Course Syllabus for Fall 2022 (note that some changes are possible)

Professor: Dr. Franck Soh  
Office: 489 Bryan Building  
Email: f_sohnoume@uncg.edu

Course Meeting Time & Place: Tuesday 6:30 to 9:20 pm, Bryan Building 216  
Office Hours: Tuesday 5:15 to 6:15 pm (489 Bryan Building)  
Wednesday 4:15 to 5:15 pm or by Appointment (virtual on Zoom)

Course Description
Predictive analytics aims at exploring and analyzing a large volume of data to predict the relationship or pattern of phenomena of interest and generate insights for business organizations. Principles, models, and methods of predictive analytics are discussed.

Course Detailed Description
The recent explosion of digital data provides new business opportunities by revealing and predicting useful information about customers, products, competitors, and economic trends. Predictive analytics involves the art of data exploration, visualization, and communication as well as the science of analyzing large quantities of data in order to discover meaningful patterns and generate insights to support decision-making. The primary objective of this course is to introduce principles and techniques to extract useful information and predict the relationship or pattern of phenomena of interest from the large volume of data an organization can use. Through this course, students will become more competent in handling data and converting it into useful information and business value. This course will cover the concepts, principles, methodologies, and emerging trends in data mining and predictive analytics.

Course Learning Objectives
Upon completing this course, students will have a useful experience with a leading analytics software and build their analytical capabilities to use data for business decision-making. Specific outcomes are:

- Demonstrate an understanding of the principles of predictive analytics
- Identify, design, and assess different predictive analytics methodologies
- Prepare and formulate data collection, preprocessing, and exploration for analytical purposes
- Apply and assess different predictive analytic models and techniques
- Evaluate organizational implications of the use and implementation of predictive analytics
- Demonstrate proficiency in the use of analytics software

Textbook
The following book is available for you to download in the library as an eBook. I encourage you to download and review this book. The textbook is not mandatory.

I will share additional materials and references for course materials on canvas. **To succeed in the class, practicing the software, reading the chapters, and watching the videos shared in the class are equally important.** Please note that there are multiple books, guides, and references available for R. My choice of textbook reflects my desire to manage the cost while maintaining the quality of materials and coverage of concepts and technologies for the course.

I encourage you to explore alternative, and perhaps more current, resources for R that are readily available on the web and find what works for you. Please share your findings and preferences with the rest of the class.

➢ **Programming Environment**

This course makes extensive use of R, a free open-source software for statistical computing and graphics, which is widely used by both academia and industry. R software is one of the top languages for statistical modeling, data mining, and predictive analytics.

R Studio is a user-friendly environment for R that has become popular. This software can be accessed via UNCG’s MyCloud ([https://mycloud.uncg.edu](https://mycloud.uncg.edu)). Students can also get their copy on the websites ([www.r-project.org](http://www.r-project.org) for R software and [www.rstudio.com/products/RStudio](http://www.rstudio.com/products/RStudio) for R Studio). Instructions on how to install it will be on Canvas.

➢ **Canvas Learning Management System**

UNCG Canvas is available at [https://canvas.uncg.edu](https://canvas.uncg.edu). Course materials, announcements, and updates will be posted on Canvas regularly. Please check canvas daily for announcements, discussions, and materials. You will be responsible for any information or announcements provided to you through emails and for any updates on Canvas.

➢ **Course Structure**

IAF 601-01, ISM 645-01, and ISM 645-02 classes are to be taught in a synchronous "HyFlex" format in Room 216 (Bryan Building). Students in the IAF 601-01 and ISM 645-01 are expected to attend the class in-person in the times and dates given in Room 216 (Bryan Building) and students in the ISM 645-02 are expected to attend the class virtually exactly in the times and dates given. Attendance for "HyFlex" classes is not optional. Attendance for students attending in-person and virtual for "HyFlex" classes is mandatory at the times listed. Faculty members, using their discretion, can give special permission for students in a "HyFlex" class to miss a specific class session (with specific "make-up" policies stated in the syllabus) or for an in-person student to attend virtually. Students (regularly attending sessions in-person or virtually in a "HyFlex" class) who have missed a specific class session with permission from the instructor could be provided with the recording of the class session missed as an exception, rather than the rule.

➢ **Participation**

Students are expected to regularly discuss their progress in the course and participate in discussions using the topic/assignment-specific discussion boards on Canvas.

➢ **Assignments**

Designing and developing problem-solving strategies constitute a significant aspect of your skill development in this course. Much of this is accomplished through discovering solutions as you solve problems presented in your assignments. Assignments, therefore, are an integral part of your learning in the course.
Students will have 4 assignments dealing with specific topics in predictive analytics (details will be posted on Canvas). Students will use R for their assignments. Assignments are due on the date/time specified in the course.

All assignments must be completed by you and outside of class. They are due at 11:59 pm on the assigned due date unless otherwise announced. Assignments submitted after their due dates may be accepted without a penalty based on valid reasons and documented cause, following discussion with the instructor. If no valid reason or documentation is provided, late projects will have a 10%-point deduction/day. Late projects will be accepted up to 4 business days after the due date only.

➢ Weekly Quizzes
Every week, course materials will be followed by short questions submitted on Canvas. They are designed to “quickly” test understanding of each lecture material.

➢ Group Project
Students must join a group of NOT MORE THAN 5 to develop a project proposal and a final report on a topic approved by the instructor. The project topic must be related to one or more aspect(s) of topics discussed in the course. Students will be developing and applying predictive analytics methods and models in a real-world setting, along with data analytical processes from data collection to data exploration to data analysis. This project will have two parts. The first part is a report that proposes and describes the project topic, its importance, and a proposed methodology. The second part is the actual project implementation and write-up. Details on this group project will be provided as going along in the course.

➢ Midterm and Final Exams
A timed midterm and final exams are required for the course. The exams will test knowledge of predictive analytics and the use of the software. For the university policy regarding COVID-19, the exams will be online.

The exams will be administered only once. If a documented emergency develops and you miss an exam, there may be an alternative at the discretion of the instructor.

➢ Extra Credit
To allow students to make up for their grades, extra activities to earn extra credit (outside of regular scores) will be given (not mandatory). Details will be provided as going along in the course. The maximum extra credit a student can have in this course is 15% of the grade points.

➢ Grading
The course grade will be calculated using the following distribution:

<table>
<thead>
<tr>
<th>Elements</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Weekly Quick Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Group Project</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final Grading Scale</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>95-100</td>
<td>A</td>
</tr>
<tr>
<td>90-94.9</td>
<td>A-</td>
</tr>
<tr>
<td>86-89.9</td>
<td>B+</td>
</tr>
<tr>
<td>83-85.9</td>
<td>B</td>
</tr>
<tr>
<td>80-82.9</td>
<td>B-</td>
</tr>
<tr>
<td>75-79.9</td>
<td>C+</td>
</tr>
</tbody>
</table>

Franck Soh, Ph.D.
Please Note:

- Grades in the ISSCM Department are NOT posted and are NOT given over the phone. You may check your grades on UNCGenie within 3-4 days after the final exam.
- Questions concerning the grading of an assignment, quiz, exam, or project must be resolved within a reasonable time (typically one week) after the grade has been posted in Canvas. After that period, all grades are final.

➢ Tentative Schedule

A flexible schedule of topics and assignments/quizzes is provided below and on Canvas. A detailed schedule before the beginning of each week will be posted on Canvas. It will include the week’s readings, assignments, and instructions. It is the student’s responsibility to stay on track with readings and assignments to be successful in the course.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Class Topics</th>
<th>Assignment/Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/16-19</td>
<td>Introduction to Predictive Analytics</td>
<td>Quiz 1</td>
</tr>
<tr>
<td>2</td>
<td>8/22-26</td>
<td>R Basics</td>
<td>Assignment 1 – Part I</td>
</tr>
<tr>
<td>3</td>
<td>8/29-9/2</td>
<td>Data Cleaning and Manipulation 1</td>
<td>Assignment 1 – Part II</td>
</tr>
<tr>
<td>4</td>
<td>9/5-9/9</td>
<td>Data Cleaning and Manipulation 2</td>
<td>Quiz 2</td>
</tr>
<tr>
<td>5</td>
<td>9/12-16</td>
<td>Data Exploration and Visualization</td>
<td>Quiz 3</td>
</tr>
<tr>
<td>6</td>
<td>9/19-23</td>
<td>Cluster Analysis</td>
<td>Quiz 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assignment 2</td>
</tr>
<tr>
<td>7</td>
<td>9/26-30</td>
<td>Association Rules and Recommender Systems</td>
<td>Quiz 5</td>
</tr>
<tr>
<td>8</td>
<td>10/3-7</td>
<td>Linear Regression</td>
<td>Quiz 6</td>
</tr>
<tr>
<td>9</td>
<td>10/10-12</td>
<td>Fall Break</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10/17-21</td>
<td>(Online) Midterm Exam</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>10/24-28</td>
<td>Meeting for Final Project – No Class</td>
<td>Progress Report Due</td>
</tr>
<tr>
<td>12</td>
<td>10/31-11/4</td>
<td>Solving a Real-World Problem</td>
<td>Quiz 7</td>
</tr>
<tr>
<td>13</td>
<td>11/7-11</td>
<td>Logistic Regression</td>
<td>Quiz 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assignment 3</td>
</tr>
<tr>
<td>14</td>
<td>11/14-18</td>
<td>Classification and Regression Tree</td>
<td>Quiz 9</td>
</tr>
<tr>
<td>15</td>
<td>11/21-25</td>
<td>Ensemble Method and Random Forest</td>
<td>Quiz 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assignment 4</td>
</tr>
<tr>
<td>16</td>
<td>11/28-12/2</td>
<td>Final Review and Current Issues in Analytics</td>
<td>Final Project Due</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Online) Project Presentations</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>12/5-9</td>
<td>(Online) Final Exam</td>
<td></td>
</tr>
</tbody>
</table>

Topics can be adjusted depending on the progress of the class.

➢ Changes to the Syllabus/Schedule

The syllabus and schedule are tools to help you plan your time. Every effort is made to make the syllabus and schedule as complete as possible, but there may be occasions when changes are required, including changes in the grading components, due dates, and exam dates. The instructor will announce any deviations from the syllabus or schedule in class.

➢ Make-up Exam Policy
It is to your advantage to take all exams at the scheduled times. Only in the case of a well-documented true emergency should an exam be missed. Please be sure to get your instructor’s prior approval for all but emergency cases. Students with university-related or requested absences, e.g., field trips in other courses or multiple exams during finals week, must make prior arrangements in advance for any conflicts with their schedule and due dates for the course. **Exams missed without the prior approval of your instructor or without adequate documentation of the reason for missing the exam will result in a recorded grade of zero for the missed exam.**

➢ **Grading Impact of Possible Class Disruptions**
This section is about the impact of possible disruptions on your course grade. Rather than waiting for disruptions to happen, and then having to inform you how those are going to affect your grade, we want to tell you in advance how your course grade may be affected by possible disruptions. For example, what would happen if we have too many disruptions so we cannot complete all course assignments? What if we must cancel the project?

If any course individual projects and exams are canceled (either by the instructor or the university), the course grade will be based on the exams, and projects that have been completed in the course. The percentage cut-offs listed in the course syllabus will change.

➢ **UNCG Policy & Instruction for COVID-19**
As we return for Fall 2022, all students, faculty, and staff and all visitors to campus are required to uphold UNCG’s culture of care by actively engaging in behaviors that limit the spread of COVID-19. While face-coverings are optional in most areas on campus, individuals are encouraged to wear masks. All individuals and visitors to campus are asked to follow the following actions:

- Engaging in proper hand-washing hygiene.
- Staying home when ill.
- Complying with directions from health care providers or public health officials to quarantine or isolate if ill or exposed to someone who is ill.
- Completing a self-report when experiencing COVID-19 symptoms, testing positive for COVID-19, or being identified as a close contact of someone who has tested positive.
- Staying informed about the University’s policies and announcements via the COVID-19 website.

Students who are ill, quarantining, or isolating should not attend in-person class meetings, but should instead contact their instructor(s) so alternative arrangements for learning and the submission of assignments can be made where possible.

As we continue to manage COVID-19 on our campus, we are following the lead of the local health department and we will adjust our plans to balance student success, instructional requirements, and the hallmarks of the collegiate experience with the safety and wellbeing of our campus community.

➢ **Attendance Policy for University Sponsored Events (Please, discard this policy as this course is asynchronous)**
The University recognizes the importance of certain extra-curricular and co-curricular activities (including travel days) that enhance student learning, personal development, and professional growth. Instructors will excuse the absences of students for participation in University-sponsored events under the following conditions:

1. Students who expect to miss one or more class meetings due to participation in University-sponsored activities should:
   a. Notify the instructor(s) at least five class days in advance;
   b. Arrange to complete all missed work in advance of the absence whenever practicable as judged by the instructor(s). When missed work cannot be completed in advance, the instructor(s) should provide students with the opportunity to make up the work. Students should be aware, however, that not all kinds of work can be made up. The instructor(s) have the discretion to deny make-up work if (i) alternative assignments place an unreasonable demand on the instructor, (ii) the original assignment is such that not completing it at the originally assigned time impedes student learning; and
   c. Present relevant documentation of participation in a relevant University-sponsored activity to the instructor(s) upon request.

Students who expect to miss more than three class periods of any single course of any kind in a term or more than two consecutive meetings of a laboratory course in order to participate in University-sponsored activities should inform the instructor at the beginning of the course. In the case that the faculty member cannot make reasonable accommodations for make-up work, the student may appropriately be advised to drop the course.

Regular class attendance is a responsibility and a privilege of university education. It is fundamental to the orderly acquisition of knowledge. Students should recognize the advantages of regular class attendance, accept it as a personal responsibility, and apprise themselves of the consequences of poor attendance. Instructors should stress the importance of these responsibilities to students, set appropriate class attendance policies for their classes, and inform students of their requirements in syllabi and orally at the beginning of each term.

- **e-Mail**
  - Always include a subject line.
  - Remember without facial expressions some comments may not be interpreted accurately. Take care to word your emails. The use of emoticons might be helpful in some cases.
  - Use standard fonts.
  - Do not send large attachments without permission.
  - Special formatting such as centering, audio messages, tables, Html, etc. should be avoided unless necessary to complete an assignment or other communication.
  - Respect the privacy of other class members
  - **Please Note:** E-mail is my preferred method of communication. Please send an email directly to my email address: f_sohnoume@uncg.edu

- **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 for all users. However, in the event of an 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.

What you Need to Take this Course
- Textbook and RStudio.
- You must have access to a computer that connects to the Internet. The course materials are only accessible online by logging in to canvas.uncg.edu – your student identification number is required. If you do not own a computer, the computer labs on campus might be open during this semester.
- You must have a working e-mail account. Your first task will be to update your e-mail address on the course Web site. Instructions are online at canvas.uncg.edu - you must log in to see the course materials.
- Because of e-mail viruses, you must use the subject ISM645 and your full name typed in the message, or the e-mail may be ignored.
- If you have questions, please do not respond to a Canvas Announcement, rather send me a direct email.
- You must check your e-mail account regularly throughout the semester. Official announcements will be made by e-mail and on the course Web site at canvas.uncg.edu.
- You are responsible for saving all assignments correctly, so you can turn them in electronically. You should be comfortable using word processing software, programming software, and have reasonable keyboarding skills. No assignments will be accepted in handwritten form.
- Supplies: Although you will be publishing (uploading) your assignments, it is a good idea to keep copies of everything.

Written Communication Content
Information Systems involve a dynamic environment with constant attention to changes. Effective and professional written communication is stressed through the required assignments.

E-mail: Each student has been assigned an e-mail account by the IRC. Students will be expected to activate their e-mail accounts and to use electronic mail. An excellent way to receive help on homework assignments is for students to attach the file in question to an e-mail and send it to the instructor.

IMPORTANT: Academic Integrity Policy
Discussing your assignments with other students can be a valuable learning resource; however, each student is expected to do their original work. University students conduct themselves per the highest standards of academic integrity. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, forgery, or plagiarism. UNCG Academic Integrity Policy can be viewed at http://sa.uncg.edu/handbook/academic-integrity-policy/. Students should NOT make, borrow, or “share” copies of their assignments or files with other students, including previous ISM 645 students. Helping one another is allowed, but copying, even electronically, is cheating. This practice is against the UNCG Academic
Integrity Policy and defeats the purpose of this course. No credit will be received for shared work, and other penalties may be imposed.

➢ Accommodations for Students with Disabilities
UNCG seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a disability must connect with the Office of Accessibility Resources and Services (OARS) at 215 Elliott University Center, (336)334-5440, oars.uncg.edu. The student is to provide a written request for each test accommodation to their instructor (an e-mail will suffice provided you have received a reply from the instructor). Both the requests to the OARS and the instructor are to be made at least ten school days before the test date.

➢ Important Health Statement
Health and well-being impact learning and academic success. Throughout your time at the university, you may experience a range of concerns that can cause barriers to your academic success. These might include illnesses, strained relationships, anxiety, high levels of stress, alcohol, drug problems, feeling down, or loss of motivation. Student Health Services and The Counseling Center can help with these or other issues you may experience. You can learn about the free, confidential mental health services available on campus by calling 336-334-5874, visiting the website at https://shs.uncg.edu/, or visiting the Anna M. Gove Student Health Center at 107 Gray Drive. For undergraduate or graduate students in recovery from alcohol and other drug addiction, The Spartan Recovery Program (SRP) offers recovery support services. You can learn more about recovery and recovery support services by visiting https://shs.uncg.edu/srp or reaching out to recovery@uncg.edu

➢ Religious Obligations Statement
It is expected that instructors will make reasonable accommodations for students who have conflicts due to religious obligations. Please make arrangements with the instructor in advance of any conflict. For more information on UNCG’s Religious Obligations policy, visit: https://drive.google.com/file/d/0B3_J3Uix1B4UeTV4Nk1vVFJoVFE/view?resourcekey=0-zRdXEmUA6rRI2RzKq06u3g

➢ Expectations of Faculty and Students in the Bryan School
Students should read the Guidelines for Faculty and Students presented on the web pages found at http://bryan.uncg.edu/wp-content/uploads/2012/08/faculty_student_guidelines.pdf