THE NEW SCHOOL
PARSONS
DESIGN+TECHNOLOGY

Parsons MFADT
Creativity and Computation Lecture/Lab
Syllabus, Fall 2016 (subject to change)

Lecture
PGTE 5251-A CRN: 5376
Friday 3:50pm-5:10pm**, 63 5th Ave (University Center), room L104 (lower level)**
Faculty: **Sven Travis** (traviss@newschool.edu or sven@newschool.edu)
Lecture website: **my.newschool.edu** and **Canvas**
Lab website: **GitHub**

Sven's office is D12, 1210, 12th floor, 6 E 16th St.
Sven's office hours: Tues 12-2pm, Weds 10am-12pm and by appointment,

Labs (Faculty and section information):
Luobin Wang (luobin@newschool.edu)
CRN: 3382 - PGTE 5250 – F, Monday 7:00 pm - 9:40 pm, 6 East 16th Street 1208

Jaskirat Singh Randhowa (jaskiratr@newschool.edu)
CRN: 3258 - PGTE 5250 – A, Tuesday 7:00 pm - 9:40 pm, 6 East 16th Street 1205

Kristin Slater (kristin@newschool.edu)
CRN: 3259 - PGTE 5250 – B. Tuesday 7:00 pm - 9:40 pm, 6 East 16th Street 1208

Peiying Feng (pfeng@newschool.edu)
CRN: 3260 - PGTE 5250 – C, Tuesday 7:00 pm - 9:40 pm, 6 East 16th Street 1206

Aaron Lehr (lehra714@newschool.edu)
CRN: 3263 - PGTE 5250 – D, Tuesday 7:00 pm - 9:40 pm, 6 East 16th Street 1200

Miri Park (miri@newschool.edu)
CRN: 3381 - PGTE 5250 – E, Thursday 7:00 pm - 9:40 pm, 6 East 16th Street 1002

Weili Shi (weili@newschool.edu)
CRN: 4905 - PGTE 5250 - G Thursday 7:00 pm - 9:40 pm, 63 5th Ave L101 (lower level)

Lab faculty do not have scheduled office hours

This is a required lecture/lab course for first year MFA Design and Technology students. Each student should be enrolled in the lecture and one lab section.

General Course Description
The primary intent of this course is to get all of us (students, faculty) to think about ourselves as creative individuals, and to investigate our relationship with digital technology, specifically coding, physical computing and making. How do we become authors using computation and devices? The course will combine informational lectures

that will touch upon a variety of topics with hands-on labs that will require the students to code and build projects related to specific technologies (Javascript, Arduino, openFrameworks, and Unity).

Lectures will vary between historical overview, scientific explanation, philosophy, and presentation of important historical figures (artists, designers, technologists). Although carrying on class discussion in such a big group can be a challenge, we will give it a shot. Hopefully ideas raised in this class will find their way to the studio, and vice-versa. Labs will be hands on. Each lab session will involve building code or devices to accomplish a specific goal. Students will be expected to carry out each lab module, and to apply them to projects. Two projects will be required in the lab during the semester (along with weekly homework).

This course will have two basic components: the weekly lecture and the weekly lab. The lecture will last one hour twenty minutes per week, and the lab will be a full two hours forty minutes. The course is broken down as follows:

1. **Lecture** (63 5th Ave (University Center), room L104 (lower level)-- full group, about 80 students). In most cases, lecture topics will be somewhat parallel with topics and work occurring in the lab (but not always). The intent is to provide historical, cultural, and critical context for the technical subjects taught in the lab. There will not always be a perfect connection between the lecture/lab.

2. **Lab** (locations vary, sections of about 12 students—see above). This year the lab will focus on programming with Javascript, Physical Computing with Arduino, and a brief introduction to programming toolkits using openFrameworks and Unity. We will spend about three weeks on each topic. There will be a final project due at mid-semester after the JavaScript and Arduino modules, and one due at end-of-semester after the openFrameworks and Unity modules. Via workshopse will also be introducing you to one or more micro computer platforms for use in your work (Raspberry Pi).

Assignments

There are two types of assignments for this course: readings and writings for the lecture (see schedule), and two project deliverables for the CC Lab course (one at mid-semester and one at end-of-semester). It is considered desirable to combine projects undertaken in CC Lab with your Major Studio projects. In addition to Lab projects, you will be expected to continue to improve technically, via a variety of weekly homework assignments throughout the semester. You should spend appropriate time designing, developing, and executing each homework assignment and/or project. The course is divided loosely into four parts, with 2 or 3 homework assignments within each part. The following description provides general details of each part, and the learning outcomes that the related project should demonstrate. Specific details of each course section will be provided in class.

Part One: Javascript:

a) “Vanilla Javascript”
b) “JQuery”
c) “Accessing APIs”

Part Two: Arduino:

a) “Basic electronics, overview of Arduino”
b) “Serial connections, sensors and control”
c) “Programming and networking”

Part Three: openFrameworks:

a) “Coding with C++, working with IDEs”

b) "Basic oF: examples, setting up projects, project structure"
c) "Writing code: classes"

Part Four: Unity:
a) "Working within the Unity environment"
b) "Basic 3D examples"
c) "Moving towards immersion (VR)"

Required deliverables for CC Lecture/Lab:
1. Two papers for the lecture
    a. *"My Philosophy of Technology*", due September 30th
    b. *"Why Technology is Bad"*, due Thanksgiving day
2. Weekly homework assignments within the CC Lab (may vary between sections).
3. Two final lab projects ({Javascript—Arduino}, {openFrameworks—Unity}).
4. Participation during the fall semester in a large-scale design jam (TBA)
5. One example of applying CC tech to a Major Studio project
6. Attendance and class participation in labs and lecture.

Optional deliverable for CC Lecture/Lab: final project (extra credit)

Assessable Tasks and Learning Outcomes

By the successful completion of this course, students will be able to:

1. Demonstrate an understanding of the iterative making process as relates to code or physical computing, using incremental methods such as prototyping and testing to build toward more advanced work
2. Demonstrate an understanding of the basic technologies presented in the CC Lab (web scripting, electronics and physical computing, compiled programming), including which projects might be appropriate to apply specific technologies too
3. Demonstrate effective application of course technologies presented in CC Lab to projects within the MFADT Major Studio environment
4. Understand why the technologies presented are relevant to the current (and future) worlds of art and design, as well as our broader society
5. Understand and execute "writing" of code, as compared to cut-and-paste borrowing or "reading" of code.
6. Be able to archive and document technical work in a demonstrative and reflective manner for presentation and referencing
7. Demonstrate an ability to recognize the importance of innovation, creative thinking, risk-taking, and experimentation, via written assignments in CC Lecture

CC Lecture/Lab topics

(Order, dates, and actual topics may change—please check the course syllabus [**my.newschool.edu**] for updates-- Sven will address the class for approximately 75 minutes each week. Any schedule, topic, assignment due dates, or other changes will be announced in lecture.)

Week of	**Lecture**	Labs
Aug 29	Course overview Lecture/Lab topics Internet and Javascript history	Vanilla Javascript

Sept 5th	*Iain M Banks* *Oliver Sachs*	Libraries/JQuery
Sept 12th	Data and information, databases Edward Snowden, Wikileaks, Anonymous	Accessing APIs with JS
Sept 19th	Web servers Intro to hardware platforms (Arduino, Raspberry Pi, Galileo) The DIY/Maker movement. *Jeremy Rifkin*	Intro to Arduino and overview of the board Basic electronics Soldering Components
Sept 26th	Raspberry Pi *"My Philosophy of Technology" paper due*	Serial connections Inputs and outputs, sensors and motors Programming the Arduino
Oct 3rd	Computer architecture Operating systems Programming Languages *Ray Kurzweil*	Arduino Outputs **+ OSC**
Oct 10th	Networks How they work Protocols Big art projects Community *Gabriella Coleman*	First project workshop (either JavaScript, Arduino, or both) IDEs (XCode, Code::works) Downloading and installing oF
Oct 17th	Open Source Linux, Apache, openFrameworks The state of new media: applications of creative coding *Steven Johnson*	Intro to C++ **Taught by Luobin** openFrameworks: Running examples Project management/structure
Oct 24rd	Creative Coding Programming Languages Algorithms and algorithm design *Bill Joy*	First project presentation OF Basics Continued
Oct 31st	Wearable tech Examples Available devices	openFrameworks: Add-ins Input/output Classes
Nov 7th	Combined with Lab: Intro to C++ and openFrameworks. Cinder *Malcom Gladwell*	Unity: installation and overview of the environment
Nov 14th	AI and machine intelligence Minsky Kurzweil	Simple 3D in Unity

	Art and AI *Howard Gardner, Marvin Minsky*	
Nov 21st	**Lecture: No Class (Thanksgiving)** *"Why Technology is Bad" paper due*	**Labs: No Class (Thanksgiving)**
Nov 28th	Building complicated things Project process Software engineering Usability Scale and scaling *China Mieville*	Porting Unity into VR
Dec 5th	Augmented reality Virtual and imagined realities Fantasy and Sci-fi	Final project workshop (either openFrameworks or Unity)
Dec 12th	Presentation of outstanding Lab projects	Final project presentations

References/Resources/Readings

Important: you should always back up your work to disk (or to thumb drive or to SDCard). Do not count on Internet access, and you should always carry an extra digital copy of assignments when you need to show them in class or turn them in. I will always have a hard disk available for you to upload assignments to—email may or may not work to hand things in.

Required Readings for CC Lecture

Sven will periodically distribute short readings or essays for the CC Lecture, via my.newschool.edu, Canvas, or email (TBD). Books that we will likely refer to are listed below (I provide Amazon links). Note: you are not required to purchase these books, but by all means do if you wish (they are great to have). Almost all are available used, and also in ebook/mobi (Kindle) format:

- **Gibson, William**: The Peripheral, http://www.amazon.com/dp/0399158448
- **Sacks, Oliver:** An Anthropologist on Mars, http://www.amazon.com/dp/0679756973
- **Csikszentmihalyi, Mihaly**: Flow: The Psychology of Optimal Experience, http://www.amazon.com/dp/0061339202
- **Coleman, Gabriella**: Hacker, Hoaxer, Whistleblower, Spy: The Many Faces of Anonymous, http://www.amazon.com/dp/1781685835
- **Rifkin, Jeremy**: The 3rd Industrial Revolution, http://www.amazon.com/dp/0230341977
- **Kurzweil, Ray**: The Age of Spiritual Machines, http://www.amazon.com/dp/0140282025
- **Chandra, Vikram:** Geek Sublime: The Beauty of Code, the Code of Beauty, http://www.amazon.com/dp/1555976859
- **Gardner, Howard**: Frames of Mind: The Theory of Multiple Intelligences, http://www.amazon.com/dp/0465024335
- **Johnson, Steven**: How We Got to Now: Six Innovations That Made the Modern World, http://www.amazon.com/dp/1594632960
- **Mieville, China**: Perdido Street Station, http://www.amazon.com/dp/0345443020

Required Readings/Resources for CCLab

All required readings for lab (software tutorials, etc.) will be posted to the Lab **GitHub** site. For the Arduino section (4th week), students are required to purchase the following kit from AdaFruit:
Adafruit ARDX - v1.3 Experimentation Kit for Arduino,
https://www.adafruit.com/product/170
If you are enrolled in a Physical Computing elective, you will likely be purchasing the same kits, so you are set (you do not need to buy two).

Useful URLs

- http://www.codecademy.com/en/tracks/javascript
- http://www.w3schools.com/js/
- http://learn.jquery.com/
- http://arduino.cc
- http://openframeworks.cc/
- http://www.raspberrypi.org/
- http://www.intel.com/content/www/us/en/do-it-yourself/galileo-maker-quark-board.html?wapkw=galileo

Software/Hardware (used in labs)

--A text editor (of your choice)
--Javascript (open-source: available at no cost)
--Arduino Uno board and affiliated components (we will distribute required kit info within the first couple weeks of class)
--XCode IDE (Mac), ***Code::blocks, or Visual Studio*** IDEs (open-source or available at no cost)—which one we used will be announced in class
--Raspberry Pi boards: don't go out and purchase one yet—we will talk more about this in lecture

University Resources

The university provides many resources to help students achieve academic and artistic excellence. These resources include:

- The University (and associated) Libraries: http://library.newschool.edu
- The University Learning Center: http://www.newschool.edu/learning-center
- University Disabilities Service: www.newschool.edu/student-disability-services/

In keeping with the university's policy of providing equal access for students with disabilities, any student with a disability who needs academic accommodations is welcome to meet with me privately. All conversations will be kept confidential. Students requesting any accommodations will also need to contact Student Disability Service (SDS). SDS will conduct an intake and, if appropriate, the Director will provide an academic accommodation notification letter for you to bring to me. At that point, I will review the letter with you and discuss these accommodations in relation to this course.

Lab access, printing, fabrication, and equipment checkout for students

Visit http://resources.parsons.edu/ for information. There is a great deal of equipment available to you, and many different labs/printers. The main thing is not to wait until the last minute to figure it all out.

Other resources

You should also be aware of the following resources. We will discuss in-class those we will use or depend on.

Lynda.com guide on The New School Library page - The New School Libraries have purchased a site wide license that is available to all faculty and students at the New School. Lynda is an online

learning platform with video tutorials in a number of disciplines: 3D, video, business, photography, web design, graphic design, and more. There are many other digital resources available at TNS Libraries—you should check them out.

Adobe is one of the best resources for Creative Cloud tutorials (Premiere, InDesign, Photoshop, etc). Many of the Adobe tutorial videos are also on Lynda.com

Creative Commons Search. Copyright accessible materials: searching on this site assures you that the material you are using in a project has a Creative Commons Copyright agreement attached to it.

Youtube and Vimeo – Very handy for uploading and presenting code sketches, especially oF stuff.

Google Drive – please familiarize yourself with this as you may need to use it.

Grading and Evaluation

Students' ability to meet the course's learning outcomes will be evaluated based on the following criteria:

- evidence of the ability to solve problems, both creative and technical;
- evidence of the understanding of the project assignments and course material;
- the correct use of materials and formats specified;
- quality of work as evidenced in in-class exercises, final projects, sketchbook exploration and the learning portfolio;
- participation in class and online;
- improvement in technical, creative, and problem solving abilities;
- attendance in class and the timely completion of projects.

Final Grade Calculation for CC Lecture/Lab

20% Attendance and participation (students who miss more than two lectures and two labs, or any combination of four absences, should consider themselves in trouble)
40% Homework
20% Two CC Lab projects
20% Papers for CC Lecture
100% TOTAL
Note: you will be graded by your CC Lab faculty, with input from Sven

Grading Standards

A Work of exceptional quality
A- Work of high quality
B+ Very good work
B Good work; satisfies course requirements
Satisfactory completion of a course is considered to be a grade of B or higher.
B- Below-average work
C+ Less than adequate work
C Well below average work
C- Poor work; lowest possible passing grade
F Failure
GM Grade missing for an individual

Grades of D are not used in graduate level courses.

Grade of W
The grade of W may be issued by the Office of the Registrar to a student who officially withdraws from a course within the applicable deadline. There is no academic penalty, but the grade will appear on the student transcript. A grade of W may also be issued by an instructor to a graduate student (except at Parsons and Mannes) who has not completed course requirements nor arranged for an Incomplete.

Grade of Z
The grade of Z is issued by an instructor to a student who has not attended or not completed all required work in a course but did not officially withdraw before the withdrawal deadline. It differs from an "F," which would indicate that the student technically completed requirements but that the level of work did not qualify for a passing grade.

Grades of Incomplete
The grade of I, or temporary incomplete, may be granted to a student under unusual and extenuating circumstances, such as when the student's academic life is interrupted by a medical or personal emergency. This mark is not given automatically but only upon the student's request and at the discretion of the instructor. A Request for Incomplete form must be completed and signed by student and instructor. The time allowed for completion of the work and removal of the "I" mark will be set by the instructor with the following limitations:

> **Graduate students:** Work must be completed no later than one year following the end of the class. Grades of "I" not revised in the prescribed time will be recorded as a final grade of "WF" (for Parsons and Mannes graduate students) or "N" (for all other graduate students) by the Office of the Registrar. The grade of "N" does not affect the GPA but does indicate a permanent incomplete.

Divisional, Program and Class Policies

● Responsibility
Students are responsible for all assignments, even if they are absent. Late assignments, failure to complete the assignments for class discussion and/or critique, and lack of preparedness for in-class discussions, presentations and/or critiques will jeopardize your successful completion of this course.

● Participation
Class participation is an essential part of class and includes: keeping up with reading, assignments, projects, contributing meaningfully to class discussions, active participation in group work, and coming to class regularly and on time.

● Attendance
Faculty members may fail any student who is absent for a significant portion of class time. A significant portion of class time is defined as three absences for classes that meet once per week and four absences for classes that meet two or more times per week. During intensive summer sessions a significant portion of class time is defined as two absences. Lateness or early departure from class may also translate into one full absence.

● Blackboard or Canvas
Use of Blackboard may be an important resource for this class. Students should check it for announcements before coming to class each week.

● Delays
In rare instances, faculty may be delayed arriving to class. If they have not arrived by the time class is scheduled to start, you must wait a minimum of thirty minutes for their arrival. In the event that they will miss class entirely, a sign will be posted at the classroom indicating your assignment for the next class meeting.

● Electronic Devices
Use of electronic devices (phones, tablets, laptops) is permitted when the device is being used in relation to the course's work. All other uses are prohibited in the classroom and devices should be turned off before class starts.

● Academic Honesty and Integrity
Compromising your academic integrity may lead to serious consequences, including (but not limited to) one or more of the following: failure of the assignment, failure of the course, academic warning, disciplinary probation, suspension from the university, or dismissal from the university.

Students are responsible for understanding the University's policy on academic honesty and integrity and must make use of proper citations of sources for writing papers, creating, presenting, and performing their work, taking examinations, and doing research. It is the responsibility of students to learn the procedures specific to their discipline for correctly and appropriately differentiating their own work from that of others. The full text of the policy, including adjudication procedures, is found at
http://www.newschool.edu/policies/# Resources regarding what plagiarism is and how to avoid it can be found on the Learning Center's website: http://www.newschool.edu/university-learning-center/student-resources/

The New School views "academic honesty and integrity" as the duty of every member of an academic community to claim authorship for his or her own work and only for that work, and to recognize the contributions of others accurately and completely. This obligation is fundamental to the integrity of intellectual debate, and creative and academic pursuits. Academic honesty and integrity includes accurate use of quotations, as well as appropriate and explicit citation of sources in instances of paraphrasing and describing ideas, or reporting on research findings or any aspect of the work of others (including that of faculty members and other students). Academic dishonesty results from infractions of this "accurate use". The standards of academic honesty and integrity, and citation of sources, apply to all forms of academic work, including submissions of drafts of final papers or projects. All members of the University community are expected to conduct themselves in accord with the standards of academic honesty and integrity. Please see the complete policy in the Parsons Catalog.

● Intellectual Property Rights: see http://www.newschool.edu/policies/#