

Project Rules and Grading Criteria

A. General rules:

- Create a Python program to accomplish a task.
- You can work in this project in groups of up to two people. More people on the team means that more work will be done by that team.
- Your project must fall in one of the following categories (the project categories):
 - Data analysis project: You select a dataset¹ and conduct analysis of the data using a code.
 - Simulation project: You create a simulation of a dynamic system or phenomenon.
 - Engineering design project: You create a project to design an engineering solution.
 - Mathematical optimization project: You create a program that implements an optimization algorithm or problem.
 - Special subject: You can work on a project not related to the previous categories if the idea is well developed and challenging (before you start working on this, consult with me).
- Basic requirements of your code:
 - It must use at least one loop structure or vectorized operations.
 - The program must be able to read data from a file (e.g., from a CSV file)
 - The program must be able to save the output in a file (e.g., to a CSV file).
 - The program must be able to produce plots of results.
- (5 points) Submit a memorandum with your project idea on or before **November, 2019**.
 - In your memorandum, follow the general structure shown in the attached Form A. I will let you know if your project idea is acceptable (i.e., has an appropriate degree of difficulty), or if you need to change something.
 - *You must submit a hard copy (paper copy) of the memorandum to me.*
- (95 points) The projects are due on **December 3, 2019**, and the final submission will consist of:
 - A compressed folder with:
 - A short memorandum (in PDF) with a description of the inputs, outputs, and purpose of the program. The memorandum will have three subsections: Purpose, Inputs, and Outputs. At most, the memo will have a length of two pages. The memo can be written in Spanish or English. Use the general memorandum structure presented in Form B.
 - Python scripts (in .py format).
 - Folder will have be given the name FP_[LastName_FirstName]. In teams, use the name of the person whose last name comes first alphabetically.
 - Project submission will be in online.upr.edu.
 - Late submissions will not be accepted.

¹ You can find interesting datasets at <https://www.kaggle.com/datasets> and <https://archive.ics.uci.edu/ml/index.php>

B. Grading

Your final program and memorandum will be graded using the criteria presented next:

	Criterion	Points
	In folder: All submission documents in compressed folder	1.5
<i>Matters of Style</i>	In folder: Name of folder follows required format	2
	In program: Consistency in the way variables are named.	2
	In program: Comments included that describe what is happening in the program.	2
	In program: The comments are clear and with no grammatical mistakes.	10
	In memo: Document has a style consistent with a professional memorandum.	2
	In memo: Memo is free of grammatical mistakes and saved in PDF format.	5
	In memo: Memo clearly and succinctly explains the inputs, outputs, and purpose of the program.	2
	In memo: Electronic file given the name FP_[LastName_FirstName]. In teams, use the name of the person whose last name comes first alphabetically.	1
<i>Functionality</i>	Appropriate degree of difficulty (established in the initial evaluation of proposed idea)	10
	Limited use of hard coding (https://en.wikipedia.org/wiki/Hard_coding).	12.5
	Program has error messages or strategies to handle incorrect inputs. That is, program accounts for the possibility that the user will not correctly enter the inputs required by the program.	15
	Program is free of semantic errors.	30

Special penalties applied to the project score:

- -100 penalty: You or your teammates copied your program, in part or completely, from the internet, a friend, or any other resource. That is plagiarism. You can use a limited number of functions or codes from other sources if you document the source (i.e., indicate where you obtained the information) and if the tasks completed by the borrowed codes are not fundamental element to the purpose of the project. Note that the grade you would receive is not 0, it would be -100 points.
- -75 penalty: Your code does not work. For example, your program has syntax errors.

[FORM A: Delete this line from the document you submit. The information in the brackets gives you a general ideal of the content of the memorandum. DELETE THE BRACKETS AND THEIR CONTENT; THESE ARE JUST PLACEHOLDERS]

Memorandum A

To : Daniel Rodríguez Román, PhD
From : [Your Name] [Student Number]
Date : March 29, 20109
Subject : [Project Team and Idea]

[This memo should have basic information on]:

- [Basic information: team members]
- [Basic information: title of project]
- [Basic information: project's category]
- [Basic information: project objectives]
- [Basic information: general programing structures]

[FORM B: Delete this line from the document you submit. The information in the brackets gives you a general ideal of the content of the memorandum. DELETE THE BRACKETS AND THEIR CONTENT; THESE ARE JUST PLACEHOLDERS]

Memorandum B

To : Daniel Rodríguez Román, PhD
From : [Your Name] [Student Number]
Date : May 7, 20109
Subject : [Final Report – Project Title]

[Basic information: short introduction to purpose of program]

[Basic information: high-level flowchart of algorithm]

[Basic information: list and explanation of program inputs]

[Basic information: list and explanation of program outputs]