



# ISM 645: Principles of Predictive Analytics

Fall 2018

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## CATALOG DESCRIPTION:

Predictive analytics are iteratively generated by analyzing and exploring enterprise data to predict relationships and generate insights for organizations. Principles, models, and methods of predictive analytics are discussed.

## STUDENT LEARNING OUTCOMES (SLOs):

Upon completion of this course, students will demonstrate a broad knowledge and clear understanding of critical concepts, practices and issues in developing and using Predictive Analytics models and methods.

Specific course outcomes are:

1. Demonstrate an understanding the principles of predictive analytics process
2. Identify, design and assess different predictive analytics methodologies
3. Describe data needs and quality controls issues associated with predictive analytics
4. Prepare and formulate data collection, sampling, preprocessing for analytical purposes
5. Explore, apply and assess different predictive analytic models and techniques
6. Evaluate organizational implications of the use and implementation of predictive analytics
7. Demonstrate proficiency in the use of SAS Enterprise Miner

## COURSE MATERIAL

This course is **Web based** and delivered **on-line**. It blends assignments, online discussions, final project and final exam. Except for Dr. Siegle's book, all other teaching material including text books, assignments, handouts and other learning recourses needed for this course are available electronically at the course Canvas site. It is your responsibility to read the assigned readings. Please sign into Canvas to gain access to the material and come back frequently, as I upload new content throughout the semester.

## TEXT BOOKS

### Required:

1. *Applied Analytics Using SAS® Enterprise Miner™ Course Notes* was developed by Peter Christie, Jim Georges, Jeff Thompson, and Chip Wells. Additional contributions were made by Robert Blanchard, Tom Bohannon, Mike Hardin, Dan Kelly, Jay Laramore, Bob Lucas, André de Waal, and Sue Walsh. ISBN 978-1-63526-196-7. Editing and production support was provided by the Curriculum Development and Support Department. Copyright © 2017 SAS Institute Inc. Cary, NC, USA. Available free via Canvas. I will refer to this as AA
2. *Advanced Predictive Modeling Using SAS® Enterprise Miner™ Course Notes* was developed by Jim Georges and Christina Andersson, and revised by Jeffrey Thompson and Chip Wells. Additional contributions were made by Mike Patetta, Catherine Truxillo, Anette Almer, Stefan Ahrens, Tamara Fischer, Mihai Paunescu, Torsten Scholz, and Reinhard Struby. Editing and production support was provided by the Curriculum Development and Support Department. Copyright © 2017 SAS Institute Inc. Cary, NC, USA. Available free via Canvas. I will refer to this as AP
3. *Text mining Using SAS® Enterprise Miner™ Course Notes* was developed by Jim Georges and Christina Andersson, and revised by Jeffrey Thompson and Chip Wells. Additional contributions were made by Mike Patetta, Catherine Truxillo, Anette Almer, Stefan Ahrens, Tamara Fischer, Mihai Paunescu, Torsten Scholz,

and Reinhard Struby. Editing and production support was provided by the Curriculum Development and Support Department. Copyright © 2016 SAS Institute Inc. Cary, NC, USA. Available free via Canvas. I will refer to this as TM.

4. *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die*, 2<sup>nd</sup> Edition. By Eric Siegel, Wiley Press, ISBN-13: 978-1119145677. I will refer to this PA

### Supplemental

1. *Credit Scorecards Using SAS® Enterprise Miner™* Editing and production support was provided by the Curriculum Development and Support Department. Copyright © 2013 SAS Institute Inc. Cary, NC, USA. Available free via Canvas. Available free via Canvas
2. *Data Mining Using SAS® Enterprise Miner™: A Case Study Approach*. Editing and production support was provided by the Curriculum Development and Support Department. Copyright © 2018 SAS Institute Inc. Cary, NC, USA. Available free via Canvas. Available free via Canvas
3. Other books on Specific topics in SAS are also available for free via Canvas.

### SOFTWARE NEEDED FOR THE COURSE:

This course makes extensive use of SAS® Enterprise Miner™ 14.3. This software is the leading data analytics tool available in the market. This software is part of SAS 9.4 suite of products that constitute perhaps the powerful analytical tools. This software can be accessed via the UNCG's mycloud (mycloud.uncg.edu). Instructions as how to do that are on Canvas. You can also get your own personal copy of SAS and SAS® Enterprise Miner™ and install them on your machine. SAS® 9.3 or 9.4 and SAS Enterprise Miner™ are very expensive software and having your own personal copies is a good thing. The instruction for getting your personal copies can be found at <http://its.uncg.edu/software/available/sas/>. You need to do this during the first couple of weeks of the term.

### COURSE ASSIGNMENTS

you will have 4 topical assignments each one dealing with specific topic in predictive analytics. The assignments use Enterprise Miner™. Assignments are due on the date/time specified in the course. Assignments turned in late will be assessed a grading penalty. Assignments submitted after the due date may not be accepted but, if they are based on valid excuse, there will be a minimum of a 20% reduction for each day late. Also, any assignment that requires rework will be assessed at least 20% penalty.

1. Assignment 1 deals with data collection, sampling, preprocessing and quality control descriptive analytics model development.
2. Assignment 2 deals with predictive analytic model development, assessment and implementation using different supervised techniques.
3. Assignment 3 deals with predictive analytics model development, assessment and implementation based on clustering and market basket analysis techniques.
4. Assignment 4 deals with predictive analytics model development, assessment and implementation based using text analytics techniques

### FINAL PROJECT AND REPORT

You must join a group of NOT MORE THAN 4 to develop a final research proposal and a final report on a topic of approved by the instructor. This project topic must be related to one or more aspect(s) of topics discussed in the course, where you will be developing and/or examining the impact of PA methods and models in a business environment. This project will have two parts. The first part is a report where you propose and describe your final project topic, its importance and a proposed methodology. The second part is the actual project implementation and write up. I will describe this project further as we go along in the course.

### FINAL EXAM

A timed on-line final exam is required for the course. The exam will test your knowledge of predictive analytics topics and the use of software.

### **CLASS DISCUSSION BOARD AND PARTICIPATION IN WebEx SESSIONS**

Each student is required to regularly participate in all on-line WebEx session and discuss online with the instructor. It is your responsibility as a student to know what is going on in the course and “I did not know” is not an acceptable excuse for missing any deliverables.

### **EVALUATION AND GRADING:**

The course will be letter graded. A student’s final grade will depend on the quality of the project components.

Contribution to class discussion board and Participation in WebEx sessions	5%
Assignments (2@ 10% each 2 @ 15% each)	50%
Final Project and Report	20%
Final Exams	<u>25%</u>
Total	100%

### **Letter Grades and Points**

950-1000 = A, 900-940 = A-, 860-890 = B+, 830-850 = B, 800-820 = B-, 760-790 = C+, 730-750 = C, 700-720 = C-, 690 and below =F

### **ATTENDANCE POLICY:**

Since it is an online class, no physical class-room attendance is required. However, I will have weekly WebEx on-line sessions that you are required to attend. Typically, these sessions will be on **Thursday 5:30-6:30 PM**, It is the student’s responsibility to stay on track with readings and assignments to be successful in the course.

### **NETIQUETTE:**

The same guidelines that apply to traditional classes should be observed in the virtual classroom environment. Please use proper netiquette when interacting with class members and the professor.

### **POLICY ON SERVER UNAVAILABILITY OR OTHER TECHNICAL DIFFICULTIES**

The university is committed to providing a reliable online course system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will extend the time windows and provide

### **ELECTRONIC MAIL AND ACCOUNTS:**

You should check your UNCG email and Canvas Course link regularly as I may send email updates or add new info on BB on an ongoing basis. You will be responsible for any information or announcements contained in the email messages or updates on Canvas.

### **ACADEMIC INTEGRITY, ETHICAL ISSUES AND THE HONOR CODE POLICIES:**

Students are responsible for becoming familiar with the Academic Integrity Policy in all its aspects and for indicating their knowledge and acceptance of the Policy by signing the Academic Integrity pledge on all major work submitted for the course. All individual assignments must be done by only you. Individuals should not work on assignments together. A single failure to follow this policy will result in a grade of 0 on that assignment; subsequent violations of this policy will result in a grade of F for the course. University students are expected to conduct themselves in accordance with the highest standards of academic honesty. I will pursue cheating as far as the university allows me. Specific information on the Academic Integrity Policy may be found on the UNCG web site at <http://academicintegrity.uncg.edu>