

HNRS 2200

COGITATIONS ON COMPUTATION

Honors Nature of Science, Technology, & Mathematics

<http://dondi.lmu.build/spring2021/hnrs2200>

Spring 2021—online (see Brightspace for links)
TR 9:50-11:10am, 3 semester hours
Office Hours: TR 3:30–6pm, W 4:30–6pm;
or by appointment (*don't hesitate to ask!*)

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Objectives and Outcomes

The course aims to introduce you to the theory and practice of computation as a scientific and engineering endeavor. Long after you finish this course, my hope is that you will be able to:

1. Understand the concept of computation through the lens of computer science, the primary discipline that studies it as a phenomenon in its own right.
2. Apply this knowledge of computation through rudimentary computer programming in either the JavaScript or Python languages.
3. Integrate this deeper knowledge of computation with its many uses in the real world, including but not limited to algorithms, networks, artificial intelligence, entertainment/media, and robotics.
4. Appreciate the abstract meaning of computation as a pure idea, separated from technology, particularly its relationships to infinity, complexity, tractability, and what problems are even “computable.”

Prerequisites/Prior Background

No prior background in computing or programming is assumed for this course. Such background might actually hinder things if it has created preconceived notions or habits that differ from what will be presented in class.

Materials and Texts

No specific textbook is required for the course. Materials will consist of articles or videos available online, either publicly via the web or posted to Brightspace for student access only.

Course Work and Grading

Your final grade will be based on the percentage of the points you get for the following deliverables against the total number of possible points:

Account listing	20 points
Video journal entries	400 (50×8)
Programming/technical	400 (80×5)
Total	820 points

Percentages $\geq 90\%$ get an A– or better; $\geq 80\%$ get a B– or better; $\geq 70\%$ get a C– or better. I may nudge grades upward based on qualitative considerations such as degree of difficulty, effort, class participation, time constraints, and overall attitude throughout the course.

Term Portfolio

Your accumulated assignments for the semester comprise the *term portfolio*—the final, definitive artifact that demonstrates the course’s outcomes. It is how you show whether you have, indeed, accomplished the objectives of this course.

An assignment’s number is its due date in *mddd* format, and it is always due by 11:59:59.999pm of that date. Punctuality (or lack of) will negatively affect the points given to a submission.

Video Journal

The video assignments elicit intellectual engagement with the material, in line with objectives 1 and 4. To maximize the points for these assignments, express yourself fully and clearly. Participate actively in discussion and be candid about what you do and don’t understand about the material so far.

Your video journal entries also serve a second purpose: they help determine the next steps of the course. Your feedback in these entries will guide me with subsequent topics and how much time to spend on them.

Programming/Technical Activities

The programming/technical assignments are meant to check your ability to apply the concepts in the class, in line with objectives **2** and **3**. To maximize the points for these assignments, follow instructions precisely, pay close attention to detail, and find ways to independently verify the correctness of your results.

Workload Expectations

In line with LMU's *Credit Hour Policy*, the workload expectation for this course is that for every one (1) hour of classroom instruction (~53 scheduled minutes for this course), you will complete at least two (2) hours of out-of-class work each week. This is a 3-unit course with 3 hours of instruction per week, so you are expected to complete $3 \times 2 = 6$ hours of weekly work outside of class.

Attendance

Attendance at all synchronous sessions is ideal, but not required. If you must miss class, it is your responsibility to notify me about this and keep up with the course asynchronously.

Due to the remote/online format of the class, it can be tempting to “spoof” yourself by logging in, deactivating audio and video, and ultimately tuning out. If you're planning to do this, don't bother—just watch the session recording later. Better for the class to know that you really aren't around than for us to *think* you're around, only to realize that you aren't when we try to interact with you.

The last day to add or drop a class without a grade of W is January 15. Because this is an Honors core course, it typically cannot be taken for Credit/No Credit grading—but these are unusual times, so if needed, we can potentially inquire about whether exceptions can be made this semester. No guarantees, but it won't hurt to ask.

Academic Honesty

Academic dishonesty will be treated as an extremely serious matter, with serious consequences that can range from receiving no credit to expulsion. It is never permissible to turn in work that has been copied from another student or copied from a source (including the Internet) without properly acknowledging the source. It is your responsibility to make sure that your work meets the standard of academic honesty set forth in:

<http://academics.lmu.edu/honesty>

Americans with Disabilities Act

Students with special needs who require reasonable modifications, special assistance, or accommodations in this course should promptly direct their request to the Disability Support Services (DSS) Office. Any student who currently has a documented disability (ADHD, Autism Spectrum Disorder, Learning, Physical, or Psychiatric) needing academic accommodations should contact the DSS Office (Daum Hall 2nd floor, 310-338-4216) as early in the semester as possible. All discussions will remain confidential.

Please visit *<http://www.lmu.edu/dss>* for additional information. Ask for help as early in the semester as possible!

Also keep in mind that resources are available through the Library (*<https://library.lmu.edu>*) and Information Technology Services (*<https://its.lmu.edu>*). The DSS Office can help students connect with the appropriate person at the Library and ITS.

Topics and Important Dates

Short of some initial material to “start the conversation,” as they say, and the computer programming aspect—meant to provide firsthand exposure to ideas that would otherwise be very abstract—this course is not married to any particular set of topics or content to be covered. I present myself as a resource with “a very particular set of skills; skills I have acquired over a very long career...” Skills that I hope don’t make me a nightmare for you, but an opportunity to lift the veil off some things that we either take for granted or are forced to trust even if our understanding of their inner workings is very limited. And there are many areas in computing that can be used to accomplish that goal. Thus, nothing is locked in, so specifics may change as the course progresses. University dates (*italicized*) are less likely to change.

January	Overview; introduction to computer programming in two languages; core computing concepts
<i>January 15</i>	<i>Last day to add or drop a class without a grade of W</i>
February	Basic data and control structures; assorted real-world computing topics (to be chosen by the class)
<i>March 1–5</i>	<i>Spring break; no class</i>
March	Functions and larger programs; additional selected topics
<i>March 31</i>	<i>Cesar Chavez Day; no class (listed here for completeness)</i>
<i>April 1–2</i>	<i>Easter break; no class</i>
April	Algorithms and theoretical foundations of computing
<i>May 6</i>	<i>Last set of term portfolio assignments due</i>

You can view my class calendar and office hour schedule in any iCalendar-savvy client. Its subscription link can be found on the course web site (*it’s too long to provide in writing*).

Tentative Nature of the Syllabus

If necessary, this syllabus and its contents are subject to revision; students are responsible for any changes or modifications distributed in class or posted to the course website.