

Modeling and Simulation Course: Final Project Guidelines

Objective

The goal of this project is to provide a comprehensive analysis of a specific phenomenon by developing a mathematical model and conducting a simulation. This task will require a deep understanding of the relevant mathematical background, solid coding skills, and a strong ability to communicate your findings.

Project Requirements

1. **Literature Review:** Conduct a literature review to gather information on your chosen phenomenon. Include references to the sources you have used.
2. **Mathematical Model:** Develop a mathematical model to describe the phenomenon. Explain the assumptions, parameters, and equations used.
3. **Simulation:** Write Python code to simulate the phenomenon. Your simulation should implement the mathematical model and visualize the results.
4. **Analysis:** Analyze the simulation results and discuss their implications. Compare your findings with the existing literature.
5. **Jupyter Notebook:** Present your work in a Jupyter Notebook. The notebook should include both your Python code (in code cells) and a written report (in markdown cells). The written report should cover the literature review, explanation of the mathematical model, and your analysis of the simulation results.

Coding Guidelines

- Use clear and concise code with meaningful variable names.
- Include comments to explain what your code does.
- Make use of Python libraries such as numpy, scipy, and matplotlib as needed.
- Clearly explain the parameters, equations, and functions used in your code.

Report Guidelines

- Write in a clear and concise manner.
- Use sections and subsections to organize your content.
- Include mathematical equations, tables, and figures as needed.
- Cite your sources using a consistent citation style.

Evaluation

Projects will be graded on the following criteria:

- Quality and depth of the literature review
- Mathematical soundness and sophistication of the model
- Functionality and clarity of the code
- Quality and depth of the analysis
- Overall presentation and organization of the Jupyter Notebook

Submission

Please submit your Jupyter Notebook file (.ipynb) by 16.07.2023 to enis.yazici@srh.de. Make sure your notebook can be run without errors and that all figures and text are clearly visible.

Academic Honesty

Originality is crucial for this project. Each submission should be the result of individual effort and reflect the student's understanding of the subject. Copying code from your peers, or from sources found online without proper citation is strictly prohibited. To ensure the originality of submissions, all code will be cross-checked using a software.

Plagiarism will not be tolerated and will result in a failing grade for the project.

Good Luck!

Remember, the goal of this project is to demonstrate your understanding of modeling and simulation. Be creative, thorough, and critical. Good luck!