation, etc)
- [Course Policies](#)
(attendance, academic integrity and collaboration, late/makeup work, extensions, getting help, disability accommodations, etc)

Documentation and Reference Material

- [Using Linux at HWS](#)
(lots of useful information about the Linux systems at HWS)

last updated: --Sun Jan 21 09:39:15 EST 2024--

Schedule Page

check here for readings, assignments,
handouts, examples from class, etc

CPSC 229

Foundations of Computation

Spring 2024

CPSC 229 Schedule

Reading is to be done for the class period where it is listed; unless stated otherwise, sections refer to the textbook.

Dates for things in light gray are for planning purposes and may be adjusted slightly. Homework will typically be assigned and due on Wednesdays, except when there is an exam.

Assignments

Week 1: 1/22-1/26

Topics: course introduction; propositional logic, boolean algebra

Mon

Wed

Reading:

- chapter 1 introduction (logic and proof)
- section 1.1 (propositional logic)

homework

Fri

Reading:

- section 1.2 (boolean algebra)

Week 2: 1/29-2/2

Topics:

Mon

Homework

- complete the introductory survey (see the schedule page)
 - includes scheduling problem sessions
- consult the schedule page for reading for Wed
 - we begin with logic and proof, two topics from mathematics which underlie both the operation of computers themselves and how we establish the correctness of what they compute
- review the policies and other information available on the course web page

<http://math.hws.edu/bridgeman/courses/229/s24/>

Course Materials

- textbook – *Foundations of Computation*
 - PDF available online (link on course webpage)
 - can purchase a printed copy if you want
- software – some exercises will involve a bit of Java programming
 - available on the lab machines in Rosenberg 009 and Lansing 310
 - it is also possible to set up your own computer (optional)

Expectations

- attend all scheduled class sessions
- attend 5 hours of problem sessions over the course of the semester
 - schedule will be established starting next week
 - for additional help or if you can't attend the problem sessions, the expectation can also be met by coming to office hours
 - 5 hours = e.g. 1 problem session every 3 weeks or a 20-minute office hours visit every week
- spend approx. 8 hours per week outside of class on reading, assignments, and studying
 - you may need to spend more
 - if you routinely spend significantly less, you may not be sufficiently mastering the material

Assignments and Evaluation

exam dates are on the schedule page

- homework [45%] – opportunity for practice
 - weekly assignments
- exams [50%] – demonstration of mastery
 - two in-class midterms + final exam

Assignments and Evaluation

exam dates are on the schedule page

- engagement [10%] – your active participation in the learning process
 - attendance, participating in class, asking questions, coming to office hours, ...
 - minimum expectation for a passing grade
 - satisfy the attendance policy
 - for full credit, demonstrate greater engagement through some of the following –
 - missing fewer classes
 - participating in class
 - asking questions
 - coming to office hours
 - working on and discussing the end-of-section exercises

Etiquette

- arriving late, leaving early, and coming and going during class is distracting
 - please do your best to arrive on time, and to take care of any necessary business before or after class so you can stay for the whole period
 - habitual late arrivals or early departures may be marked as an absence
 - let me know if you know in advance that you need to miss part or all of a class

Policies

- attendance
 - this is an in-person course, and being in class is an important part of the course
 - students who regularly miss class/lab often do not do as well
 - if you must miss class, it is your responsibility to be aware of and make up missed content
 - check the schedule page for material from class and new assignments
 - come to office hours if you have questions
 - in addition –
 - more than 6 missed classes will lower your engagement grade
 - 4, 5, or 6 missed classes will lower your engagement grade unless you are proactive about managing your absences and demonstrate engagement in other ways
 - plan ahead when an absence is known about in advance
 - take steps to promptly make up missed content
 - communicate when you'll be absent and what you are doing to catch up
 - participate in class, ask questions, come to office hours, work on the end-of-section exercises, ...

Policies

- exams
 - if you have an unavoidable conflict with the date, see me in advance to discuss rescheduling
 - if a last-minute illness, personal or family emergency, or other crisis outside of your control means that you can't attend class on an exam day, contact me as soon as possible
 - otherwise exams cannot be rescheduled or made up if missed
 - the final exam can only be rescheduled in consultation with your dean

Policies

- there is a steady workload – late handins can quickly snowball into falling behind
- topics are not completely independent, so it is not always possible to start fresh with the next topic if you are behind on the previous one
- late policy
 - in general, homework will not be accepted late
 - no work will be accepted after the end of the final exam timeslot
- extensions
 - a two-day extension can be requested for homeworks (one per assignment), *but it must be requested before the due date*
 - if you need more than an occasional extension or there are circumstances outside your control which are significantly impacting your ability to focus on academics for several days or more, *reach out promptly to discuss a plan for getting back on track*
 - no work will be accepted after the end of the final exam timeslot

Policies

- academic integrity and collaboration
 - exams demonstrate mastery
 - solely your work, and only those resources explicitly authorized in the instructions
 - homeworks for practice and learning – for *your* mastery
 - should first attempt on your own, using the course materials (textbook, posted slides and examples, linked references)
 - the primary resource for help or to discuss ideas should be office hours
 - can discuss problems with others, but you *must* write up solutions yourself, in your own words – you may *not* work collaboratively with other students to write solutions, copy a solution from others, or use a solution written by someone else "as a guide" for your own solution

Policies

- academic integrity and collaboration
 - copying part or all of someone else's solution program is expressly prohibited, and it is not acceptable to be in possession of someone else's solution or program before you have handed in your own
 - unless otherwise prohibited, other materials (such as reference books or websites) may be used as technical references to learn about a particular topic, however **looking for and/or copying a solution is not acceptable and you may not incorporate code or solutions you find in other materials or on the Internet into your own**, even if you make modifications to it
 - learning from examples is valuable – with an example, you have to understand it in order to be able to apply what it is illustrating to constructing your own solution
 - with solutions, you take someone else's work largely as-is and do not need to understand much about it
 - using someone else's program or solution "as a guide" for your own is still plagiarism even if there's a right answer and anyone solving the problem would arrive at a similar result

Policies

- academic integrity and collaboration
 - AI systems (e.g. ChatGPT, Codex), homework help or study aid sites (e.g. Chegg, Course Hero), and sites where you post a homework problem or question and solicit answers from others **may not be used in the completion of graded work**
 - use of generative AI for study purposes is discouraged because it is an unreliable source

Being Successful

- stay on top of the material – things will pile up quickly if you fall behind
 - regularly utilize office hours
 - start assignments early
 - try as many of the end-of-section exercises as you can
- be proactive if you must miss class, especially if you miss several classes in a row, or if there is an ongoing issue which adversely affects your work
- ask questions / come to problem sessions and office hours – don't wait if something is confusing or doesn't make sense
 - office hours are drop-in – no appointment needed
 - email and/or make an appointment if you can't come to office hours
- helpful practices
 - let me know if there are things about how the class is run that would be helpful for your learning
- disability accommodations
 - see the syllabus statement from Disability Services (on the Policies page)