**Medgar Evers College (CUNY)**

**Department of Physical, Environmental and Computer Sciences**

718-270-6484

**SYLLABUS**

**CS345 -001 SCIENTIFIC PROGRAMMING I: DATA ANALYSIS Instructor: Dr. Armando Howard**

**917-640-8024 armando.m.howard@gmail.com**

4 lecture hours, 3 credits Spring 2016

AB1-C09 Fridays, 2:20 p.m. – 5:50 p.m.

Office Hours: Fri.,10:00a.m.-12:30p.m.,6:00p.m.-7:30p.m. and by appointment.

AB1-503V [fifth floor, Physics and Computer Science Department]

**Course Description:**

Introduction to the use of computer programming in science. Emphasis will be placed on data analysis and simulation. MATLAB will be employed for data analysis and some simulations. NASA-GISS climate model data will be used in examples.

**Pre-requisites:**  CS 246 and MTH 202

**Evaluation:**

1. Attendance: Students are expected to attend class. If a class is missed, students are expected to obtain the lecture notes from a classmate. Participation in class, which of course includes attendance, will count as part of the grade.

2. Assignments: There will be eight(8) homework assignments. You will be graded on your best six(6).

3. Project: There will be a term project to be chosen by the student from options provided by the instructor by February 26. A first conference with the instructor on the project must be scheduled by March 4 and a preliminary written report on the project is due March 11.

A second , mid-project, conference with the instructor must be scheduled by April 8, and a final end-of-project conference by May 20. On May 20 the final written report on the project will also be due and an in-class presentation (30 minutes = 20 presentation + 10 answering questions) of the results of the project is to be made on that date also. Evaluation will include performance in the conferences and on the presentation as well as the reports.

4. Final Grade: Class participation, assignments, and the project will be weighted

towards the final grade as follows:

Class Participation.....................................................................10 percent

Best 6 Assignments(6% each).................................................36 percent

3 Project conferences(3% each)……………………………… 9 percent

Project preliminary report...................................................... 5 percent

Project final report……………………………………………..25 percent

Project presentation……………………………………………15 percent

Total 100 percent

**Textbook** - Required:

Introduction to Computational Science: Modeling and Simulation for the Sciences. by Angela B. Shiflet and George W. Shiflet, 2nd Edition. Princeton University Press ISBN-13: 978-0691160719 ISBN-10:0691160716 .

Strongly Suggested:

MATLAB: A Practical Introduction to Programming and Problem Solving by Stormy Attaway, 3rd Edition. Butterworth-Heinemann ISBN-13: 978-0124058767 .

**Goals:**

to introduce students to how computers are used in science,

to reinforce programming skills and logical thinking,

to inform students on some current scientific research and of the ways it is performed,

to introduce students to data analysis and further their understanding of statistics,

to have students understand what simulations are and learn to perform simple ones,

to introduce students to numerical methods of problem solving,

to instruct students in MATLAB, a language useful for both visualization and programming,

to allow students to further their research and presentation skills.

**Due Date Reminder**

**February 26 `**5th Class **Project must be chosen by this date.**

**March 4** 6th Class **First project conference with instructor must be held by this date.**

**March 11** 7th Class **Preliminary written report on project \*due\*.**

**April 8** 8th Class **Second project conference with instructor must be held by this date.**

**May 20** 15th Class **Final written report on project \*due\*; third project conference with instructor must be held by this date.**

**May 20** 15th Class **In class project presentations.**

**May 27 Overflow date for in class project presentations.**