

DOMINICAN UNIVERSITY *of CALIFORNIA*

Getting Started With Computer Coding

EDUO 9137 1 Graduate-Level Credit/Unit

Instructor – Joe Herz

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Syllabus

Hello and Welcome! This course will guide you through resources and activities that will help you understand the world of Computer Coding at a beginner's level. Coding is similar to learning a new language. The coder must learn a language of code. Coding can be challenging. Coding is a process of inputting instructions into a computing device that results in an action, or output. Success brings the coder a feeling of satisfaction and pride. If the result is flawed or needs revision, troubleshooting by trial and error engages critical thinking skills. Coding offers students a challenging, exciting, fulfilling and productive look into what makes digital sound and motion take place. We know not all students are not going to become computer programmers. So why should every child learn about coding? Most every profession today and in the future relies at some level on coding.

Course Objectives:

1. In this course you will have opportunity to:
 - a. Learn that Coding is a set of instructions that computers use to complete a task.
 - b. Understand the educational and career concepts that support students learning to code.
 - c. Practice some simple coding using free online resources.
 - d. Research and report on coding programs and resources available for varied skill levels and goals.
 - e. Evaluate your new knowledge of coding and plans to implement a coding program.

Submitting Assignments:

Assignment Formatting:

All written assignments must be in standard 12 point font, single spaced with no more than 1" margins. Cite any resources not listed in the course.

How to Submit Coursework:

Each completed assignment in this course is submitted to the instructor for review. Follow directions at the end of each assignment on how to prepare and in which Moodle Dropbox to place completed work. Name each file submitted with your last name and assignment number (i.e. BrownAssignment3. Make sure you place your full name, course number and assignment number at the top of each document page. You will receive feedback from your instructor within 2-5 days indicating successful completion of the assignment or the need for revision. Assignment grades will be averaged for the final course grade. Refer to the **Course Rubric** at the end of this document.

Getting Started:

Introduction - What is Coding and What Does it Look Like?

Coding is a language. It is a set of instructions. Code tells a device what to do. Most every device that operates by a form of power uses code. Coding, professionally known as Computer Programming, is nothing brand new. The most basic form of coding began in [1842](#)! This century's explosion of devices that run on code has brought to the forefront a movement to introduce coding to students from 5 to adult. Why is this and what does coding look like? Time to find out...

Let's start here: "[What is coding?](#)" An Hour of Code: An Introduction to Computer Programming.

Next, watch and listen to the video's found at [The Hour of Code 2015 - WORLDWIDE](#) (you might get tempted to look at other coding videos found on the side menu – that's OK! Just be sure to come back here when done)

Now that you have a better background about coding, [Fun Ways Kids Can Learn to Code Infographic](#) wraps up the intro up by defining, promoting, encouraging and listing basic coding tools.

On the side:

1. You've all heard of Khan Academy. At some point in this course, perhaps after you have spent a little more time learning and trying some simple coding, take a look at what Khan Academy has put together for teachers and student at [Hour of Code](#).
2. Visit – (Don't skip this) [Google CS First](#) As you progress through the course you'll see how CS First connects to students who engage in coding and the value's it brings to their lives.

Additional Resources You Need to Watch for this Introduction

- [Coding for Kids 1: What is a Computer Program?](#)
- [Coding for Kids 2: How Computer Programs Work](#)
- ["Is Computer Programming hard to learn?"](#)
- [Why Your Child and Mine Should Learn to Code](#)

OK – you have learned what coding is about, why students should experience coding and you discovered some cool coding tools for students. Next stop is one organization, CODE.org which is at the front of the recent coding movement. Their motto:

Every student in every school should have the opportunity to learn computer science

Take time to visit. Link to : [CODE](#) Be SURE to scroll down and link to Hour of Code. **Try the Star Wars: Building a Galaxy with Code or Minecraft Hour of Code.** Fantastic fun way to start novice coders 6 and up.

Assignments

Assignment 1: Understanding the Value of Learning Code

Having read and viewed the Introduction content, and looking through the [Addendum](#) section at the end of the syllabus, place your responses to the following on a word processing document. Clearly label each response with the correlating main assignment number (1A, 1B, 1C and 1D)

- 1A: Your definition of coding
- 1B: The importance that students learn about coding
 - a. Why the national push
 - b. Quotes from videos (at least four). Cite the video resource.
 - c. Rationale
 - d. Practicality of it taking place in a school setting (did you visit Google's [CS First](#) site?)
- 1C: List several coding programs from simple to complex
 - a. Examples of codes developed for specific purposes were found on one of the video's. List those codes and their purpose.
 - b. What, in your opinion, did Khan Academy's site have to offer coders that makes it unique for learning about code. Look at it as a teacher and as a student.
 - c. Give a detailed overview of the CODE site.
- 1D: Wrap Up. Summarize what you now know and think about coding.

Place your completed document in the [Assignment 1 Dropbox](#). Make sure to include your last name and assignment number in the document name.

Assignment 2: Coding with PencilCode

Objective: To create a PencilCode project

There is 1 assignment of 2 items to complete and submit.

- 1) A picture of a PencilCode project you created
- 2) The actual coding commands that made the project work.

Time for you to code. It sounds hard. It is a LITTLE hard. Go slow. Check your work often. Think. Revise. Enjoy.

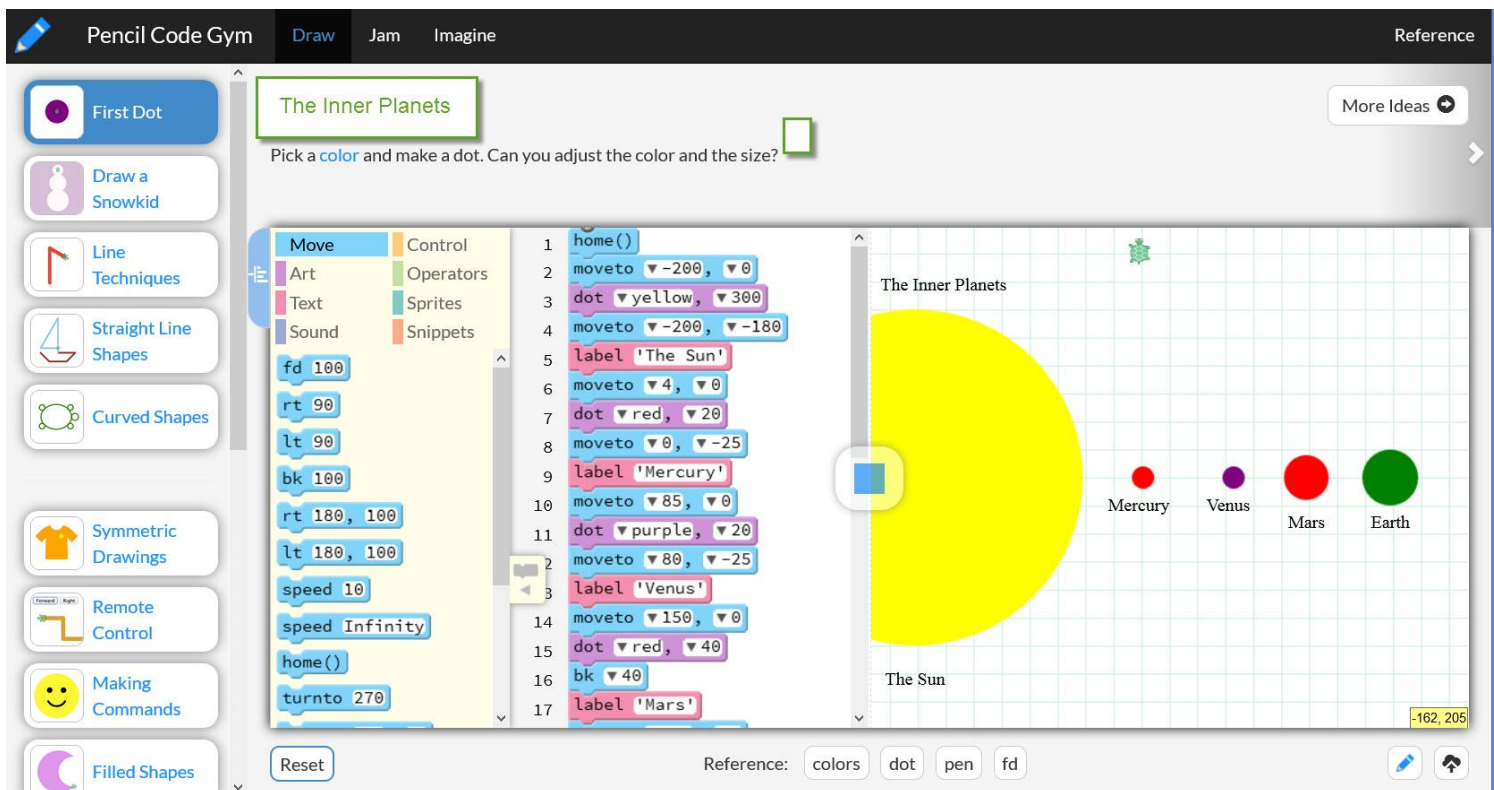
PencilCode is a Google-supported open source coding laboratory using drawing, music and creative fiction to introduce coding concepts. It is located at Pencil Code Gym at <http://gym.pencilcode.net/>

This is the link in Moodle to a movie I made using PencilCode. Pencil Code projects cannot be saved. It is just a workspace. To submit your Pencil Code project, place 2 items on a single document:

- 1) A screenshot or camera picture of the product
- 2) The text of your coding. Look below on how to switch from block codes to text. Highlight, copy and paste the text coding under the image you took.

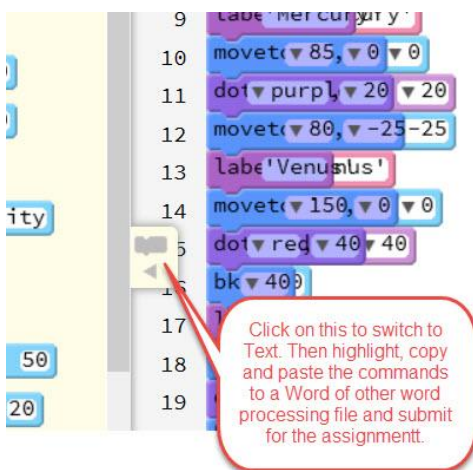
Place the document into the dropbox OR email it to me as an attachment if you run into dropbox problems.

Below is an image of code I made for a project I named, The Inner Planets:



Of course it's more interesting to watch the code in action so look at: [Pencil Code Video](#)

How to switch from block to text: Copy the code (switch from the Block command list to Text; image below) and submit it along with your project image into the **Assignment 2 Dropbox**.



To sum up Assignment 2:

- 1) Go to PencilCode, create an activity related to education. Work out all the bugs. Take a picture of the screen using a camera or screen shot.
- 2) Copy the coding text commands onto the same doc as you may have placed the image. (I want to copy the commands, paste them in PencilCode and watch the action!) Place the document in Assignment 2 Dropbox.

Assignment 3: Coding with Scratch

Objective: To create, save and share a Scratch coding project.

There is 1 assignment to complete.

Scratch is a logical jump up from PencilCode. It is more robust free coding program with many advance tools but you will be keeping it simple. Scratch allows you to save and share projects.

Scratch Demos to look at within Moodle course page:

- 1) A scratch Demo title “Gravity” is linked on the Moodle course page under Assignment 3.
- 2) A Scratch demo project I made for this course is on the Moodle course page under Assignment3. It is called My Scratch Course Demo.
 - a. When you create a Scratch account, you can access my simple project. My Scratch Course Demo is at: <https://scratch.mit.edu/projects/92331740/#> You can watch it work look at the commands.
Be VERY careful not to alter my project, thank you.

NEXT: Take time learn about Scratch at <https://scratch.mit.edu/>

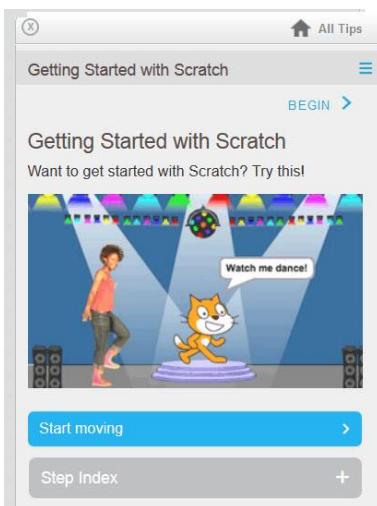
Go to “TRY IT OUT”, “SEE EXAMPLES” AND THEN create a Scratch account so you can Save and Share your work.

Create stories, games, and animations
Share with others around the world



A creative learning community with **12,655,248** projects shared

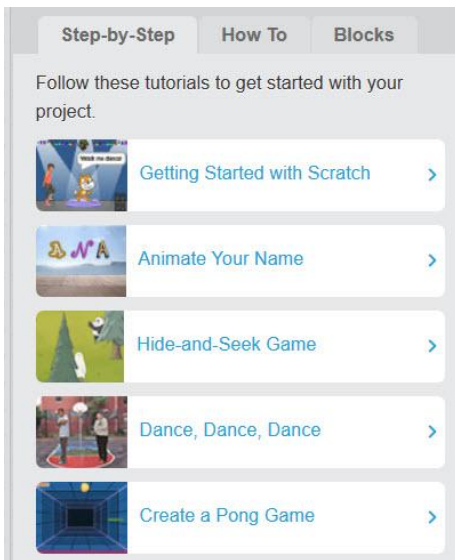
When you “TRY IT OUT” look at the example of a Help Tutorial



At some point from the menu bar browse “Explore” and “About”.



READY? Go to “Create”. There are helpful tutorial within Scratch:



When Creating access the ? button for “how to” Help:



Save your project constantly as you work!

When done, share the project with me. Send me the url of the project. It will look like this but with a different number: <https://scratch.mit.edu/projects/123734098/> The url is shown when you are in the editor but will have “#editor” attached. Go to See Project Page or My Stuff to see the url.

Email the code to jherz@dominicancaonline.com. Subject Line: EDUO9137 Scratch Code

Assignment 4: The Variety of Coding Apps and Software

Objective: To research and report on the variety of coding tools available to students.

There is 1 assignment to complete.

After using the information found in the Addendum at the end of this course and found in your own research, create at 2-3 page word processing document summarizing your findings. Find K-12 coding resources ranging from teaching coding with AND without computers, basics to advanced.

List and summarize at least 6-8 varied age and skill level coding programs/methods, their target ages and objectives.

Place the completed document in **Dropbox 4, Variety of Coding App**. Make sure to include your last name and assignment number in the document name.

Assignment 5: Evaluate, Plan and Share

Objective: To summarize what you learned and accomplished and your next coding steps.

There is 1 assignment to complete.

Post a Reflective Summary equal to 1-page of a single-spaced word processing document regarding what you learned about coding and your plans to try coding out with students. If you do not have plans right now to use it with students, reflect on the value of student's being exposed to coding.

- Place your Reflection in the Assignment 5 Forum, Evaluate, Plan and Share.
- Respond to 1 other Peer posting in the Forum.

Course Assessment Rubric

Exemplary: Above and beyond acceptable performance: A to A-	Acceptable: Meets expectations: B+ to B-	Unacceptable: Needs considerable improvement: Resubmit Work
Assignments have been accurately completed according to directions and meet learning objectives. Any requested revisions were made.	Most assignments have been accurately completed according to directions and meet learning objectives. Any requested revisions were made.	Assignments have not been accurately completed according to directions and do not meet learning objectives. Requested revisions were not made. Work clearly exhibits a lack of time and effort. Directions were not followed.
All work is very well organized	Most work is generally well organized	Work shows little or no organization
Assignment content and projects are original.	Assignment content and projects are original.	Assignment content and projects may not be original.
Work is free of spelling and/or grammatical errors	Work has a few spelling and/or grammatical errors	Work has numerous spelling and/or grammatical errors

Addendum: Coding Information and Tools

[Add Coding to Your Elementary Curriculum...Right Now](#)

[Top 12 Kids Coding Languages](#)

[Visual Programming Resources for K–12 Students](#)

[15+ Ways of Teaching Every Student to Code \(Even Without a Computer\)](#)

[Coding in the Common Core](#)

[Teach Kids to Code](#)

[CodeRev](#)

End of Course