An Introduction to Data Analytics using Excel

Course outline

Modern technology allows businesses to collect vast amounts of data. Being able to interpret, understand and use that data requires analysis. This hands-on, intensive course in Data Analytics will introduce a range of tools and techniques that can help business professionals uncover important information and make better decisions based on data. Topics are covered over five classes and include presenting data using visuals and descriptive statistics, measuring and understanding the relationships between variables, and making the most of customer feedback. Applications for the business environment include supply chain, marketing and pricing.

Class 1: Data Analytics Overview

Description
An introduction to data analytics in Excel to assist private and public sector professionals make more informed decisions. Topics include types of data, data cleaning, recoding and sorting, data visualization, summarizing data and an introduction to analysis of relationships between variables.

After completing the session, participants should be able to:

- Understand basic data analytics concepts
- Use Excel to sort data with pivot tables
- Use Excel to create histograms and other charts for data visualization
- Use Excel to calculate summary statistics
- Use Excel to create indicator variables for qualitative information

Instructor Bio
Dr. Peter Schuhmann, Professor of Economics, received his Ph.D. in Economics from North Carolina State University. Pete teaches undergraduate and graduate courses in Microeconomics, Econometrics and Natural Resource Economics. He also serves as a reviewer for several academic journals and professional organizations and has made numerous contributions to scholarly publications in economics. Prior to joining the UNCW faculty in 1999, Brian taught Economics at the University of Richmond.

Class 2: Measuring association between variables

Description
An introduction to data analytics in Excel to assist private and public sector professionals make more informed decisions. Topics include types of data, data cleaning, recoding and sorting, data visualization, summarizing data and an
introduction to analysis of relationships between variables.

This session builds on Dr. Schumann’s introductory session. In this session we will focus on using Excel to visualize and identify trends in data. In particular, we will examine customer demand data and seek to forecast future demand. We will examine the impact of forecasted demand on business operations.

After completing the session, participants should be able to:

- Visually examine data (via Excel charts, sparklines, etc.) and identify trends
- Construct linear regression models in Excel
- Evaluate linear regression model quality
- Use models to forecast demand and interface with Excel Solver to make operational decisions

**Instructor Bio**

Dr. Stephen E. Hill is an Assistant Professor of Operations Management at UNCW. He received his Ph.D. in Operations Management at the University of Alabama. Stephen teaches undergraduate courses in Operations Management, Supply Chain Management, and Business Analytics. Dr. Hill’s research focuses on applications of operations management and analytics techniques in transportation/distribution and sports. He is also interested in developing innovative educational approaches and tools.

**Class 3: Pricing analytics**

**Description**

Understanding how pricing impacts revenues is one of the most important issues faced by managers. Thus, this session focuses on utilizing Excel to estimate demand curves and determine profit maximizing pricing strategies that result in higher sales and improved profitability.

After completing the session, participants should be able to:

- Understand basic pricing concepts, such as price elasticity, demand curves, and yield management
- Use Excel Trend feature to estimate demand curves
- Use Excel Solver to determine the profit maximizing price for a product
- Use Excel Solver Table to maximize revenue by pricing multiple products at a time
- Develop yield management pricing strategies for time sensitive and/or seasonal products

**Instructor Bio**

Dr. Brian R. Kinard, Associate Professor of Marketing, received his Ph.D. in Marketing from Mississippi State University. Brian teaches undergraduate courses in Marketing Analytics, Marketing Research, and Sports Marketing. He also serves as a reviewer for several academic journals and professional organizations and has made numerous contributions to scholarly publications in marketing. Prior to joining the UNCW faculty in 2007, Brian taught Retailing and Consumer Behavior at Georgia Southern
Class 4: Turning customer feedback into actionable insights

Description

An introduction to using Excel to extract actionable insights from customer feedback, particularly data that might be in the form of free response text customer responses.

After completing the session, participants should be able to:

- Understand the benefits and challenges of free text customer responses.
- Understand basic strategies for extracting actionable information from free text information.
- Use Excel to extract customer sentiment.
- Use Excel to extract common customer topics and concerns.
- Use Excel to create visualizations to communicate customer feedback information effectively.

Instructor Bio

Dr. Curry Guinn, Associate Professor of Computer Science, received his Ph.D. in Computer Science from Duke University. Curry teaches undergraduate and graduate courses in Artificial Intelligence, Natural Language Processing, and Data Structures. He also serves as a reviewer for several academic journals and professional organizations and has made numerous contributions to scholarly publications in computational linguistics and computer science. Prior to joining the UNCW faculty in 2004, Curry worked as a Research Engineer at RTI International in Research Triangle Park, NC.

Class 5: Analytics applications for finance

Description

This module will introduce practical aspects of financial modeling using Excel. The analysis will begin with a sales forecast using historical data. Pro-forma financial statements will be prepared with the goal of determining whether additional (external) funds will be required to achieve the desired growth. The sustainable growth rate that requires no external financing will be derived and the forecast cash flows will be discussed.

After completing the session, participants should be able to:

- Learn how to forecast sales using trend data.
- Prepare pro-forma financial statements.
- Understand the link between growth and financing needs.
- Learn to calculate sustainable growth rate algebraically and also by using Excel Goal seek.

Instructor Bio

Dr. Ciner is a professor of finance at the Cameron School of Business, UNCW. He has also taught at Northeastern University, MA before joining UNCW. His teaching interests lie in corporate finance and financial modeling as well as international finance. His research specializes in international finance and commodity market dynamics. As a prolific researcher, he has published numerous articles on financial markets and currently serves as an associate editor for three Elsevier finance journals.