IE 630 Simulation Modeling & Analysis

Course Project

Total Marks: 100 (Weightage: 25%)

- This project offers students an opportunity to explore simulation techniques by applying them to a practical problem.
- Students will be allowed to forms the teams containing about 2-4 members.
- Student teams will conceptualize and develop a simulation model, perform experimental analysis, interpret outcomes, propose potential improvements, and deliver a final presentation with meaningful insights.

Project Topic:

- Projects may focus on domains such as logistics, healthcare, service operations, or public infrastructure.
- Emphasize understanding the operational aspects & system dynamics before deciding on modelling techniques.
- Aim for ambitious ideas, and scope adjustments can be made as needed.
- Research case studies from academic conferences or real-world challenges for inspiration.
- The simulation can be built using Discrete-Event Simulation (preferred), Monte Carlo methods, Agent-Based Modelling, or hybrid approaches.

Project Milestones & Checkpoints:

- Each team will engage in structured discussions through two subsequent progress reviews. These meetings are mandatory and ensure steady advancement.
- Meetings will serve as a platform to assess ongoing work, address issues, and outline the next steps.

Evaluation Criteria:

- Progress Reviews: 20 points per evaluation x 2 sessions = 40 points
- Each team will be assigned a Point of Contact TA for helping and evaluation
- Final Submission & Presentation: 60 points

Assessment Components:

- Problem Definition & System Overview
- Present a structured depiction of the system through diagrams or process flows.
- Identify assumptions and data constraints.
- Clearly define objectives and performance metrics.
- Conduct preliminary input data analysis (if required).
- Develop an accurate and verified simulation model.
- Incorporate visualization and animations where applicable.
- Analyze output data, run scenario tests, and document findings.
- Offer recommendations for performance enhancement.
- Key Takeaways
- Summarize insights gained from the project.