

SYLLABUS – Spring 2019

DGMD E-12 Introduction to Creative Exploration on the Web

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Course Description

Are you a visual thinker, an aspiring designer, digital media student or artistic professional looking to build more immersive, interactive and expressive content for the web? Are you completely new to programming, and eager to experience a more visual approach? Perhaps you're someone who's struggled with the algorithms, data structures, and technical complexity of a more conventional computer science class, but still want to learn to code for the web? If so, welcome to Introduction to Creative Exploration on the Web!

This class will focus on a highly interactive, audiovisual approach to programming. Using the easy-to-understand language syntax of the P5JS JavaScript library, we'll create digital 'sketches' that provide immediate visual feedback to the web page. With each lesson, we'll build skills and tackle increasingly complex creative challenges. By semester's end, students will leave empowered with enough programming knowledge to create their own data visualizations, natural systems, games, media mashups, or artistic expressions on the web. They'll also be well prepared to continue along to more advanced programming courses.

How does DGMD E-12 differ from CSCI E-3 at HES?

[CSCI E3, Introduction to Web Programming Using JavaScript](#) provides an excellent introduction to the data structures, syntax, and programming best practices of native JavaScript, jQuery, and other libraries. CSCI E3 is highly recommended for aspiring web developers looking for a strong programmatic foundation for a future in JavaScript development.

By contrast, this class is targeted to students more interested in design, visual arts, creative programming, and digital media. Programming challenges will be paired with assignments to strengthen visual communications and design creativity.

P5.JS is a library built using JavaScript, but it has a different syntax and methodology from native JS. P5JS is optimized for animation, media manipulation, and quick visual experimentation. In general, the lessons in this class are geared for those who might rate themselves a bit "less comfortable" with conventional programming, but perhaps more engaged by challenges requiring creativity or abstract thought.

Course Prerequisites & Requirements

CSCI E-12 **OR** DGMD E-20, **OR** permission of instructor.

Having taken one or both of the classes above, you should be comfortable crafting your own **valid** HTML5 markup and CSS styling **by hand** (i.e., no WYSIWYG editors allowed). You should be comfortable using a **text editor**. I'll be using the [P5 IDE](#) and/or [Atom](#), but that's not a requirement. You're free to use whatever text editor works for you.

While you're expected to be comfortable with HTML and CSS, **no previous programming experience is necessary**. This is an introductory programming course geared for beginners.

You will need a **web server** to which you can post your projects and other assignments. You should also be comfortable with **FTP or SSH** to transfer files to/from your server. File transfer will **not** be covered in class, as it was covered at length in CSCI E12 and DGMD E20.

If you need web hosting, you can get one year for free through [SiteGround](#). This link doesn't serve as an endorsement for SiteGround - you may use whatever host you wish, as long as you can publish your work to the web and submit a URL to access your assignments.

To get free hosting through SiteGround, [you need a harvard.edu email address](#). **DO NOT WAIT TO REGISTER as you can't get one instantly anymore.**

Instructors

Alex McWhinnie, Instructor

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LinkedIn: <https://www.linkedin.com/in/alexmwhinnie/>

Teaching Assistant(s), Delia Lupu

Sections

To be held over Zoom with Delia, at Wednesday 19:00 EST

Contacting the instructors

Please email us with any personal issues that are affecting your class experience, or with any information you do not wish to share with the rest of the class. Example: personal difficulties, death in the family, severe illness, grading issues, etc.

Please do **NOT** email with questions about the week's material. It is better to ask these questions in the forum for the class, where others can benefit from the answer as well. (See "How Class Works" below.)

Class Objectives

- Learn programming fundamentals in a friendly visual environment and workflow
- Empower students of digital media, design, or visual studies – or for those less comfortable with programming – to confidently create rich, interactive experiences on the web
- Strengthen visual communications skills through the exploration of ideas in programs
- Leverage and manipulate digital assets like images, video, and audio in new and creative ways

Lecture Time

Lectures are posted online, asynchronously. New lectures will be published each week, on or before Tuesday at midnight. An optional weekly section will provide an opportunity to work through problems with your teaching assistant.

How Class works

1. This class is online, with an optional weekly section. You may do the work whenever you wish, as long as you meet the posted deadlines.

Handle this flexibility with caution. This class will combine exercises in technology, programming, and creativity. It's often difficult to conjure those skills at the last minute under the pressure of an impending deadline.

Anticipate unforeseen problems, frustrations, and creative blocks that happen to all of us. **Technical difficulties are not an acceptable excuse for a late submission.** Aim to complete assignments in advance of the deadline, and rest easy at night.

2. Harvard University is in Cambridge, MA - Eastern time, this will be the time zone by which assignment deadlines are based. If not local, then use Boston or New York as the city for calculating time and date for all assignments. Refer to <http://www.timeanddate.com/worldclock/> for your local time and date

for when assignments are due. All dates and times posted in class refer to Eastern time, and you should adjust your time and date accordingly.

3. Harvard Extension School is an international campus, with students participating from all over the world. While we will strive to make lectures as clear as possible, U.S. English sometimes presents a barrier for those who do not speak natively. Do not hesitate to ask questions if the lectures or assignments are not clear. This helps us improve, and we want you to succeed in class!
4. A new class will be posted to the Modules section of the site every Tuesday (or earlier).

Each week's module contains lecture videos, links to the accompanying code examples, notes, whiteboards, suggested readings, etc. There will also be a link posted to a recording of the weekly section. In the videos, I often offer informal suggestions for code practice and invite you to share your work in the weekly discussion board. These are not required assignments, but are for fun and feedback. Official assignments and their due dates are posted to the "Assignments" section of the site.

If you have questions, ask!

5. There will be a discussion forum posted every week where you can ask questions about the week's assignment, interact with other classmates, and answer each other's questions.
6. Delia will run a weekly optional section to discuss the week's lessons, work through coding challenges, or answer any lingering questions from the lecture.
7. Please do not email staff with questions about the assignment, what you should be doing, something you didn't understand in the reading, etc. Post these questions in the forum so we can ALL answer them. We'd rather answer your question once than individually for each student.
8. While public questions go to the forum, please email if you have any personal issues that will prevent you from completing assignments, pertain to your grade, or contain other personal information you don't wish to share with the class. If you anticipate a schedule conflict related to any assignment, please

let me know **in advance**. Please do not inform me after the fact that a life event kept you from submitting your work in a timely manner.

9. Be warned: each lecture builds on the ones preceding. If you're late turning in an assignment, catch up as fast as you can. If you don't understand something, be sure to ask in the forum. **DO NOT GET BEHIND**. Practice coding from each week's lectures and you should have no trouble keeping up.

If you have any questions or expectations for this class, please ask!

Grading

Graded assignments

There will be four projects in this course, as described below in the course outline. A detailed description of each project will be distributed at least 2 weeks before the project is due. Each of the first three projects is worth 20% of your grade. The last project, which is considered the “final” project, is worth 30%.

Graduate students will have additional work or additional requirements to complete for each assignment.

Class Participation

Class participation is worth 10% of your final grade.

A key component to making an online course worthwhile is immersing yourself in the experience. Admittedly this requires an extra effort when barriers of distance, schedule, culture and geography must be overcome. Nevertheless, whether it's in sections or on the discussion boards...take time to ask questions, contribute ideas, offer suggestions, express frustrations, share victories, or simply critique and celebrate the work of your peers.

Become an active and integral part of building the class culture. If you can't attend the sections, then try to be a regular contributor on the discussion forums. While no one specific section attendance or contribution is “required”, general participation in class dialog will be inventoried. By semester's end we should all know who you are, and recognize your name, “voice” and work in our collective discussions.

Homework assignments & informal challenges

Each week, the videos will offer quick exercises or informal fun challenges to complete on your own. These exercises might be saved on your own server, Codepen, or similar,

where they can easily be shared or forked with your peers. Submission of these exercises isn't required, and won't be graded. That said, please share your creations on the forum for the rest of us to enjoy! It is strongly recommended you complete any optional exercises. They will help you build skills each week, and make the bigger projects much easier to complete.

Grading procedures

Projects are due on the dates specified in the course outline by 11:59 PM Eastern time that day. **It is expected that you will turn the assignment in on time.**

Grades will be posted online in Canvas, our online learning environment.

Late assignments

You may turn in assignments 1, 2 **OR** 3 late. **If more than one assignment is submitted late, it will receive a zero.**

Assignment 4 cannot be late, as it is the end of the term and would impact grade submission.

"Late" means **three days late**. All assignments are due on Fridays, so the "late date" would be the immediately following Monday at 11:59 PM. **Any assignments submitted more than three days late will automatically receive a zero.**

When your assignment is late, we note it in Canvas. There is no penalty on your grade for one late assignment.

However, you may only turn in one assignment late. Again, if more than one assignment is late, the second one will receive a zero.

Regrading of assignments

If you are dissatisfied with a grade you receive on assignments 1, 2, or 3, you may resubmit the assignment for review. This resubmission must occur **within 3 days** of receiving your grade.

You may have **one regraded assignment** per term.

Regraded assignments are recorded in Canvas. There is no penalty for your regrade. However, you may only have one per term.

Regrading is not available for the fourth (final) project due to grade submission timing.

Turning in assignments

Your assignment will generally be in the form of a web page including an HTML file, a P5JS 'sketch.js' file included in that HTML file, or a combination of HTML and JS files. You will post these in your web hosting environment. You will then submit the URL for the homepage of your assignment to Canvas. Detailed instructions will be provided for your first assignment.

Academic Honesty

Plagiarism is a serious offense and will be dealt with quickly and unemotionally. Please don't do it.

You are responsible for understanding [Harvard Extension School policies on academic integrity](#) and how to use sources responsibly. Not knowing the rules, misunderstanding the rules, running out of time, submitting "the wrong draft", or being overwhelmed with multiple demands are not acceptable excuses. There are no excuses for failure to uphold academic integrity.

To support your learning about academic citation rules, please visit the [Harvard Extension School Tips to Avoid Plagiarism](#), where you'll find links to the Harvard Guide to Using Sources and two, free, online 15-minute tutorials to test your knowledge of academic citation policy. The tutorials are anonymous open-learning tools.

If any evidence of plagiarism is suspected, the student's work will be referred to the Ad Board for further investigation. If found guilty of plagiarism, the results are likely removal from the class, and/or suspension or dismissal from any degree or certificate program.

You may – and should! – be influenced and inspired by the ideas and code shown in class, from the work of your peers, and elsewhere throughout the web. That's part of the learning process. Even though those influences may shape your own style, **the work that you submit should ultimately remain your own creation and ideas**. It's fine to repurpose a snippet of code or a logic pattern in the creation of your own larger work. If so, you must make sure you cite and credit any and all original sources via inline code comments and/or submission comments in Canvas.

If ever in doubt, contact the instructor or a TA via email **in advance of submission** and we can discuss. But this rule of thumb should govern your conscience – if it feels wrong, it probably *is* wrong.

Accessibility

The Extension School is committed to providing an accessible academic community. The Disability Services Office offers a variety of accommodations and services to students with documented disabilities. Please visit the [Accessibility and Student Services website](#) for more information.

Textbooks & Materials

While there is no required textbook for the class, I highly suggest acquiring a paper copy of [Make: Getting Started with P5.JS](#), it's written by the team that wrote the Processing and P5JS languages. We'll loosely follow the book's outline in our own course.

An [online version of the book](#) is available to HES students for free via the online Safari Books Library. An HUID is required to access any material on Safari.

One can complete this course simply by watching the lecture videos and looking up your own resources online. However, the P5JS book will help to fill in gaps and supplement the lecture videos.

I will likely recommend or mention many other books, tools, and resources as we continue through the semester. None of these are required, but you may find them helpful for reference, inspiration, or additional help.

Course Outline (subject to change)

Week / Date	Agenda
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Week 1	Hello, let's get sketching!
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Week of Jan 28, 2019	What is code? What's P5JS, and how does it relate to JavaScript? Introduction to the P5JS JavaScript library, and its use in interactive programming on the web. Learn to draw primitive shapes, and set properties of color and transparency. Get comfy with the syntax (language conventions) of JS and P5.
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Feb 1, 2019	Assignment 0 Due
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Week 2	Variables and Objects
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Week of Feb 4, 2019	Store, modify, and reuse information using variables. Create simple creatures that walk across our canvas, all while learning about the basics of JavaScript objects and dot notation.
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Week 3	Conditionals, Boolean Expressions, Loops
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Week of Feb 11, 2019	Let your programmatic sketches make their own drawing decisions. Learn about boolean variables, boolean expressions, and how we can control these creatively. Get loopy while making patterns using loops and nested loops. Loops will empower us to do so much neat stuff in the weeks ahead.
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Week 4	Conditionals, Boolean Expressions, Loops, cont'd
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Week of Feb 18, 2019	Review the important subjects from last week. I'll provide more use cases and examples, and take time to answer questions from the discussion forum in advance of Assignment I due date.
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Feb 22, 2019 Assignment 1 Due

Week 5 Functions and Objects

Week of Feb 25, 2019 We've been using functions all along. Now let's write our own. Modularize and reuse our code with customized objects and functions.

Week 6 Functions, Objects (Continued)

Week of Mar 4, 2019 Learn how Constructor functions work as factories to build new objects whenever we need them. Work with objects and images

Week 7 Arrays

Week of Mar 11, 2019 Learn how arrays (lists) can help manage groups of objects. Looping through arrays of objects to instantiate a world of independent creatures, each with their own behavior.

Week of Mar 18, 2019 Spring break, no lecture

Week 8 DOM Manipulation

Week of Mar 25, 2019 Move outside the canvas, and manipulate the entire HTML page via the DOM (document object model).

Mar 29, 2019 Assignment 2 Due

Week 9 DOM Manipulation, continued

Week of
April 1,
2019

April 5, Final Project Proposal due
2019

Week 10 Data / APIs

Week of Acquire information from the web and visualize it in any way you can
Apr 8, imagine. (If time allows, demo a P5/Particle Photon hardware interface)
2019

Apr 12, Assignment 3 Due
2019

Week 11 Image, Video, Cameras

Week of Harness images and video from the web, or from a webcam. Use image
Apr 15, data as the pixel source for creative experimentation.
2019

Week 12 Image, Video, Cameras (continued)

Week of Paint using webcam data, glitch video, and otherwise destroy pixels in fun
Apr 22, ways.
2019

Week 13 Sound

Week of Load and manipulate sound files. Gather ambient sound from the mic and
Apr 29, use it to modify sketch visuals. Process sound effects. Synthesize our own
2019 sounds using code.

Week 14 What's Next?

Week of May 6, 2019 Armed with your new programming skills, you're ready to tackle more sophisticated projects in the future! We'll review amazing and inspirational work happening in the P5JS / Processing space. We'll consider generative art, data visualization, natural behavior modeling, 3D printing, WebGL, microcontrollers, and related cool stuff you can do with P5 and Processing.

May 13, 2019 Assignment 4 (Final Project) Due

Course Summary

Date	Details	
Sun Jan 28, 2019	Assignment 0 - Hello, you!	due by 11:59pm
Fri Feb 1, 2019	Assignment 1 - Bauhaus	due by 11:59pm
Fri Feb 22, 2019	Assignment 2 - It's About Time	due by 11:59pm
Fri Mar 29, 2019	Final Project Proposal	due by 11:59pm
Fri Apr 5, 2019	Assignment 3 - DOM, DOM, DOM	due by 11:59pm
Fri May 13, 2019	Final Project Submissions	due by 11:59pm
	Class Participation Score	
	One Late Pass for Assignments 1-3	
	One Regrade Pass for Assignments 1-3	