Course Description
Computer code is the foundation of digital media. As the second part of the Digital Studies Studio this course introduces code as a cultural technique and an epistemic device. Code and technology normally come in black-boxes which do not reveal their functioning principles and internal structures. To be able to understand code and to critically reflect on those technologies it is important to understand their principles and the underlying thought systems and philosophies. The central goal of this class is to open up these black boxes and reflect on the basic functions of code and the ways coded principles shape how we use digital technologies and eventually how we perceive our environment, how we communicate and how we think using those structures.

Through a critical discussion of classic texts of pioneers of digital technologies we will understand the philosophical origins and learn how to use digital media as critical and creative tools. This process rests equally on theoretical reflection as well as practical engagement with the technologies.
The course introduces foundational skills in the formulation and understanding of code and the digital representation of images, time-based processes and abstract data. A focus area is the relationship and interaction between humans and computers. Students will understand the importance of interface design and learn how to conceptualize and create simple computational and interactive systems. Through several assignments and in-class exercises we will approach code and familiarize us with the ways digital media help us represent the world as coded structures and finally come full circle by materializing computer-generated representations as 3-D printed objects.

**Learning Objectives**

- Develop a basic understanding of code as a cultural technique that is central to how we think and communicate.
- Acquire the basic skills to create computational and interactive structures
- Develop the ability to reflect critically on digital technologies and code as a form of representation

**Course Schedule: A Weekly Breakdown**

**Part 1: Cultural Techniques**

1. **Week: Jan 14, 2015:** *Introduction* – Cultural Techniques  
   Overview over course structure and class projects  
   Lecture and discussion of cultural techniques

2. **Week: Jan 21, 2015:** *Storing and Managing Knowledge*  
   A historic overview of methods of knowledge production and management.  
   Visit to USC Special Collections  
   Take-home assignment: Write an observational description of the library search process and compare it to online search.  
   Reading: Markus Krajewski: Paper Machines (excerpt)

3. **Week: Jan 28, 2015:** *Speculative Knowledge Tools*  
   Lecture and discussion about digital media as knowledge tools  
   In-class workshop: Design a speculative knowledge tool  
   Reading: N. Katherine Hayles: My Mother was a Computer (excerpt)

4. **Week: Feb 4, 2015:** *Ethnography of Online Spaces*  
   Lecture and discussion about ethonography as a research method  
   In-class workshop: a tentative ethnography of online platforms  
   Reading: Alexis de Tocqueville: Democracy in America (excerpt)

5. **Week: Feb 11, 2015:** *Presentation*  
   Student presentation and discussion of the first class-project  
   **First class-project due**
Part 2: Knowledge Systems and Information Architectures

6. Week: Feb 18, 2015: **Organizing Knowledge**
   Lecture and discussion of information architectures and computational methods of knowledge organization; understanding through tentative reverse-engineering
   Reading: Vannevar Bush: As We May Think

7. Week: Feb 25, 2015: **Code as Phenomenon**
   In-class workshop: Basic structures of code
   Reading: Nick Montfort et al.: 10 PRINT (excerpt)

8. Week: Mar 4, 2015: **Simulation and Representation**
   **Midterm exam**
   In-class workshop: Cellular automata
   Reading: Norbert Wiener: Cybernetics (excerpt)

   Visit to the Museum of Jurassic Technology
   Take-home assignment: Write an observational description of the technologies and forms of presentation of the Museum of Jurassic Technology.
   Reading: Douglas Engelbart: Augmentation Research

Springbreak

10. Week: Mar 25, 2015: **Presentation**
    Student presentation and discussion of the second class-project
    **Project #2 due**

Part 3: Critical Reflection of Coded Structures

11. Week: Apr 1, 2015: **Forms of Representation**
    Lecture and discussion of of forms of representation from perspective to computation multi-dimensionality
    In-class workshop: Basic forms of spatial representation in code
    Reading: J.C.R. Licklider: Man-Computer Symbiosis

12. Week: Apr 8, 2015: **Technological Determinism**
    Discussion of positions and counter-positions of technological determinism
    In-class workshop: Introduction to 3-D modeling
    Reading: Daniel Chandler: Technological and Media Determinism;

13. Week: Apr 15, 2015: **Media Phantasms**
    Lecture and discussion of phantasms in digital media
    In-class workshop: Development of design ideas for a critical interface object
    Readings: D. Fox Harrell: Phantasmal Media (excerpt)
14. Week: Apr 22, 2015: **Code and Race**  
Discussion of the intertwinnings of world views and operating systems  
In-class workshop: Creation of a critical interface object  
Reading: Tara McPherson: U.S. Operating Systems at Mid-Century

15. Week: April 29, 2015: **Presentation**  
Student presentation and discussion of the third class-project  
Class round-up  
**Project #3 due**

16. Week: May 6, 2015: **Final Exam**  
Location and time of the final exam will be announced in class

**Technological Proficiency and Hardware/Software Required**  
The class is an introduction and does not require specific pre-existing technology skills. Software will be available on the SCA lab computers.

**Required Readings and Supplementary Materials**  
Required readings are specified in the weekly breakdown of the class and are available online. Readings are due at the day they are mentioned in the syllabus.

**Description and Assessment of Assignments**  
During the semester we will work on three projects and several in-class and take home assignments.  
Project #1: Write an ethnography of a social media platform of your choice. Use the example of Alexis de Tocqueville’s method of distant observation to develop your project.  
Project #2: Based on in-class exercises create two cellular automatons, one focused on aesthetic output and a second to simulate a real-world phenomenon of your choice.  
Project #3: Following in-class exercises design a 3-dimensional object in the computer that can serve as a critical interface to our environment. This pobject will be 3-d printed to form an actual tangible embodiment of the computer design.  
All projects will be prepared and discussed in depth in class and will be followed by a reflection on the process of their realization.  
The in-class and take-home assignments will emerge out of the class context and comprise written reflection, design exercises and the writing of program code.  
The assignments and project will be evaluated according to the grading breakdown below. As a guideline for the evaluation we will use the criteria specified in the evaluation outline below.
Grading Breakdown
How will students be graded overall, including the assignments detailed above. Participation should be no more than 15%, unless justified for a higher amount. All must total 100%.

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>Discussion and peer critique</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Class exercises and presentations</td>
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<td>15</td>
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<tr>
<td>Reflections</td>
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<td>Project #1</td>
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<td>Midterm exam</td>
<td>15</td>
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<td>Final exam</td>
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TOTAL 100 100

Evaluation Guidelines
In general, you will be graded using these criteria:

Conceptual Core
- The project’s controlling idea must be apparent.
- The project must be productively aligned with one or more multimedia genres.
- The project must effectively engage with the primary issue/s of the subject area into which it is intervening.

Research Component
- The project must display evidence of substantive research and thoughtful engagement with its subject matter.
- The project must use a variety of credible sources and cite them appropriately.
- The project ought to deploy more than one approach to an issue.

Form and Content
- The project’s structural or formal elements must serve the conceptual core.
- The project’s design decisions must be deliberate, controlled, and defensible.
- The project’s efficacy must be unencumbered by technical problems.

Creative Realization
- The project must approach the subject in a creative or innovative manner.
- The project must use media and design principles effectively.
- The project must achieve significant goals that could not be realized on paper.
Assignment Submission Policy
All assignments are due as mentioned in the weekly breakdown. Depending on the nature of the assignment they are submitted either through the online platform of the class or handed in personally.

Missing an Exam, Incompletes
The grading of this course is based mainly on the work completed and presented during the course of the class (see the grading section of this syllabus) and the mid-term and final exams. The presentation of the assignments as well as the reflections on their realization processes play equally important roles and are mandatory. The only acceptable excuses for missing a presentation or taking an incomplete in the course are personal illnesses or a family emergency. Students must inform the professor before the project presentation or exam and present verifiable evidence in order for a make-up to be scheduled. Students who wish to take incompletes must also present documentation of the problem to the instructor before final grades are due.

Mid-term Conferences
In the middle of the semester the instructor will meet with every student individually. These conferences allow you to get a sense of your overall progress, areas for improvement and an estimated grade at mid-point in the semester. If you are in danger of failing, you will be alerted in writing and in a conference; we will outline together what steps must be taken in order for you to pass. It is the student's responsibility to be aware of USC's add/drop and withdrawal deadlines.

Fair Use
Fair use is a legal principle that defines certain limitations on the exclusive rights of copyright holders. The IML seeks to apply a reasonable working definition of fair use that will enable students and instructors to develop multimedia projects without seeking authorization for non-commercial, educational uses. In keeping with section 107 of the Copyright Act we recognize four factors that should be considered when determining whether a use is fair: (1) the purpose and character of use, (2) the nature of the copyrighted work, (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole, and (4) the effect of the use upon the potential market for or value of the copyrighted work. In general, we regard the reproduction of copyrighted works for the purposes of analysis or critique in this class to be covered by the principle of fair use.

Citation Guidelines
All projects will need to include academically appropriate citations in the form of a Works Cited section, which covers all sources, in order to receive a passing grade. The Works Cited is either included in the project or as a separate document, as appropriate to your project. The style we use is APA 5th edition and you may refer to these guidelines: http://owl.english.purdue.edu/owl/resource/560/01/

Statement on Academic Conduct and Support Systems

Academic Conduct
Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in Scampus in Section 11, Behavior Violating University
Standards: https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu/ or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems
A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu/ will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.