ENGR 6205
Production & Logistic Analysis

Course Preview

Description
In this three-credit, 15-week online graduate course, use visualization and cluster analysis tools to gain deeper insights into production and logistic relationships. Apply a Rensselaer Analytic Approach to real-world production problems and questions, including factor isolation, output risk analysis, forecasting environmental control factors, and minimization of defects and shortages. Tune models to represent the current state and adjust these models to represent the desired future state as underlying assumptions change.

Projects
Over four projects, apply a Rensselaer Analytic Approach to find opportunities for process improvement in order to improve and optimize organizational performance.

Project 1: Hypothesize an Analytical Approach to a Production Problem
Document the current state of a computer production system and hypothesize an approach to evaluate throughput and performance. Hypothesize approaches for an analytic model to benchmark and set production metrics.

Project 2: Evaluate Data to Tune a Model
Evaluate the current state of the production line’s performance by analyzing operating data. Establish which criteria are relevant to optimizing flow and reducing time in production.

Project 3: Predict Outcomes
Use a combination of predictive forecasting, optimization, and sorting techniques such as random forest to improve inventory, production throughput, and order fulfillment. Make recommendations to eliminate bottlenecks and wastes to effectively achieve organizational objectives. Estimate time and cost savings for recommended improvements.

Project 4: Forecast/Predict, Prescribe, Set Performance Metrics
Apply a Monte Carlo simulation to evaluate and model risk factors and their implications on the financial performance of a production line. Develop performance metrics (Key Performance Indicators) on which the production line can be evaluated in ongoing operations.

Outcomes
Completion of the course enables you to:
- Demonstrate the use of data in a complex analytic framework to evaluate and respond, in context, to a business problem or question
- Communicate with purpose and clarity to a leadership audience
- Assemble and prepare data from multiple sources that informs analysis in a sound and logical manner
- Analyze business data to discover relationships and deliver insights to inform a business decision

Features
Live, online synchronous sessions are scheduled every 2–3 weeks throughout the semester with the instructor and professionals from various industries also participating in this course. Sessions are designed to cultivate your understanding of course concepts and guide your approach as you gain insights from others’ experience.

Technology
This course is offered through the Rensselaer Studio, 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.