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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>YouTube account listing</td>
<td>20</td>
</tr>
<tr>
<td>Video journal entries</td>
<td>400</td>
</tr>
<tr>
<td>Programming/technical</td>
<td>400</td>
</tr>
<tr>
<td>Total</td>
<td>820</td>
</tr>
</tbody>
</table>

Percentages ≥ 90% get an A– or better; ≥ 80% get a B– or better; ≥ 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 mmdd 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 portions and be candid 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 (50 scheduled minutes), 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 sessions is expected, but not absolutely required. If you must miss class, it is your responsibility to notify me about this and keep up with the course. The last day to add or drop a class without a grade of W is January 18. Because this is an Honors core course, it cannot be taken for Credit/No Credit grading.

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

Special Accommodations
Students with special needs who require reasonable modifications or special assistance 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, learning, physical, or psychiatric) needing academic accommodations should contact DSS (Daum 224, x84216) as early in the semester as possible. All requests and discussions will remain confidential. Please visit http://www.lmu.edu/dss for additional information.

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
January 18 Last day to add or drop a class without a grade of W

February
Basic data and control structures; assorted real-world computing topics (to be chosen by the class)

March
Functions and larger programs; additional selected topics
March 11–15 Spring break; no class

April
Algorithms and theoretical foundations of computing
April 17–19 Easter break; no class

May 9 Last set of term portfolio assignments due

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.