MIS5900: Applied Business Analytics

BACKGROUND: The goal of this course is to cultivate students’ capability to apply data analytics and decision support modeling in an industry that is characterized by complexity policy environment and competing demands in decision making. The power system in the U.S. is undergoing a transformation from one based on fossil fuel-fired central generation plant to one that relies much more heavily on wind, solar and distributed energy resources. Government and industry are balancing several issues: cost and affordability, climate impacts, and economic development on the one side and sustainable business development, competitiveness, and profitability on the other. In this context, managers must call upon business analysts to assess the implications of state and federal policies, wholesale and retail markets, and broader economic factors on optimal investment plans, operating costs, and price volatility.

We will provide a framework for quantitative decision-making and effective resource allocation. The framework that we will use is applied today in many business analytics and decision making contexts. The course will focus on (1) identification and collection of relevant data for analysis; (2) identification and application of the appropriate models and techniques (e.g., capital budgeting, benefit cost analysis, optimization (Excel solver add-in), and monte-carlo simulation (Excel Crystal-Ball add-in); and (3) structuring the decision problem in terms of objectives, decision variables, uncertainties, outcomes, choice criteria, and feasibility. The class project will be structured as a real life consulting engagement.

Learning Objectives
The successful student will demonstrate the ability to:
1. Assess the business context and apply business analytics skills to the managerial decision problem.
2. Structure and implement a complex decision analysis.
3. Select appropriate data and analytical methods and build spreadsheet models.
4. Apply project management principal and tools to the completion of complex analysis.
5. Present and defend the analysis and recommended investment program.

FIN5900 Financial Consulting Projects

BACKGROUND: The power system in the U.S. is undergoing a transformation from one based on fossil fuel-fired central generation plant to one that relies much more heavily on wind, solar and distributed energy resources. This transformation is being spurred by a combination of economic, regulatory and environmental considerations.
Utilities, independent power suppliers, and private equity firms are all looking at opportunities to make strategic investments in renewable power projects. The challenge for these investors is understanding the complex and developing power markets and regulatory landscape, and the available funding sources and business models, to fully evaluate the risks and make smart capital investment decisions.

GOAL: The goal of this course is to bring together a talented curious group of students with backgrounds and interests in capital budgeting and asset valuation, risk analysis, renewable resources, and environmental policy to work as interdisciplinary teams to propose, analyze, and defend an investment opportunity in a renewable energy project. The class project will be structured as a consulting engagement. By the end of the course, students will understand the major issues investors and regulators consider and be able to apply the techniques that professionals use to make real investment decisions under uncertainty.

**Prerequisites:** FIN5401 for MSF students; FIN4200 for MBA students

**MKT5900: Digital Marketing Analytics**

Digital marketing is an exciting area of marketing practice. In this course, we will cover the what, why, and how of major current approaches, including search engine optimization, search and display ads, email marketing, social media, and online listening/monitoring. This course provides a quantitative approach to understanding and harnessing tools in digital marketing analytics to meet business objectives.

Three key messages are woven into the coverage of those tactics. First, you should establish habits for keeping up to date on emerging digital technologies relevant to business and to marketing. Second, you should tie the use of digital marketing activities to business objectives. Third, you should identify data sources that allow you to track performance for your digital marketing activities. The course is designed to get you to think like a digital marketing professional, and to give you experience with industry-relevant hands-on assignments and exercises.

**Prerequisites:** MKT4400