Description

In this three credit, 15-week online graduate course, develop a computer simulation of a business or manufacturing process of your choice. Begin with a mapping exercise that leads to the creation of a user-friendly computer model, complete with visualizations and analytics. With this model, optimize process flow, throughput, queuing, resource allocation, and resource utilization. Then, advocate for the future use of modeling and simulation in the design and operation of complex systems.

Project

Work with your instructor mentor to select an underperforming process to model and simulate. In this semester-long project, establish performance metrics for the process and use a proven approach to build a validated simulation in AnyLogic. You will capture the behavior of the real-world process to identify and quantify process improvements in the following milestones:

Milestones 1-3: Learn to use AnyLogic and Map Your Process
Select the process to model, establish performance metrics, and map the process with a detailed flowchart. Learn to use AnyLogic and create discrete event simulations (DES) through step-by-step tutorials for modeling business and manufacturing operations at a bank and a machine shop.

Milestones 4-6: Build a Model of Your Process in AnyLogic
Turn your flowchart into a model built in AnyLogic. Learn to model statistical variation, finite human and physical resources, operating schedules, and process errors or defects.

Milestones 7-9: Validate Your Model and Explore Process Improvements
Evaluate if your model mimics real-life behaviors of the process. Explore system improvements and quantify impact. Use the model to test process improvements and determine if the desired outcome is achieved.

Outcomes

Completion of the course enables you to:

- Gain a step-by-step approach to simulation that can benefit business and manufacturing operations
- Use statistical methods to accurately capture variation within processes and systems
- Use system-level analytics to ensure process changes positively impact global system metrics
- Explore system factors that impact process performance without disruption to day-to-day operations

Features and Technology

This course is offered through the RensselaerStudio, providing ease of access to all course technologies and software required, any time, anywhere. Live, synchronous sessions are held every 2 – 3 weeks via Zoom. Sessions are designed to cultivate your understanding of course concepts and guide your approach as you gain insights from others’ experience.