EDS EDUCATIONAL DEVELOPMENT AND SERVICES

*in partnership with*

# DOMINICAN UNIVERSITY *of* CALIFORNIA

*School of Liberal Arts and Education*

## Getting Started With Computer Coding

**EDUO 9137 1 Semester Credit/Unit**

Instructor – Joe Herz

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**Public Syllabus**

<span style="color:red">**This syllabus contains partial course detail and assignments. Contact the instructor if you would like to see the full course syllabus.**</span>

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?   Because, <u>every</u> profession today and in the future relies at some level on coding.

<span style="color:green">**Understanding is relevant to Success**</span>

## 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:** 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 lot at what Khan Academy has put together for teachers and student at Hour of Code.

Additional Resources You Need to Watch for this Introduction….

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

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

## Assignments

## Assignment 1: Understanding the Value of Learning Code

Having read and viewed the Introduction content, 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

## 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 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, you can simply take a picture of the code and resulting product and place it in 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:

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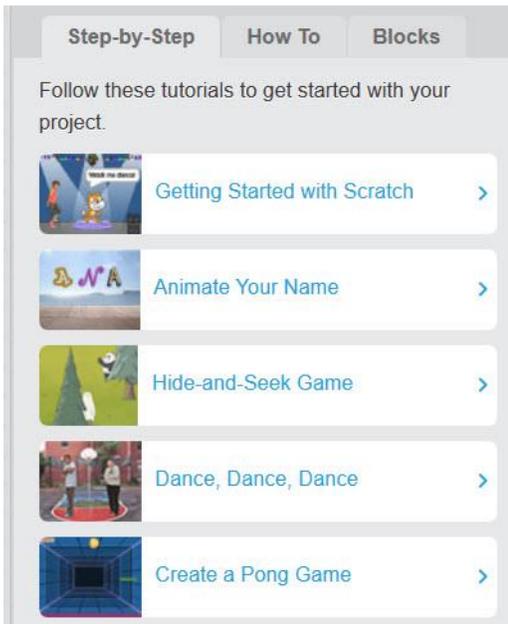
NEXT: Take time learn about Scratch at https://scratch.mit.edu/

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



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

## When Creating access the ? button for "how to" Help:



## Save your project constantly as you work!

## When done, share the project. To share a project, you must be in the project page and click 'share', a button in the orange bar with the text next to it reading: This project is not shared – so only you can see it. Click share to let everyone see it!  Share the code that is created with me and of course anyone else you like!

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 ,,,

## 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.

## 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 |