EM 224 Informatics and Software Development

Fall 2022

Monday *6:30 - 9:00 PM*

Instructor: Dr. Suleyman Vural

Email: svural1@stevens.edu

Class: Mondays 6:30 - 9:00 at Burchard 102

Course Overview:

What is Informatics? It is an application of technology such as computer science and statistics to different fields of study or professions. This course teaches basic concepts in the field of Informatics, focusing in particular on subjects that will prepare students for more advanced coursework in data analytics and software engineering. By the end of the course, students are expected to have developed the following skills:

- Transforming "data" into meaning and actionable knowledge;
- Understanding common methods of conducting exploratory and predictive analysis;
- Applying techniques discussed in class to evaluate real world problems.
- General understanding critical technology in data analytics and software engineering;

Prerequisites:

No previous programming experience is required. Although it would be desirable that students have a general understanding of statistics, and be comfortable with scripting language such as ***Python***.

Text Books:

There is no official textbook for this course. We will mainly use lecture notes for the course. However, we recommend the following books for your reference, **you can find the pdf versions on Canvas.**

- McKinney, Wes (2012), Python for Data Analysis, O'Reilly
- Severance, Charles [Dr. Chuck] (2011), Python for Informatics

Evaluation:

The evaluation will be based on following criteria & weights:

- **Assignments (30%):** There will be in class demonstrations and after-class assignments as needed. Written homework should be finished individually, discussions with peers or instructor is allowed, but copying or any other type of cheating is strictly prohibited.
- **Exam (37.5%):** Students will work individually with mid and final exam.
- **Final Project (27.5%):** The course project is to give the students hands-on experience on solving real world data mining problems or proposing novel research-oriented problems. The course projects will be developed over the course of the semester. Group work is strongly encouraged, but not required.
- **Online session Attendance (5%):** You are expected to attend every class and be on time. Absence and tardiness will affect your in-class/participation grade. You are encouraged to bring your computer to class. Participation will be part of the grading.

Grade	Percentage
A	93-100
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	77-79.9
C	73-76.9
C-	70-72.9
D+	67-69.9
D	60-66.9
F	< 60

Students are expected to abide by the Stevens Honor Code in submitting assignments and project. **If you are straddling two grades, your class participation and occasional bonus points (or lack of it) will determine which way your grade will go.** Even if your answers are incorrectly (hopefully not TOO often), your participation is noted and counts as engagement.

Notes:

(1) The students are advised to get in touch with the instructor with any doubts / clarification regarding any assignment well before the submission deadline. **The lowest assignment score will be dropped.** All assigned problems need to be done individually. However, you may reference someone else on the assignment, if you went to him or her for assistance. Solutions will be gone over in class.

(2) Late Homework and Make-up Exams: Late homework and project submission will be provided to the student only if there is a situation of unavoidable emergency. This requires a written excuse and is solely based on the discretion of the instructor. **If you do not submit homework/exam, or submit late with no explanation in advance, you will lose 5% after due date/time, 10% after 24 hours, 20% after 48 hours, 30% after 96 hours, and receive a zero after a week.**

Canvas

The class Canvas site contains information on assignments and due dates, as well as other course information. You are responsible for checking the site regularly for announcements, and for completing assignments according to the instructions and schedule on the site. Unless otherwise indicated, all assignments are to be submitted via Canvas. It is your responsibility to

check that your assignment has been successfully uploaded to Canvas. Computer, Internet, or Canvas problems will NOT be accepted as an excuse for a late or missing assignment.

Programming Guidelines:

Program header must include Author name(s) and assignment information (use comments). Comments must also be used to give an overall description of the program. Comments should also be used throughout the code to explain what it is doing. It should be possible to re-create your program based on the comments alone. Quality of comments will be part of the grading criteria.

Programs should employ good programming practices as presented in class. An example is the use of descriptive variable and function names.

All code must be your original creation. Any non-original code must be clearly marked as such (using comments). Programs are subject to screening by plagiarism software. Plagiarism is considered cheating and will result in a zero grade.

If part of all the code in an assignment is not original and not from a cited source, the case will be considered as “cheating”/plagiarism and will result in a zero grade.

Tentative Assignment and Online Schedule for EM224 (subject to change)

Week	Date	Additional Comments	Assignments Due	Topic
1	Monday September 12, 2022			Course overview
2	Monday September 19, 2022			Python introduction, variables and controls
3	Monday September 26, 2022			Python introduction, tuples, dictionaries and functions
4	Monday,October 3, 2022			Python modules, data manipulation and managing text
5	Monday, October 10, 2022	Fall Recess; No Classes		
6	Monday, October 17, 2022			Software testing
7	Monday, October 24, 2022			Data visualization
8	Monday, October 31, 2022			Mid-term exam
9	Monday, November 7, 2022			Extrating knowledge from data
10	Monday, November 14, 2022			Machine learing (part 1)
11	Monday, November 21, 2022			Machine learing (part 2)
12	Monday, November 28, 2022			Web mining
13	Monday, December 5, 2022			Software development
14	Monday, December 12, 2022			Final Exam
	Friday, December 23, 2022			Project due