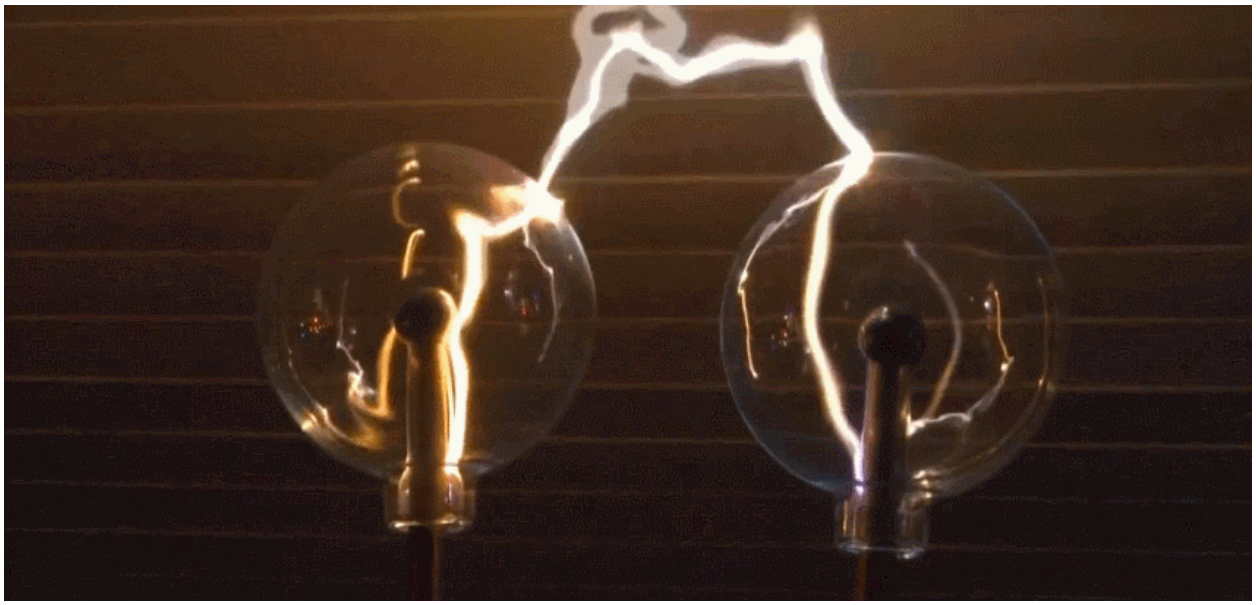
CAR211: Introduction to Electronics

CAR 211 - M001 (18951)
Monday | 2:15 pm - 6:15 pm | 019 Schaffer Hall | Syracuse University
Instructor: Mohini Dutta | mfdutta@syr.edu | Office Hours: TUESDAY 3pm-4pm [Room 020 Schaffer]
TA: Jarrod Hagadorn | jhagador@oswego.edu



Course Description

This class we will be interacting with the world by constructing and understanding physical interfaces within artistic practice. Through a combination of exercises, readings, videos, discussions, examples, and presentations, we will be building a strong base comprehension of the context and issues related to the field. The emphasis in this course is not on technical mastery but on the relationship between interaction and interface for creative cultural practice.

Course Philosophy

Electronics are interfaces that expand and enhance our experience of the world. They allow us to engage with the world and adapt our environment towards specific needs and desires. In this class, we will be covering interaction principles as they relate to interfaces for

creative expression.

You will be going out into the world to observe how people interact with objects, spaces and ideas, and return to class to build tech-augmented interventions towards specific goals. Each project will challenge your assumptions about the world around you, and encourage you to develop artistic and cultural objects in response to this. Expect readings and discussions on cultural issues surrounding electronic objects and environments accompany the technical aspects of this class. Note that this is not a hobby-electronics class, and while a more advanced understanding of electronics will be helpful in building the interfaces, students will be challenged on other aspects in their projects.

In this class we will be looking at electronic environments through the lens of play, social critique, and architectural theory. Students will be creating, deconstructing, and analyzing environments, both real and virtual, building a broad, socially relevant designer's toolkit.

Course Outline

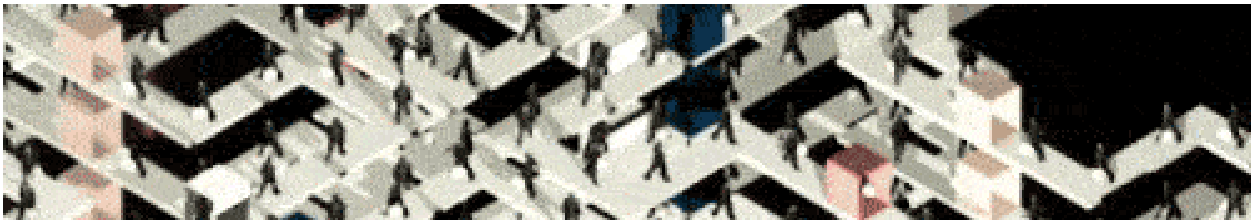
NOTE:

- ★ *Some of these assignments might get switched.*
- ★ *Readings and Assignments will be on another document updated weekly.*
- ★ *It is the **student's responsibility** to check documents and read emails with assignment and readings.*
- ★ *There will be presentations and deliverables <u>every</u> week, in addition to required and suggested readings.*
- ★ *Students are encouraged to bring in additional related readings/media to class.*
- ★ *Students are encouraged to respectfully challenge the philosophies we will be discussing in this class.*
- ★ *Electronics do not exist outside of society, culture or humans. They are dynamic medius, and for them to remain so, artists and designers need to embrace change, dynamism, a healthy relationship to socially relevant topic matter, and an ability to respond to it.*

Week No	Theme	Date	In Class Schedule	Assignment for next week
WEEK 1	Observe	Aug 28	- Introduction, Syllabus Discussed - Researching Interfaces: Introduction - Excerpt Video from: The Social Life of Small Urban Spaces by William H. Whyte - In-class assignment: Terrain Mapping of the Campus - Homework: Field Assignment-Observe the Terrain	**Assignment**: **Observation 101** - Observe a zone on campus for from 6am-9pm. - Document how people use it, and what potential interventions can you do there. - Documentation must be on your blog. - Readings & Video TBD

				Due: Sept. 4 (Via Email)
WEEK 2	No Class	Sept 4	LABOR DAY!	Readings Response & Documentation Blog post due (via email) **Assignment for Sept. 11: Presentation of Documentation**
WEEK 3	Intervene	Sept 11	- 5 min. Pecha kucha style presentation from Blog of the Terrain Mapping assignment. - In-Class: Threshold Mapping within your zones - Pitch Interventions within your zone - Prototyping in low-tech - Paper Prototyping interactions - History of electronics lecture.	**Assignment: Intervene 101** - Make a low-tech intervention prototype - Iterate on this at-least once. - Document Making Process AND folks using it. - Present findings in class. **Assignment: Research** - Presentation on electronic / interaction artist or designer whose work you admire. Cannot be anyone we covered in class. **Due: Sept. 18**
WEEK 4	Project 1 Spatial Interventions	Sept 18	- Spatial Intervention Assignment discussion.	**Assignment: Spatial Intervention #1** - Make an electronic intervention using the Makey Makey in your zone. - Document **Due: Sept. 25**
WEEK 5		Sept 25	Circuits & electricity Basics - Introduction to Makey Makey platform History of Space and spatial interventions lecture. - Come Out and Play, and using physical space as resistance and subversion. - Exercises using Makey Makey and Conductive Ink. - Telling stories through Tech, a prime	**Assignment: Spatial Intervention #2** - New intervention using the Makey Makey platform in your zone. - Document everything. **Due: Oct. 2**
WEEK 6		Oct. 2	- Workshop: The Body as a Controller with Mattie Brice.	**Assignment: Spatial Intervention #2** - New intervention using the Makey Makey platform in your zone. - Document everything.

				Due: Oct. 9
WEEK 7		Oct. 9	- One on One with me. - Presentation preparation, and walk-around run through for Midterms - Troubleshooting and bug fixing.	**Assignment: Spatial Intervention #2** - Make a final presentation for the Midterm Project. - Prepare Site-specific project for presentation by guest critics. **Due: Oct. 16**
WEEK 8	MID TERMS	Oct. 16	MIDTERM PRESENTATIONS! PART1: In-class 10 minute presentations PART2: Science Fair Style walk around the campus to see site-specific student work in their zones	Readings and response **Due: Oct. 23**
WEEK 9	Project 2 Electric Play	Oct. 23	- Electric Play Assignment Starts - Analog Game Design 101 - Prototyping Analog for Digital products	**Assignment: Electronic Play** Make a Game using the pieces assigned. Test with players, Iterate once. Document your design and iteration process to present in class **Due: Oct. 30**
WEEK 10		Oct. 30	- Presentations of work & Playtest - Introduction to Making simple controllers for playful interactions	**Assignment: Electronic Play** Make a digital version of your game. **Due: Nov. 6**
WEEK 11		Nov. 6	- Present projects in class - Playtest each other's projects - Introduction to simple game design platforms like TWINE and GameSalad	**Assignment: Electronic Play** Respond to readings Prepare to pitch a concept for your Final project in class. **Due: Nov. 13**
WEEK 12	Final Project	Nov. 13	Final Project Kicks Off Playful Storytelling with interactive, electronics and games! - Build a controller and a game to control - Pitch an initial project concept. - Build elements	Begin building parts of your project. Document everything. Send me the blog post/site where your documentation is.
WEEK 13	ᕕ(ᐛ)ᕗ	Nov. 20	Thanksgiving Break	Continue to build your project.
WEEK 14		Nov. 27	In-class run through of final projects, troubleshooting & one on ones.	Continue to build your project.
WEEK 15		Dec. 04	FINAL PRESENTATIONS!	Day of Reckoning



Learning Outcomes

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

1. Contextualize the practice of making electronic objects in the real-world
2. Respond to philosophies and ideologies with a creative art practice using the digital medium
3. Professionally present their work orally, in writing, and virtually
4. Orient a personal body of work in the digital medium
5. Gain a greater understanding of power dynamics in the creation of digital and physical spaces
6. Gain an understanding of your process through documentation

Projects

How will Projects work?

Individual Dev Blogs and reports:

- Students can use any blogging platform they prefer
    - I suggest Tumblr for ease of use ʕ| ˉ́ɪˉ́ |ʔ
- The blogs must document the process of building projects using images, text and video
- We will discuss project details in class every week. These details will be here.

Notes on Weekly presentations and Responses:

- **Response:** A blog post on the readings assigned that week.
- **Presentation:** You may present off your blog, as these are short update presentations. If you are not comfortable, use slides :)
- Presentations follow a Pecha Kucha Style,
- Please post presentations on your individual dev blogs **the same day**

Midterm and Final presentations:

- These **will have guest critics**, so need to be polished enough so new folks who don't know anything about you can understand the project. Use clear concise language, and use your documentation images.

Note: For every project, students are expected to have

1. Blog post (of documentation or Reading response each week of the project)
2. Presentation
3. Link to Video or other documentation of project.

for every Assignment on their blog.

So by the end of all the mini-projects, you should have 5 sets of the above posts (minimum) about your mini projects. Failure to do so will result in loosing grade points in the relevant sections.

Students are encouraged to document in-process work (in addition to above required posts) in whatever other way they see fit (can be images, blog posts, instagram, videos etc.)

How this works

Your documentation + responses should help you make your final presentation (for each project), which will both help you talk about your game with some coherence, confidence and insight. Electronics are ubiquitous, which means they are being used in a variety of mediums and industries. Throughout this semester we will work on strategies to best communicate your work.

Dev Blog

1. Project Posts

need to respond to the following questions:

1. What am I working on?
    a. *Describe the theme or topic you have been doing research on*
    b. *Contextualize the readings in relation to your work*
2. Why am I working on this?
    a. *Inspiration / Motivation*
    b. *Precedence projects (medium agnostic, can be games, books, films, net art, memes etc)*
3. How does my project use the project theme?
4. How will my project use interaction media to make the point I am interested in making?
5. Blockers in my path
    a. *Stuff you are finding challenging or hard to understand*

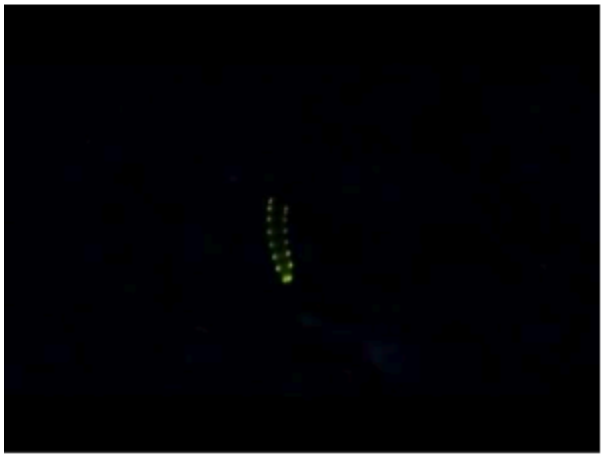
   b. *Things you need help on*
6. Next steps

2. Documentation Posts

Put up pictures, add text below or to the image explaining what is going on there.
Try to take as high quality pictures as possible to **<u>communicate your ideas</u>**.

I should be able to understand what's going on there. (^_-)≡☆

BAD



No clue what's going on here...

GOOD

I UNDERSTAND THAT YOU WANT ME TO LOOK AT LOUNGING LIZARDS! YAY!

Note: Students need to submit their blogposts by 6pm the night before the class if they want to get feedback before class.

Presentations

If Powerpoint / Keynote / Slides –

Use the Pecha Kucha style
15-20 Slides
10 Seconds per Slide

Or

If presenting off your blog

Organize your thoughts in the following order:

<u>Suggested structure:</u>

1. Always start with - Who are you? Why are you here?
2. What is my project about?
    - *Describe the theme or topic assigned to you*
        - *This week we did _____*
    - *Contextualize the readings assigned in relation to your work*
        - *Which readings were most helpful to you, and why*
3. What inspired to you to do this?
    - *Inspiration / Motivation*
        - *A personal memory, experience, object etc. that you used as personal inspiration. Can also be a film, music etc.*
    - *Precedence projects (if different from Inspiration)*
        - *This can be medium agnostic, feel free to use games, books, films, net art, memes etc.*
4. How does my project use the project theme?
5. Short Video of project (Overview of your project. This can also be a series of images)
6. Next steps
    - *Will you continue working on this? y/n*
    - *Why?*

Midterm Presentation for Spatial Interventions

Present your process and documentation.
Students will be graded on:

- How they changed the way people interact in their zone
- Changes in assumptions from week 1 to week 4
- How well do they use the readings and contextual material in their projects

Be prepared to stand by your project and talk about it as guests interact with it on-ste.
Students will be graded on:

- Ability to use the affordances of the environment they were assigned

Final Project

Use the conceptual and technical skills you have learned so far to create the story and controllers for a game.
All projects need to be pitched to and approved by the instructor.

Final Grade Calculation

Evaluation Criteria: All practical creative projects will be evaluated according to conceptual and technical coherence. Projects are expected to be physically intact, complete, and coherent at the time of presentation. A clear connection between the physical shape of the project and the concept is expected. Project should clearly be finished and not in a provisional state.

Project	**Percentage**
Observe Assignment	5%
Intervene Assignment	5%
Spatial Interventions Assignment	15%
Electric Play Assignment	15%
Final Assignment	25%
Presentations & Participation in Class	15%
Attendance	10%
Individual Dev Blog	10%

Readings, Videos & Homeplay

Media for the week

Please refer to this google doc for weekly readings and assignment reminders.

Suggested Readings

Hertzian Tales (Anthony Dunne)
Design Noir (Anthony Dunne, Fiona Raby).
Practical Electronics for Inventors (Paul Scherz) This is mainly a technical reference book. It can be accessed online through http://library.syr.edu
Thinking in Systems (Donella Meadows)
Hidden in Plain Sight (Jan Chipchase)
Additional TBD

Materials and Supplies

Students will need to have a personal development blog that they will use for documentation.

Grading Rubric for Projects

Every project will be evaluated on five aspects: Design Fundamentals, Interaction Fundamentals, Creativity, Effort, Craftsmanship, and Group Cooperation. Your grade will be an average of these six elements. When not working in groups, only the first five will be used.

Design Fundamentals

Line, Texture, Color, Shape, Form, Value, etc…

> A: The project was carefully planned, with sketches and process clearly documented. It shows an awareness of the elements and principles of design, chose color schemes carefully, used space effectively. Visually striking and well documented.
>
> B: The project applies the principles of design while using one or more elements effectively; showed an awareness of filling the space adequately. Visually striking but design process inadequately documented or vice versa.

C: The project is adequate, but shows little evidence that an overall composition was planned. Visually lacking and under-planned.

D: The project was completed and turned in, but showed little evidence of any understanding of the elements and principles of art; no evidence of planning. Ugly in a bad way.

F: The artwork was never completed.

Elements of Interaction:

A: The project has transparent affordances, agency for the interactor, and was well mapped out with interaction stories, interactor profiles, and wireframes or storyboards. Intentions of the creator are reflected in the interaction.

B: The project is engaging, but has discernibility issues, inadequate framing, or was only half planned out. Unintentionally difficult to use but largely accomplishes the creator's goals.

C: The project is difficult to interact with, experience is hampered by inadequate planning, or fails to take advantage of the natural affordances of the Digital Medium. The Interaction Design works against the creator's goals.

D: The project was turned in, but is thrown together without fully mapping out an interaction framework. Works, sorta...

F: The project demonstrates a clear misunderstanding of affordance, discernibility, no wireframes or storyboards, and lack of agency.

Creativity/Originality

A: The student explored several choices before selecting one; generating many ideas; tried unusual combinations or changes on several ideas. The Project engages with culture in a new way. I wish I thought of that.

B: The project is loosely based on someone else's idea, but creates a new understanding of the idea. Alternately, the creative decision making is logical, rather than expansive. Obvious ideas executed well.

C: The Project lacks originality. It might have been copied work, or uses staid methods of interaction or execution. Ripped off; I've seen this before.

D: The Project is essentially a modification of another work. Highly derivative or hackneyed.

F: The Project is completely derivative, stolen, or recycled.

Effort and Perseverance

A: The project was continued until it was complete as the student could make it. The student's effort goes beyond the project's requirements.

B: The project is good, but with a little more effort it would be outstanding.

C: The student finished the project, but it could have been improved with more effort. The project is an adequate interpretation of the assignment, but lacks finish.

D: The project was completed with minimum effort.

F: The project is not finished.

Craftsmanship and Skill

A: The artwork was beautiful and patiently done. Beautiful, no bugs, and performs exactly as planned.

B: The project is beautiful, but lacks interaction. Alternately, the interaction is great, but the art is placeholder or inadequate. The project has "programmer art" or "artist code".

C: The project is careless in its execution. The code has bugs, the animations are lacking, or the project doesn't adequately walk the interactor through the experience. Looks or feels unfinished.

D: The project has "programmer art" **and** "artist code".

F: Project nearly fails to run.

Syracuse University Syllabi Requirements

A [4.0; 96–100%]
Work of exceptional quality, which often goes beyond the stated goals of the course

A- [3.7; 91 –95%]
Work of very high quality

B+ [3.3; 86–90%]
Work of high quality that indicates substantially higher than average abilities

B [3.0; 81–85%]
Very good work that satisfies the goals of the course

B- [2.7; 76–80%]
Good work

C+ [2.3; 71–75%]
Above-average work

C [2.0; 66–70%]
Average work that indicates an understanding of the course material; passable
Satisfactory completion of a course is considered to be a grade of C or higher.

C- [1.7; 61–65%]
Passing work but below good academic standing

D [1.0; 46–60%]
Below-average work that indicates a student does not fully understand the assignments; Probation level though passing for credit

F [0.0; 0–45%]
Failure, no credit

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:

> Work must be completed no later than the seventh week of the following fall semester for spring or summer term incompletes and no later than the seventh week of the following spring semester for fall term incompletes. Grades of "I" not revised in the prescribed time will be recorded as a final grade of "F" by the Registrar's Office.

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 & Project Completion

  You are permitted one unexcused absence. Excuses for class absences for medical reasons will be given only if such absences are advised by a health care provider at the Health Center, based on clinical findings and prescribed treatment recommendations. Excused notes will not be given solely to confirm a visit to the Health Center. For complete details on excuse notes, visit: http://health.syr.edu/students/policies.html. If such notice is not provided, the final grade for the class will be reduced by 10 points on a 100 point scale. The same amount of points will also be deducted for repeated lateness or prolonged absences during class. This does not

have to be physical absence but can also be lack of participation due to texting, IMing, sleeping etc.

Late projects/assignments will not be accepted without a doctor's note or other acceptable third party written excuse. The Teaching Assistant has no authority to issue extensions on project deadlines. Email me if you are unable to turn in a project due to illness.

I will communicate deadlines and other course-related information mainly through blackboard email. You are responsible for keeping up with this information. Grades will be posted on Blackboard. If you don't see a grade posted for an assignment within two weeks of completion, contact me.

- Delays

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

- Electronic Devices

  The use of electronic devices (phones, tablets, laptops, cameras, etc.) 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.

- Syllabus Academic Integrity Statement

  The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see http://academicintegrity.syr.edu

  In the context of this class academic integrity means that you will not copy other people's work and you will not cheat on quizzes. You will disclose if you have had significant help with practical assignments. You can combine a project from this class and a project from another class into one project. However, you need to disclose this to us as well as to the instructor of the other class and discuss the project with us before going ahead.

  The practical assignments are art projects. The idea behind a project therefore has to be yours. You can go to Instructables, Hackaday, Adafruit, Sparkfun, and other sites for inspiration, tutorials, and to help you solve problems. But in the end, a project has to be your idea and your own creative effort has to be visible in the finished project. The creative effort should be appropriate to the project assignment (changing a disproportionally small amount of code for example will count as academic dishonesty). If I find that you have followed an Instructable (tutorial) and copied somebody else's project 1:1, including the idea behind it, I will consider that plagiarism. Just assembling a ready-made-kit ordered from Adafruit, Sparkfun, etc. and calling it

your project is counted as plagiarism as well. If you are not sure whether you might be violating the academic integrity policy, please email me questions or talk to me in person.

- Syllabus Disabilities statement

  Students who may need academic accommodations due to a disability are encouraged to discuss their needs with the instructor at the beginning of the semester. In order to obtain authorized accommodations, students should be registered with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498 and have an updated accommodation letter for the instructor. Accommodations and related support services such as exam administration are not provided retroactively and must be requested in advance. http://provost.syr.edu/provost/Units/academicprograms/DISABILITYSERVICES/index.aspx