SCM 651: Business Analytics

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Final Exam Review

Final Exam

- Academic integrity
  - Do your own work, no collaboration
- My philosophy
  - More questions, each worth fewer points
    - Advantage: if you don't know the answer on a question, it's only worth a few points
  - Test breadth of knowledge (multiple choice)
  - Test depth of knowledge (short answer)
- Test Taking Strategy
  - Strive for full credit on a question – there is no extra credit for elaborate answers, so don't spend too much time on any question
  - Use your time wisely

Final Exam

- Content
  - Part 1: Concepts – Short Answer
  - Part 2: Tools – Multiple Choice
  - Part 3: Techniques – Multiple Choice
  - Part 4: Regression Assumptions – Multiple Choice
  - Part 5: Interpretation – Short Answer
  - Part 6: Business Issues from Articles – Short Answer
- Summary
  - 15-20 multiple choice questions
  - 15-20 short answer questions

- Final exam will be sent to you via email at your syr.edu address
- You will need MS Word
- You will not run any other software – just answer the questions

Final Exam

- Content
  - Part 1: Concepts – Short Answer
    - Define or describe a concept or business application
  - Part 2: Tools – Multiple Choice
    - Identify which tool was used in a given example (e.g., Excel, Access, Google Analytics, R, Tableau)
  - Part 3: Techniques – Multiple Choice
    - Identify which technique is presented in example (e.g., correlation, linear regression, exponential regression, power regression, moving average, logit, probit, neural network)
  - Part 4: Regression Assumptions – Multiple Choice
    - Identify assumption violations, corrections (linearity, multi-collinearity, heteroscedasticity, serial correlation, outliers)
  - Part 5: Interpretation – Short Answer
    - Interpret output results of a technique
  - Part 6: Business Issues from Articles – Short Answer
    - Provide a short answer to questions from the articles

Final Exam Topics

- Week 1
  - Background
    - What drives analytics?
    - Why is analytics difficult?
    - What are business examples where analytics is important?
  - Tools
    - Formulas
    - Sorting
    - Filters
    - Pivot tables and charts
    - Powerview

Final Exam Topics

- Week 2
  - NPV
  - IRR
  - Correlation
  - Linear regression
  - Exponential regression
  - Power regression
  - Time series

Final Exam Topics

- Week 3
  - Sensitivity analysis
  - Conditional formatting
  - Dashboards in Excel
  - Google analytics

Final Exam Topics

- Week 4
  - Importing data
  - Access tables
  - Access relationships
  - Access queries
    - Grouping
    - Criteria
    - Calculations

Final Exam Topics

- Week 5
  - PowerPivot importing
  - PowerPivot relationships
  - PowerPivot tables
  - PowerPivot charts

Final Exam Topics

- Week 6
  - Goal seek
  - Solver (unconstrained)
  - Solver (constrained)

Final Exam Topics

- Week 7
  - R: 3D visualization
  - ANOVA
  - Dummy variables
  - Moderating effects

Final Exam Topics

- Week 8
  - Regression Assumptions
    - Know what each looks like
    - Know what a violation looks like
    - Know the solutions to the assumption violation
  - Solutions
    - Linearity
      - Solution: transformation
    - Multi-collinearity
      - Solution: Combine variables or drop one
    - Heteroscedasticity
      - Solution: transformation
    - Serial correlation
      - Solution: Time series analysis
    - Outliers
      - Solution: drop outliers

Final Exam Topics

- Week 8 (continued)
  - Benford's Law
  - Decision trees

Final Exam Topics

- Week 9
  - Logit
    - Logistic distribution
    - More sensitive at extreme values of X variables
  - Probit
    - Normal distribution
    - More sensitive at values of variables near their means
  - Perceptrons
    - Early linear attempt at machine learning

Final Exam Topics

- Week 9
  - Neural networks
    - Uses logistic function
    - Has at least three levels: inputs (X), hidden (H), and outputs (Y)
      - Can have multiple hidden layers (deep neural networks)
    - Subject to local optima

Final Exam Topics

- Week 10
  - Tableau
    - Importing data
    - Creating relationships
    - Tables and charts
    - Dashboards