

Game and Robotics Programming in Snap! and Python

COR 100.09 Y1 Program Fall 2023

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August 13, 2023

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1 General Course Information

- Meeting Times: Tuesday, 11:00-11:50 hrs
- Meeting place: Lyon Building Computer Lab room 104

- Professor: Marcus Birkenkrahe
- Office: Derby Science Center room 210
- Phone: (870) 307-7254
- Office hours: MWF 10-10.30am, 2-4pm / TTH 9.30-11am, 12.15-2.15pm

2 Course description

In this course, you will complete a series of game, animation and robotics projects using the visual, drag-and-drop programming language Snap! and Python (for robotics) You will learn basic computer and data science principles, and understand how computers help us control the world around us. You will graduate from mere consumer and user to powerful programmer while playing around with blocks on the screen. Acquiring programming skills will help you develop your critical thinking. We will meet daily for 90 minutes of practical problem solving and interactive exercises. In between classes, you will work on small assignments, and you will read short textbook chapters or watch short instructional videos. You'll get to present your own work and (optionally) publish your finished projects for the whole world to see, and if things go well, perhaps we'll go to Snap!Con in California next year!

3 Learning Objectives

Students who complete "Games and Robotics Programming with Snap! and Python" will be able to:

- Create exciting games, animation and media computation
- Learn computer and data science principles by playing with data
- Acquire basic sequential programming skills
- Know how to translate visual Snap! code into procedural Python code
- Know how to operate robots using simple instructions
- Understand the relationship of humans and machines better
- Develop their critical thinking skills
- Know how to effectively present assignment results

4 Textbook (optional)

- Textbook: Joshi A.B. (2020). Learn CS Concepts with Snap!: Create exciting games and interactive animation in Snap! and learn computer science principles.
- See also: Joshi A.B. (2021). Learn Python in a Snap!: Rapid introduction to Python for those who already know Snap! Programming.
- Author's website: abhayjoshi.net.
- All other materials will be available online via GitHub or on the Snap! home page at Berkeley U.

5 Grading

DESCRIPTION	IMPACT
Programming assignment	25%
Tests	25%
H.A.T.S. presentation	25%
Participation	25%

Notes:

- To pass you need to get 60% of the available points.
- There will be 10 programming assignments in Snap!/Python.
- The tests are multiple choice quizzes.
- The H.A.T.S. presentation is a session developed and executed by the class at the December symposium.
- Participation is the result of being present and engaged with the class.

6 Course Schedule

Week	Date	TEXTBOOK CHAPTER
1	Aug 21-Aug 25	First Look at Snap!
2	Aug 28-Sep 01	Sequence and Sounds
3	Sep 04-Sep 08	Looping and Costumes
4	Sep 11-Sep 15	Geometry and Motion
5	Sep 18-Sep 22	Broadcasting
6	Sep 25-Sep 29	Animation project
7	Oct 02-Oct 06	Events and Concurrency
8	Oct 09-Oct 13	Keyboard interaction
9	Oct 16-Oct 20	Mouse interaction
10	Oct 23-Oct 27	Paddle and bricks
11	Oct 30-Nov 03	From Snap! to Python
12	Nov 06-Nov 10	Finch 2.0 Motion
13	Nov 13-Nov 17	Finch 2.0 Lights
14	Nov 20-Nov 24	Finch 2.0 Sensors
15	Nov 27-Dec 01	Finch 2.0 parade
16	Dec 04-Dec 08	H.A.T.S. preparation

- NO CLASSES: Aug 21, Oct 10 (Fall break), Oct 19 (Service day), Nov 23 (Thanksgiving). See 2023-2024 academic calendar.

7 Learning management system

- We use Lyon's Canvas installation for this course.
- The home page contains: assignments, grades, pages, people, syllabus, quizzes, Google Drive, Course evaluation and Zoom.
- The Zoom page includes cloud recordings of all past sessions.
- Recorded sessions will be deleted after the last class.

8 DataCamp (courses/workspace)

The course includes a free subscription to the DataCamp classroom at datacamp.com for further study, and for the opportunity to earn certificates. DataCamp is a popular data science online learning platform. DataCamp assignments are optional.

9 GitHub (course materials)

All course materials are available in a public GitHub repository (github.com/birkenkrahe/ai482). GitHub is the worldwide largest online platform for software development.

10 Lyon College Standard Policies (Fall 2023)

Online: <https://tinyurl.com/LyonPolicyF23>, see also Class Attendance