Course Description
This course provides students with the transformative and empowering experience that comes with learning how to program a computer and translate ideas into code. We focus on some of the “Big Ideas” of computing that have impacted the way we present information, solve problems, and connect people. Central questions include: What is an algorithm? How is an algorithm translated into a working software application? Who are the people and what are the technological developments that have made computing ubiquitous? What impact does computing have on society? What constitutes an ethical use of computing technology? Where will computing take us in the future?

Programming projects emphasize animation and artificial intelligence, focus in part on social issues, such as overpopulation or the depletion of natural resources, and can be tailored to the student’s major discipline.

Students demonstrate critical thinking and develop oral communication skills through active discussion of program designs and ethical issues related to computing, and through oral presentation of a small research project. They develop writing skills and information literacy through social issues essays, a research paper, and a short reflection paper on computing and the world.
Specific Learning Outcomes:
Upon completion of this course, it is anticipated that the student will be able to:

• Understand the nature and process of software development, including design, implementation, and test
  . Design an algorithm or series of steps that can be used to solve a problem
  . Transform an algorithm into a working program
  . Demonstrate knowledge of basic programming constructs through implementing programs in SNAP! (Build Your Own Blocks)
  . Design, document, implement, and test a computer program
• Understand the role technology plays in our society
  . Form and support an opinion about various uses of technology
• Engage critically and reflectively in a discussion of
  . Code design, documentation, programming style, and testing
  . Ethical issues related to computing
• Analyze a software program from the perspectives of design and programming style
  . Explain the function of the program at an abstract level
  . Paraphrase the structure of the program at the code level
• Exercise critical thinking in oral discussion and writing
  . Write a short technical paper
  . Document a software program
• Acquire research skills to
  . Use the on-line library catalog and electronic databases to retrieve books or articles
  . Differentiate between scholarly and popular sources
  . Research and write a short technical paper

Required
Willingness to participate in class discussions and group activities and complete readings prior to lectures. Classroom activities will include both individual and group assignments.
One 15-minute meeting with the instructor during the semester, either during office hours or by appointment.
No other prerequisites.

Expected Work
Completion of four Information Literacy Tutorials and quizzes.
  • Complete tutorial and its quiz by 5 PM on the Friday following the date it is assigned, e.g., complete the tutorial assigned August 27th by 5 PM on Friday, August 30th.
Weekly reading and programming tutorials
  • Complete each required reading programming tutorial before class begins the following Tuesday, e.g., complete the tutorial assigned August 27th by 9:25 AM on Tuesday, September 3.
Course portfolio containing a representative subset of course assignments.
  If you do the assignments well and on time, the majority of the work for your portfolio will be completed before it is due. Refer to the portfolio handout for details regarding content, presentation, and due dates.
Programming:
  • Five smaller programming assignments
  • Two larger programming projects
Pair programming employed on all programming assignments and projects. Working as a team produces better results and enhances learning. Students are expected to share work equally and turn in their individual notes and a reflection on the experience along with the work completed by the pair as a team.

Each team will make an oral presentation (with visuals) to the class on their project; reviews will include design review, code review, and demo.

Software is a programmer’s version of an essay. Working code is not enough. Programs and tests must be clearly documented, observe established programming standards, exhibit good design and degrade gracefully.

Five essays on specific social and ethical issues related to course topics, minimum length 400 words. Each essay needs to give a well-formed argument for or against a particular point and be supported by at least one reference beyond the assigned reading. You will include the best three in your course portfolio due at the end of the term.

Computers and the World Essay: How has studying computer science in Ideas to Code affected your understanding of the world around you? Two pages, 1.5 line-spaced (400-500 word).

Research Activity completed independently and reported in a two-page paper (excluding images, 750-1000 words in length) and a classroom presentation. References must be cited. Graded deliverables include
- Deliverable #1: Topic selection and posting
- Deliverable #2: References to be used, a draft of the introductory paragraph, and an outline
- Deliverable #3: Draft of activity report with references cited
- Deliverable #4: Final report, to be included in the portfolio
- Deliverable #5: Oral presentation, to be included in the portfolio and presented in class

Additional details and interim due dates are found in the Course Portfolio handout. Research activities will be graded on content (50%) and presentation (50%).

Student will submit a draft of each essay and research activity deliverable to the writing instructor for review, then resubmit the assignment to the instructor for grading. Both the draft with comments from writing instructor and the final version must be returned when submitted for a grade or included in the Course Portfolio.

Completion of all book problems related to the assigned readings is recommended.

Work Load Expectations
Students are expected to spend an average minimum of six hours per week on class-related learning activities, in line with LMU’s Credit Hour Policy (see http://www.lmu.edu/Assets/LMU+Credit+Hour+Policy_Final.pdf). Programming assignments might require additional time for some students to complete.

Slip Days
You have three (3) Slip Days to use for programming assignments and programming presentations.

- Use them to extend a due date, 1 slip day for a 1 day extension
- Use them one at a time or all at once or in any combination
- They follow you around when you pair up – you are counted individually!
  - E.g. A has 2, B has 0. Project is late by 1 day. A uses 1, B is 1 day late
- Late is 1/3 off per day
. Slip days cannot be used for late Information Literacy Tutorials and quizzes, writing assignments, reading assignments, programming tutorials or videos, or the project presentations planned for the last week of class.

Exams
Quiz, midterm. Both on basic concepts.
Students present their projects and turn in their portfolios during the final exam period, **8 a.m.** Thursday, December 12, 2013.

Text and Required Materials
SNAP! lab notes. Available online: [Beauty and Joy of Computing Curriculum](http://bjc.berkeley.edu/bjc-r/course/berkeley_bjc.html)
Supplementary materials as posted on *MyLMU|Connect* or handed out in class.
Required technology:
• Access to a computer running SNAP! Students will learn how to download and install this software in class. Everyone should have access to SNAP!
• Access to course information on *MyLMU|Connect*. Students are expected to inspect the course *MyLMU|Connect* frequently for announcements, updates, assignments, and documents, and to use *MyLMU|Connect* to communicate among class members.
• *LionShare* or similar file sharing software to make student files available to the instructor and other students.
Useful technology:
• Laptop for in-class activities. Not required; these group activities simply require *someone* in each group to bring a laptop to class.

Additional Resources
SNAP! videos tutorials and lab note recordings in Beta version, available from UC Berkeley ([http://sage.cs.berkeley.edu/course/view.php?id=31&topic=1](http://sage.cs.berkeley.edu/course/view.php?id=31&topic=1)).
YouTube recordings available on [http://www.youtube.com/watch?v=Aub6BAxAT-c&list=PLAE5AE3CD22628741&index=1&feature=plpp_video](http://www.youtube.com/watch?v=Aub6BAxAT-c&list=PLAE5AE3CD22628741&index=1&feature=plpp_video).
Additional SNAP! resources available online at [http://inst.eecs.berkeley.edu/~cs10/](http://inst.eecs.berkeley.edu/~cs10/) and [http://byob.berkeley.edu](http://byob.berkeley.edu).
*Computer Science: An Overview*. J. Glenn Brookshear. 9th, 10th, or 11th ed. Addison-Wesley, 2010-2012.
Other vetted sources of information are available, both in the library and on the web. Students are encouraged to take advantage of these to gain a deeper understanding of the topics covered in class and in the text.
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 on LMU's course management system MyLMU|Connect.

Grading
Your final grade will be weighted as follows:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Course Points</th>
<th>Percentage of Total Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Presentations and Participation</td>
<td>75</td>
<td>15%</td>
</tr>
<tr>
<td>Programming Assignments</td>
<td>100</td>
<td>20%</td>
</tr>
<tr>
<td>Course Portfolio</td>
<td>175</td>
<td>35%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Points</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Issues Essays</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>Research Activity and Paper</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>SNAP! Projects (pair programming)</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>Computers and the World Reflection</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Information literacy tutorial and assessment</td>
<td>50</td>
<td>10%</td>
</tr>
<tr>
<td>Quiz (on basic concepts)</td>
<td>25</td>
<td>5%</td>
</tr>
<tr>
<td>Midterm (on basic concepts)</td>
<td>75</td>
<td>15%</td>
</tr>
</tbody>
</table>

Your letter grade will be determined by total course points, as shown in the table below.

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>487-500</td>
<td>A+</td>
</tr>
<tr>
<td>462-486</td>
<td>A</td>
</tr>
<tr>
<td>450-461</td>
<td>A-</td>
</tr>
<tr>
<td>437-449</td>
<td>B+</td>
</tr>
<tr>
<td>412-436</td>
<td>B</td>
</tr>
<tr>
<td>400-411</td>
<td>B-</td>
</tr>
<tr>
<td>387-399</td>
<td>C+</td>
</tr>
<tr>
<td>362-386</td>
<td>C</td>
</tr>
<tr>
<td>350-361</td>
<td>C-</td>
</tr>
<tr>
<td>300-349</td>
<td>D</td>
</tr>
<tr>
<td>&lt;299</td>
<td>F</td>
</tr>
</tbody>
</table>
Participation rewards good behavior. Think EPA:

- **Effort**
  - Office hours, doing every single reading, writing, programming, presentation assignment

- **Participation**
  - Actively participating in all classroom activities, raising hand in class, asking questions on the discussion board

- **Altruism**
  - Helping other students in lab sessions, answering questions on the discussion board

**Academic writing** includes both narrative writing (35%) and software code writing (20%), together 55% of the course grade. Writing software programs requires a student to define and write a detailed and logical sequence of steps needed to accomplish a particular task, and includes writing a well-structured software program design, well-documented code, complete and clear test plans which evaluate whether the code meets requirements, and a written assessment of how well the code performed against the tests.

Programming assignments, course portfolio materials, and oral presentations will be graded on content (50%) and presentation (50%). Assignments and other materials are to be uploaded to MyLMU|Connect or left on the instructor’s desk, depending upon the assignment, before class on the due date.

The writing instructor for the course will review each written assignment before it is submitted for grading. At least one reference will be required for each essay. Works must be cited and included in a bibliography.

Research activity deliverables include topic selection and posting on course wiki; references, draft of introductory paragraph, and outline of the report; final report, included in course portfolio; oral presentation to the class. The disciplinary instructor will review and provide feedback on a draft of the technical aspects of the research project and on technical writing.

The disciplinary instructor will guide students in design, programming style, writing test plans, writing code, and evaluation and critique of projects. Students will present a draft of their project design which the class will critique, and demonstrate their completed projects to the class. Through this, students will have a first-hand experience with transforming ideas to code and the process of software development.

Students will participate in several group activities in the classroom over the course of the semester. Students will be graded both on the group product and on their individual contribution to the group effort. Students who miss these activities will receive no credit for the group product. Make sure your name is on each group report.

Toward the end of the semester each student will submit a portfolio of a representative sample of their work, a final copy of their programming assignments and related documentation, and certain other written assignments. Students can revise and improve assignments submitted during the semester and include the improved versions of their work in the portfolio. These will be graded more closely, as described in the Course Portfolio handout. Note that this portfolio includes a research activity and a brief in-class presentation on a topic that the student selects from a list of suggested activities. Related homework assignments help students stay on track for completing the activity.
An incomplete will be considered only when the student making the request has completed 80% of the coursework and has at least a B average in the coursework completed.

Assignments are due at the beginning of class on the due date and should be uploaded to MyLMU|Connect before class starts. Papers not submitted by 10 minutes after class has started are considered late. Late assignments are penalized as noted in Slip Days above.

Refer to the Teaching Philosophy and Course Policies handout for additional information.
Teaching Philosophy and Course Policies

Dr. Stephanie E. August

Philosophy
The instructor guides, the student explores. My job is to show the students what to learn and how to master it. The student’s job is to explore the paths laid out before them. I assume that students are taking the class because the subject interests them and expect the students to take the initiative in learning the material. Everything we learn will be useful later, so it is important to be exposed to many different ideas.

I expect all students to contribute to the learning experience and not simply wait to be taught. In a graduate course, students come to class prepared to discuss the topic at hand, relate it to their previous experience, and project how it will be used in the future. Although undergraduates might think they have little direct experience with the topic, they are encouraged to find evidence of it in their life experiences and current news articles. All students are advised to transfer knowledge from other disciplines wherever possible.

Students are always welcome to discuss course material with the instructor, but they are also expected to take responsibility for mastering the course material and to seek out additional references for amplification and clarification of course concepts. The course description provides several additional references to use as a starting point.

Expected Work
Course-specific expectations are noted in the Course Description. In addition, I have the following general expectations.

Students are expected to take responsibility for mastering course material, rather than expecting to be provided with all the answers. If an assignment is unclear, the student should discuss the assignment with the instructor, but is also expected to seek out published resources related to the assignment. Brief clarification can be accomplished in class; extended discussion of the assignment, especially when it is does not pertain to the entire class, will be handled during office hours, by phone or email, or by appointment.

Students are responsible for all the material in the assigned readings, whether or not it is covered in class, and for all material presented in class, whether or not it is in the assigned readings. Students are expected to complete the assigned reading prior to lecture and to participate in class discussions.

Students are expected to take responsibility for keeping track of deliverables and due dates throughout the semester. Students are expected to turn in materials according to the schedule distributed by the instructor at the beginning of the term, unless the instructor explicitly issues an updated course schedule; students should not expect the instructor to remind them of due dates. Late assignments are not accepted, except as noted in the Course Description or announced in class.

Course information will be published on MyLMU|Connect, which I will often refer to by its former name, Blackboard. Students are expected to:
- inspect the course MyLMU|Connect site frequently for announcements, updates, assignments, documents
- use the course MyLMU|Connect site to communicate among class members via discussion boards and email
- make certain they receive email from the email address listed for them on MyLMU|Connect
Email Communication
At times I will communicate with the entire class using campus email systems, or with individual students using MyLMU|Connect or the student’s Lion mail account on PROWL. **It is essential** that you regularly check your lion.lmu.edu email address or forward your lion account email to your preferred email address.

My goal is to respond to your email within one business day. Saturday, Sunday, and holidays are not business days. When you have questions about an imminent assignment, post them to the course discussion board where another student has the opportunity to answer the questions. There is a possibility that I will respond in the middle of the night on a weekend, but this not something on which to count.

Participation and Expectations for Classroom Behavior
Students are expected to attend every class meeting. This develops the faculty/student relationship and builds a sense of community among the students. Roll will not be taken on a daily basis, but graded group activities will occur in class throughout the semester, and a grade of 0 will be entered for those activities that a student misses.

Students are expected to be active participants throughout the entire class and to contribute to the quality of the discussion. Please note that the frequency with which a student speaks in class is not a key criterion for effective class participation. The classroom should be considered a laboratory in which students can test their ability to convince their peers that they have approached complex problems correctly and that their approach will achieve the desired results.

Criteria that we use to measure effective class participation include:
1. Is the comment clear and relevant to the current discussion?
2. Does the student support the comment well using case facts and tools developed in the class?
3. Does the student explore all the implications and importance of the comment?
4. Is the comment insightful? Does it broaden the discussion and clarify the issues?
5. Are comments complete and concise (does the comment cover the point as well as possible in a few words as possible)?

An average comment satisfies 1 and some of 2. A good comment satisfies 1-3. An excellent comment satisfies 1-5. Class participation represents a major component of your grade in this course (15-30%).

Before asking "Will this be on the test?" or “When is the assignment due?” refer to the section on **Expected Work** above and contemplate whether the question meets these criteria for effective class participation. If not, see me during office hours, drop by my office, phone in the question, or send email.

It is fair game to ask before or after class “When can I come by your office to go over this material?” but conversations requiring more than 30 seconds before or after class are likely to make one of us late for the next class or commitment and are unlikely to receive their due attention.

Students are not allowed to say ‘I don’t know’ in this class when asked a question. A student is not required to know, but is expected to think. So if I ask you a question and you don’t know the answer, you are responsible to think of an answer, to guess, to speculate, to wonder aloud.

Questions referring to material that was covered when the student asking the question was absent will be answered (or not) in class at the instructor’s discretion.

While participation should be the norm, students are cautioned against over participating. If you have made several contributions already, let someone else have a turn, and avoid calling out answers to questions directed toward other students.
Disruptive behavior which is persistent or significantly interferes with classroom activities may be subject to disciplinary action. A student may be referred to the Office of Student Judicial Affairs if their behavior constitutes a violation of the conduct code.

**Grading**

Your final grade will be weighted as noted in the Course Description handout.

Graduate-level final grades are assigned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-/A</td>
<td>Superior</td>
</tr>
<tr>
<td>B-/B/B+</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C+/C/C-</td>
<td>Poor</td>
</tr>
<tr>
<td>F</td>
<td>Fail</td>
</tr>
</tbody>
</table>

Student has mastered the material and presents it in a professional manner.

Student has a good grasp of the material and presents it clearly.

Student did some work, but does not have a strong grasp of fundamental concepts.

Student failed to learn fundamental concepts.

Graduate students must earn at least a B in each 500-level course for it to count toward their degree. 500-level courses in which the student receives a B- or lower will need to be repeated for credit.

Undergraduate-level final grades are assigned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-/A</td>
<td>Superior</td>
</tr>
<tr>
<td>B-/B/B+</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C+/C/C-</td>
<td>Poor</td>
</tr>
<tr>
<td>F</td>
<td>Fail</td>
</tr>
<tr>
<td>90-100%</td>
<td>Student has mastered the material</td>
</tr>
<tr>
<td>80-89%</td>
<td>Student has a good grasp of the material.</td>
</tr>
<tr>
<td>70-79%</td>
<td>Student has a basic understanding of the material.</td>
</tr>
<tr>
<td>50-69%</td>
<td>Student did some work, but failed to learn fundamental concepts.</td>
</tr>
<tr>
<td>0-49%</td>
<td>Student did an insufficient amount of work to satisfy course requirements.</td>
</tr>
</tbody>
</table>

This breakdown represents the floor of each grade range. For example, a student scoring 90% will receive at least a grade of A-.

Unless otherwise stated for a specific assignment or deliverable, half of the grade will reflect **content**, and half of the grade will reflect **presentation**.

An incomplete will be granted only when the student requesting the incomplete has completed 80% of the coursework, and has at least a B average in the coursework completed.

**Work Load Expectations**

Graduate students are expected to spend an average minimum of six to eight hours per week on class-related learning activities. Undergraduate students are expected to spend an average minimum of six hours per week on class-related learning activities. Programming assignments might require additional time for some students to complete. Refer to LMU’s Credit Hour Policy, (see [http://www.lmu.edu/Assets/LMU+Credit+Hour+Policy_Final.pdf](http://www.lmu.edu/Assets/LMU+Credit+Hour+Policy_Final.pdf)).

**Assignments**

Submitted assignments reflect your attitude toward learning. Written assignments may be handwritten or typed. All are expected to be neat and legible. *Homework and papers with multiple spelling and/or grammatical errors or not representative of college-level work will be returned ungraded*. Find yourself a good spelling and grammar checker and/or a trusted human editor, if you have difficulty with English spelling and/or grammar. The Academic Resource Center in Daum Hall offers such a service, both on an appointment and a drop-in basis (see [http://academics.lmu.edu/arc/](http://academics.lmu.edu/arc/) or contact the center by phone 310.338.2847 or email [arc@lmu.edu](mailto:arc@lmu.edu)).
Student’s name, the course name, the assignment number and due date must appear in the upper right corner of the first page of the assignment. Answer questions with complete sentences; include the question in the answer and show your reasoning.

Staple or otherwise fasten together pages of assignments submitted on paper or put the pages in a folder in which they are securely fastened. Points will be deducted for loose pages.

Exams
Once a quiz or exam has begun, it will be assumed that anyone leaving the room is finished with the exam. Have adequate supplies (paper, pens, pencils, tissues) on hand, and take care of personal needs before coming to class. No makeup quizzes or exams will be given, except as noted below.

If your job, team sports, or other commitments require you to travel during the term, special arrangements should be made prior to a missed class for submitting assignments, receiving assignments and handouts, or rescheduling quizzes or exams. If you miss a quiz or exam without making prior arrangements, I will enter a grade of 0 for the quiz or exam, and no makeup will be allowed.

Electronic Devices
Turn off and put out of sight all electronic devices other than laptops or tablet computers used for taking notes in class. Reading emails, completing homework assignments, or searching the internet for anything that will not augment the classroom experience for the entire class (students and instructor) should be avoided altogether. The distractions they cause disrupt class and usurp precious class time. A repeat offender may lose credit for the day’s work.

Academic Honesty and Integrity
Students find it helpful to discuss approaches to assignments and projects with their classmates. However, unless an assignment has explicitly been declared a team assignment, each student is expected to complete and write up the assignment or project component on his or her own. When an approach has been discussed in a group, each student should clearly note on the copy of the work that she or he submits the nature of the collaboration and the name of each collaborator. Researching a problem on the Internet is considered to be collaboration and should be noted on the assignment. Relevant URLs should be noted on the assignment. Cheating on assignments by failing to note collaboration or not writing up the assignment on an individual basis, cheating on examinations, plagiarism, falsification of data, and related violations of LMU standards of honesty and integrity are not tolerated. Students who commit such offenses will receive a failing grade for the assignment or exam and/or a failing grade for the course, as well further disciplinary action.

Students are expected to understand what plagiarism is and avoid all forms of it. The website http://libguides.lmu.edu/plagiarism explains the plagiarism and discusses techniques for avoiding it. The page includes links to several informative tutorials.

Academic dishonesty will be treated as an extremely serious matter, with serious consequences that can range from receiving no credit for assignments/tests to expulsion. It is never permissible to turn in any 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 the “LMU Honor Code and Process” in the LMU Bulletin (see http://www.lmu.edu/about/services/registrar/Bulletin/Bulletins_in_PDF_Format.htm).

Americans with Disabilities Act
Students with special needs as addressed by the Americans with Disabilities Act who need reasonable modifications, special assistance, or accommodations in this course should promptly direct their request
to the Disability Support Services Office. Any student who currently has a documented disability (physical, learning, or psychological) needing academic accommodations should contact the Disability Services Office (Daum Hall Room 224, 310-338-4535) as early in the semester as possible. All discussions will remain confidential. Please visit http://www.lmu.edu/dss for additional information.

**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 on LMU's course management system MyLMU|Connect.

**Survival**
Eat before you are hungry, drink before you are thirsty, and sleep before you are tired, and you will have energy left to celebrate the completion of the course and enjoy the semester break. Eating, drinking, and sleeping are to be done outside the labs and classrooms. Covered beverages are acceptable, unless otherwise prohibited by the facility, providing that the student leaves the classroom at least as neat as it was then they arrived. Repeat offenders will find it difficult to complete the course, since they will be asked to leave the classroom and will lose their lab privileges.

To report an emergency or suspicious activity, contact the LMU Department of Public Safety by phone (x222 or 310-338-2893) or at the nearest emergency call box. In the event of an evacuation, follow the evacuation signage throughout the building to the designated safe refuge area where you will receive further instruction from Public Safety or a Building Captain. For more safety information and preparedness tips, visit http://www.lmu.edu/emergency.
<table>
<thead>
<tr>
<th>week</th>
<th>days</th>
<th>topic</th>
<th>Writing Instruction</th>
<th>Assignments - Due Thursday unless otherwise specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27-Aug</td>
<td>Welcome, Introduction, Expectations</td>
<td></td>
<td>Information Literacy: Starting Your Assignment</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>Computing In Our World to Abstraction</td>
<td>Writing instructor class activity</td>
<td>B2B ch 1: Digital Explosion: Why Is It Happening, and What Is at Stake?</td>
</tr>
<tr>
<td></td>
<td>29-Aug</td>
<td>Snap! orientation</td>
<td></td>
<td>Social Issues Essay #1 Draft</td>
</tr>
<tr>
<td></td>
<td>Syllabus quiz on Thursday, 29 AUG 2013</td>
<td></td>
<td></td>
<td>Due Tuesday, 3 SEP 2013</td>
</tr>
<tr>
<td>2</td>
<td>3-Sep</td>
<td>Computers, Privacy, and Visual Programming</td>
<td></td>
<td>Social Issues Essay #1 Draft with notes and revision</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>Loops and Variables</td>
<td>Writing instructor class activity</td>
<td>Due Thursday, 12 SEP 2013</td>
</tr>
<tr>
<td></td>
<td>5-Sep</td>
<td></td>
<td></td>
<td>Topic 3: Putting It Together</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Video: Loops and variables</td>
</tr>
<tr>
<td>3</td>
<td>10-Sep</td>
<td>Representing and Manipulating Data</td>
<td></td>
<td>Social Issues Essay #2 Draft</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>Random, Conditionals, and Input</td>
<td>The Process of Writing: feedback on draft of first essay</td>
<td>Due Tuesday, 17 SEP 2013</td>
</tr>
<tr>
<td></td>
<td>12-Sep</td>
<td></td>
<td></td>
<td>Topic 3: Putting It Together</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Video: Random, If, and Input</td>
</tr>
<tr>
<td>4</td>
<td>17-Sep</td>
<td>Social Implications of Computing</td>
<td></td>
<td>Social Issues Essay #1 Draft</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>Guest Lecture: Prof. Adriana Jaroszewicz -</td>
<td></td>
<td>Due Tuesday, 26 SEP 2013</td>
</tr>
<tr>
<td></td>
<td>19-Sep</td>
<td>Designing Animation Quiz on basic concepts</td>
<td></td>
<td>B2B ch 3: Ghosts in the Machine: Secrets and Surprises of Electronic Documents</td>
</tr>
<tr>
<td></td>
<td>Thursday, 19 SEP 2013</td>
<td></td>
<td></td>
<td>Snap! programming assignment #2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNAP! Project #1 Proposal</td>
</tr>
<tr>
<td>5</td>
<td>24-Sep</td>
<td>Creating Programs that Others Can Use</td>
<td></td>
<td>Information Literacy: Finding and Evaluating Information</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>Programming Standards and Documentation</td>
<td></td>
<td>Social Issues Essay #2 Draft</td>
</tr>
<tr>
<td></td>
<td>26-Sep</td>
<td>Searching</td>
<td></td>
<td>Due Thursday, 26 SEP 2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B2B ch 4: Needles in the Haystack: Google and Other Brokers in the Bits Bazaar</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNAP! Project #1 Design Review – oral presentation, Group A</td>
</tr>
<tr>
<td>6</td>
<td>1-Oct</td>
<td>Computing as a Social Science</td>
<td></td>
<td>Social Issues Essay #3 Draft</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>Meeting Requirements and Proving It</td>
<td>Evaluating Information</td>
<td>Due Tuesday, 3 OCT 2013</td>
</tr>
<tr>
<td></td>
<td>3-Oct</td>
<td>Building Your Own Blocks - Functions</td>
<td></td>
<td>Topic 4: Build Your Own Blocks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Video: Build your own blocks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNAP! Project #1 Demo and Code Review – oral presentation, Group B</td>
</tr>
</tbody>
</table>
### FFYS 1000-24
**Ideas to Code: Introduction to Problem Solving and Programming**

**Lecture and Assignment Schedule**

<table>
<thead>
<tr>
<th>week</th>
<th>days</th>
<th>topic</th>
<th>Writing Instruction</th>
<th>Assignments - Due Thursday unless otherwise specified</th>
</tr>
</thead>
</table>
| 7    | 8-Oct     | Making Programs that are Reusable ... and Private Lists, Elements, and Indexes | B2B ch 5: Secret Bits: How Codes Became Unbreakable  
Topic 5: Lists  
Video: Lists I  
Research Activity Delivery #1: Indicate activity selected on Research Activity wiki
Begin a discussion thread for research activity Delivery #1  
**Due Tuesday, 8 OCT 2013**  
Social Issues Essay #3 Draft with notes and revision  
**Due Thursday, 10 OCT 2013** |  
|      | 10-Oct    |                                                                       |                                               |                                                       |
| 8    | 15-Oct    | Games  
Game Boards  
Sorting a List  
Serious Games | Information Literacy: Using Information Ethically  
Social Issues Essay #4 Draft  
**Due Tuesday, 15 OCT 2013**  
Topic 6: Tic Tac Toe  
Video: Lists II  
Snap! programming assignment #3 |  
|      | 17-Oct    |                                                                       |                                               |                                                       |
Research Activity Delivery #2: References, intro, outline  
**Due Tuesday, 22 OCT 2013**  
Social Issues Essay #4 Draft with notes and revision  
**Due Thursday, 24 OCT 2013** |  
|      | 24-Oct    |                                                                       |                                               |                                                       |
| 10   | 29-Oct    | How Algorithms Shape Our World                                        | WI one-on-ones  
**Social Issues Essay #5 Draft  
Due Tuesday, 29 OCT 2013**  
Topic 7: Algorithms  
Video: Algorithms  
Snap! programming assignment #4 |  
|      | 31-Oct    | **Friday, November 1st, is the last day to withdraw or apply for Credit/No Credit grading** |                                               |                                                       |
| 11   | 5-Nov     | Freedom and Expression                                                | WI one-on-ones  
**B2B ch 7: You Can’t Say That on the Internet: Guarding the Frontiers of Digital Expression**  
Social Issues Essay #5 Draft with notes and revision  
**Due Thursday, 7 NOV 2013**  
Writing Instructor class activity |  
<p>|      | 7-Nov     |                                                                       |                                               |                                                       |</p>
<table>
<thead>
<tr>
<th>week</th>
<th>days</th>
<th>topic</th>
<th>Writing Instruction</th>
<th>Assignments - Due Thursday unless otherwise specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>12-Nov to 14-Nov</td>
<td>Fractals and Recursion <strong>Midterm on basic concepts</strong></td>
<td>WI one-on-ones</td>
<td>Topic 10: Trees and Fractals using Recursion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Video: Recursion, round 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Snap! programming assignment #5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNAP! Project #2 Proposal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Research Activity Delivery #3: Paper draft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Due Tuesday, 19 NOV 2013</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNAP! Project #2 Design Review – oral presentation, Group B</td>
</tr>
<tr>
<td>14</td>
<td>26-Nov to 28-Nov</td>
<td>Simulation in Science</td>
<td>Writing Instructor class activity</td>
<td>Topic 12: Simulation in Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Video: Simulations (Shark &amp; Fish)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Computers and the World Draft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Due Tuesday, 26 NOV 2013</strong></td>
</tr>
<tr>
<td>15</td>
<td>3-Dec to 5-Dec</td>
<td>Final Project Presentations</td>
<td></td>
<td>SNAP! Project #2 Demo and Code Review – oral presentation, Group B</td>
</tr>
<tr>
<td>16</td>
<td>10-Dec to 12-Dec</td>
<td>Final: Research Activity Presentations 8:00 a.m. Thursday, December 12, 2013</td>
<td>Portfolio due Research Activity Presentation</td>
<td></td>
</tr>
</tbody>
</table>
Ideas to Code: Introduction to Problem Solving and Programming

Portfolio

I. Overview

A course portfolio, worth 50% of the course grade, contains a representative subset of course assignments. The objective of creating a course portfolio is to provide the student an opportunity to demonstrate mastery of course concepts without the time constraints or pressure of an exam and with the benefit of additional time to work with the material and receive feedback on assignments. Essays on social issues, a short research paper, two programs, and a short reflection paper on computers and the world comprise the portfolio. The majority of these will be extensions of class assignments and activities.

The completed portfolio is due at the beginning of the class final exam period. Portfolios submitted after that date will be penalized for each day they are late.

Section II of this document discusses the content of the portfolio. Section III reviews the rubric used to assess your work, and section IV discusses the disposition of the portfolio once it is graded. Section V lists relevant due dates.

Students often require extra assistance with the programming tasks. Consider working on these early and often to allow adequate time to resolve any challenges that arise.

II. Content

All material should be secured in a report folder that clearly shows on the cover the name of the student, the title of the course, and the date the portfolio is submitted. Items should be included in the order listed here. Tabs or dividers should identify and separate the sections.

Section 1: Social Issues Essays

*Can a machine think or a robot have emotions? Which do you prefer – leaving digital fingerprints everywhere and the awareness of being constantly tracked, or having few digital fingerprints and a greater sense of privacy? As electronic privacy diminishes and social networking increases, will societal structures break down? As technology offers people more “replacement parts” such as artificial limbs and internal organs grown in a lab, at what point does a person transition from human to machine?*

During the semester, students compose essays on a variety of social and ethical issues related to computing sciences as part of graded homework assignments. The objective of these essays is to reflect on the association between computing sciences and daily life. This section of the portfolio consists of three of these essays. For full credit, each essay must

- address a specific social issue question related to a course topic
- identify the question addressed
- relate the response to information covered by the course
- be a minimum of 400 words in length
- cite at least one reference beyond the text to support the points made in the essay
- include the full citation of the article(s) at the end of the essay.
Additional criteria may apply to individual essay assignments. Each essay is first submitted to the Writing Instructor for review, then revised and turned into the instructor for grading. The original essay with comments from the Writing Instructor must be turned in with the revised version for full credit on the assignment.

Section 2: Research Activity Report

This section of the portfolio provides an opportunity for the student to explore more deeply a topic of their choice. The instructor will suggest research activities related to course topics, or the student can propose a topic related to their interests and the course material. Select and complete one activity and write a two-page paper (750-1000 words) as described in the activity. If the activity involves programming, the paper should include a description of the activity and the design of the code. The code itself and an example of the code executing or graphics drawn by the code should be added as an appendix to the Research Activity paper. Cite the references used and include them in a brief References section at the end of the paper. Interim due dates for each of the following tasks are found in Section V. Due Dates.

Graded Research Activity deliverables include:

Deliverable #1: Topic selection and posting

- Indicate the research activity selected on the Research Activity wiki of the course MyLMU|Connect (see Tools/Wiki Tool/Site Navigation/Research Activities).
- Begin a discussion thread for your topic under the Research Activity Presentations forum on MyLMU|Connect. Include a sentence or two about why you selected the topic.
- Check for comments from the Writing Instructor. Revised your posting as needed.
- In the interest of diversity, each student is encouraged to select a unique activity. No more than two students can sign up for any specific activity.
- A student must obtain prior written approval of the instructor to select a topic other than those included in the posted Research Activity list, or one previously selected by two other students.

Deliverable #2: References to be used, a draft of the introductory paragraph, and an outline of the final paper

- Retain the original Deliverable #2 submission and the Writing Instructor’s comments. Turn these in with the revised version when submitting the copy to the instructor for grading.

Deliverable #3: Draft of research activity report with references cited

- This should be a nearly complete version of the report.
- Clearly identify and describe any work that remains to be completed before the final version of the report is turned in for grading with the portfolio.
- Retain the original Deliverable #3 submission and the Writing Instructor’s comments. Turn these in with the revised version when submitting the copy to the
instructor for grading.

Deliverable #4: Final report, to be included in the portfolio

- Two-page paper, 750-1000 words in length, excluding images
- Include illustrations, citations and references
- Include original draft and comments from Writing Instructor

Deliverable #5: Oral presentation, to be included in the portfolio and presented in class

- Make a 4-5-minute presentation to the class on your research activity during the scheduled final exam period
- Prepare to ask other students questions about their research activities
- Two days before the final, post to your research activity thread on MyLMU|Connect a draft of both your report and the presentation visuals
- Post the final slides for your presentation to your research activity thread on MyLMU|Connect before the presentation
- Include a 4-up landscape hard copy of your slides (see figure 1) in the portfolio; double-sided is preferred.

The selection of activity, paper draft, and presentation will each count as one homework assignment.

Figure 1. Presentation slides in 4-up landscape format.

Section 3: SNAP! Project #1

Design, document, and test a program in SNAP! As a minimum use the following constructs or parts of SNAP!:

- Variables (2+)
- Control components (3+), e.g.,
Ideas to Code

- Loop (repeat or forever)
- Conditional (if, if..then..., if..then...else...)
- Event control block (with curved top)
- Operators (3+), e.g.,
  - +, -, >, pick random

The source code can be represented with a screen shot of the program taken in the SNAP! development environment.

Additional details about the project will be provided.

Include in the portfolio:

- A README file containing brief narrative explanation of what the program does, which files are needed to run the program (the inventory), how it does it, how to test the program, and how to run the code.
- A diagram that explains graphically how the program works. A flow chart or UML sequence diagram with an associated use case diagram would be most appropriate.
- A list of primitives needed to solve the problem.
- The source code for the program.
- Screen shots of your program executing.
- A list of tests a user can run to verify that the program runs properly, expressed either as input/output pairs or user action/observation pairs.

These items should be compiled and presented in the appropriate section of the course portfolio in such a way that they tell the story of the project in a coherent and cohesive manner.

Section 4: SNAP! Project #2

Design, document, and test a program in SNAP! As a minimum use the following constructs or parts of SNAP!:

- Variables (2+)
- Control components (3+), e.g.,
  - Loop (repeat or forever)
  - Conditional (if, if...then..., if..then...else...)
  - Event control block (with curved top)
- Operators (3+), e.g.,
  - +, -, >, pick random

The source code can be represented with a screen shot of the program taken in the SNAP! development environment.

Additional details about the project will be provided.
Include in the portfolio:

- A README file containing brief narrative explanation of what the program does, which files are needed to run the program (the inventory), how it does it, how to test the program, and how to run the code.
- A diagram that explains graphically how the program works. A flow chart or UML sequence diagram with an associated use case diagram would be most appropriate.
- A list of primitives needed to solve the problem.
- The source code for the program.
- Screen shots of your program executing.
- A list of tests a user can run to verify that the program runs properly, expressed either as input/output pairs or user action/observation pairs.

These items should be compiled and presented in the appropriate section of the course portfolio in such a way that they tell the story of the project in a coherent and cohesive manner.

Section 5: Computers and the World

Write a two-page 1.5 line-spaced (400-500 word) essay on how your understanding of the world around you has been affected by studying computer science in Ideas to Code. The idea is to examine the importance computer science plays in our everyday lives by focusing on a single event in which a computer or computing plays a significant role. The event can be any of the following:

- A movie or PBS special (e.g., The Net, A.I., I.Robot, Terminator, Jurassic Park).
- A current event or news article.
- An aspect of your daily life.

The content of your essay you will be the same in each case. In your essay,

- Briefly summarize the event you have selected and identify the role computers or computing plays in the event.
- Compare what your understanding of the event would have been before taking Ideas to Code to what your current understanding is. The idea is to examine how your view of the world has changed by being more aware of computer science.
- Identify the single most important idea you have taken from the class.
- Identify the course topic that you think will be the most useful to you in the next five years as you continue in school or venture out into the world to work.

You will submit a draft to the writing instructor for review by the writing instructor, then include the final essay for grading. Both draft with comments from writing instructor and the final essay are to be included in the Course Portfolio.

III. Rubric

The objective of the portfolio assignment is for you to submit a professionally presented set of work that represents your mastery of course material. The portfolio work must meet a higher
standard than your other assignments because you will have had time to review the feedback received on earlier assignments and have learned more about the subject matter by the end of the term. Your portfolio grade will be determined by both the content of the work and your presentation of the work. A well-presented set of incomplete or incorrect assignments will not receive a high grade, but neither will a set of stunningly correct and thorough assignments that are illegible or poorly presented.

Your written portfolio work will be graded using the following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>50%</td>
<td>Includes the requested information; substantive, reflecting depth of thought</td>
</tr>
<tr>
<td>Presentation</td>
<td>50%</td>
<td>Ideas are stated clearly and flow smoothly, grammar and spelling are correct. Errors are neatly corrected. Required report format is followed.</td>
</tr>
</tbody>
</table>

For full credit on all written work such as social issues responses, research activities, computers and the world essay, cite highly regarded references that provide examples of the topic being discussed or support your view and include a full citation for each reference at the end of each piece. The full citation must include author, title, publication, publication, volume, issue, and date. If the reference was found on the web, provide the full citation plus the URL and the date the article was accessed. The idea is to provide sufficient information for someone to locate and read the article for more information, even if the web link becomes inactive.

Technical work will be graded along these criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>30%</td>
<td>Clear, flexible, and easily maintained; elegant and innovative; applies proper separation of concerns; satisfies the “one change, one place” property</td>
</tr>
<tr>
<td>Functionality</td>
<td>30%</td>
<td>Works as requested; meets all requirements; produces correct answers/results; performs in a reasonable amount of time; includes tests that demonstrate correct behavior</td>
</tr>
<tr>
<td>Naming</td>
<td>20%</td>
<td>Clear and consist; names correspond to roles, types, or actions</td>
</tr>
<tr>
<td>Documentation</td>
<td>20%</td>
<td>README or overview material provided; comments abundant in code; information is genuinely useful</td>
</tr>
</tbody>
</table>

The completed portfolio is due the last week of class.

**IV. Portfolio Disposition**

Portfolios will be available in the instructor’s office after grades are turned in (usually the Wednesday following finals) until the third week of the following semester, after which the contents will be discarded and the folders recycled, unless the student has made other arrangements to pick up the portfolio.

*If you know that you will not be picking up your graded portfolio, indicate that on the title page of your portfolio.*
## V. Due Dates

<table>
<thead>
<tr>
<th>Portfolio Component</th>
<th>Draft</th>
<th>For Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Issues Essay #1</td>
<td>week 2</td>
<td>week 3</td>
</tr>
<tr>
<td>Social Issues Essay #2</td>
<td>week 4</td>
<td>week 5</td>
</tr>
<tr>
<td>Indicate research activity selected on the Research Activity wiki</td>
<td>week 7</td>
<td></td>
</tr>
<tr>
<td>Begin a discussion thread for your research activity</td>
<td>week 7</td>
<td></td>
</tr>
<tr>
<td>Social Issues Essay #3</td>
<td>week 6</td>
<td>week 7</td>
</tr>
<tr>
<td>SNAP! Project #1</td>
<td>week 6</td>
<td>Final exam</td>
</tr>
<tr>
<td>Social Issues Essay #4</td>
<td>week 8</td>
<td>week 9</td>
</tr>
<tr>
<td>Turn in research activity draft paper by start of class</td>
<td>week 9</td>
<td>week 11</td>
</tr>
<tr>
<td>Social Issues Essay #5</td>
<td>week 10</td>
<td>week 11</td>
</tr>
<tr>
<td>Completed research activity paper</td>
<td>week 13</td>
<td>Final exam</td>
</tr>
<tr>
<td>Computers and the World Essay</td>
<td>week 14</td>
<td>Final exam</td>
</tr>
<tr>
<td>SNAP! Project #2</td>
<td>week 15</td>
<td>Final exam</td>
</tr>
<tr>
<td>Submit completed portfolio</td>
<td>Final exam</td>
<td></td>
</tr>
<tr>
<td>Research project presentation</td>
<td>Final exam</td>
<td></td>
</tr>
</tbody>
</table>