The University of North Carolina at Greensboro  
The Bryan School of Business and Economics  
Department of Consumer, Apparel, and Retail Studies

CRS 651: Advanced Retail Data Analytics (3 Credits)  

Spring 2021

INSTRUCTOR

Dr. Jin Su  
Email: j_su@uncg.edu  
Office: 214 Stone Building  
Office Phone: 336-256-0290  
Virtual Office Hours: Monday & Wednesday: 12:00 – 1:00pm  
Or by appointment

COURSE DESCRIPTION

Retail Data Analytics is a growing field and becoming more and more important for managerial decisions. This class is designed to further introduce students to predictive and prescriptive analytics tools for business decisions. Students will also be introduced to the R language and R Studio for statistical analysis and graphics, in addition to Analytic Solver Basic, JMP, SPSS, SAS, and Excel. This class takes a combination approach that includes textbook readings, videos, tutorials, and assignments.

REQUIRED TEXTBOOK


RECOMMENDED MATERIALS


Additional required readings (academic/trade articles, consulting reports and case studies) will be distributed during class or available electronically on Canvas.

COURSE STUDENT LEARNING OUTCOMES

After completing this course, students should be able to:

- Recognize and conduct statistical inference.
- Develop an appreciation of how data and data analytics can be employed by retail managers.
- Become familiar with the set of common used terms and techniques in the areas of data analytics.
- Gain an understanding of and a familiarity with using R Studio, Excel, SAS, SPSS, Analytic Solver Basic, and JMP data analysis and presentation.
▪ Identify opportunities in which business analytics can be employed to improve business performance and support decision.
▪ Develop effective business decisions based on data analytics results; and
▪ Design and implement fruitful research project.

RULE OF CONDUCT

▪ Attendance:
  You are expected to attend live web-based class meeting when it is scheduled (please see the Canvas Announcements for the week that we will be meeting live). Should you miss a class meeting, you are responsible for all materials covered at that class meeting (you can obtain these materials you miss via Canvas). Please do not miss a live web-based class meeting as we will have activities during that live meeting.

▪ Participation:
  This is a graduate-level course, which involves active participation in class discussion. Thus, class participation is extremely important. Please note: make sure that you complete all assigned readings and come prepared to participate when we meet live. Your grade will be evaluated on the level and quality of class participation. If you simply say nothing during the course, your participation grade will be recorded as a 0 (zero).

ASSIGNMENT REQUIREMENTS

▪ Late assignments WILL NOT BE ACCEPTED!

  The only exception to this rule is if you have documentation for medical or family emergencies and other crises (i.e., doctor’s note).

▪ Written Assignments: All documents must satisfy the requirements as follows:
  ➢ typed and printed on printer,
  ➢ stapled,
  ➢ double-spaced,
  ➢ 10-12 font,
  ➢ 1-inch margins on all sizes,
  ➢ title of assignment centered on first page,
  ➢ use of header containing student name at left side and due date on right side,
  ➢ use of appropriate page number,
  ➢ appropriate citation for all references and quotations (APA style in the Publication Manual of the American Psychological Association, 6th edition),
  ➢ accurate spelling and grammar.

Citation Guides: APA Style on the webpage of UNCG Libraries (University Libraries—Research Guides—Citation Guides—APA Style):
http://uncg.libguides.com/citation/apa

The Writing Center at UNCG provides some information about APA Style:
https://writingcenter.uncg.edu/writing-assistance/grammar-and-usage/

EVALUATIONS AND GRADING
<table>
<thead>
<tr>
<th>Grading Systems</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam</td>
<td>15%</td>
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<tr>
<td>Final Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Analytic Portfolios</td>
<td>15%</td>
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<tr>
<td>Term Paper</td>
<td>15%</td>
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</tbody>
</table>

The letter grade breakdown is shown below (for **graduate students**):

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100 – 93%</td>
</tr>
<tr>
<td>B+</td>
<td>89 – 87%</td>
</tr>
<tr>
<td>C+</td>
<td>79 – 77%</td>
</tr>
<tr>
<td>F</td>
<td>Below 70%</td>
</tr>
<tr>
<td>A−</td>
<td>92 – 90%</td>
</tr>
<tr>
<td>B</td>
<td>86 – 83%</td>
</tr>
<tr>
<td>C</td>
<td>76 – 70%</td>
</tr>
<tr>
<td>B−</td>
<td>82 – 80%</td>
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</tbody>
</table>

- **Exams**
  Exams are not cumulative. They are based upon class lectures, the text, class discussion, assignments, and other materials covered in class. NO MAKE UP EXAMS WILL BE GIVEN.

- **Assignments**
  There will be weekly assignments (total of 10 assignments) and due before midnight on designated due date (see tentative course schedule) on Canvas. In addition, assignments submitted past due date will not be accepted. Note, all assignments must be typed and double spaced with one inch margin across.

- **Analytic Portfolios**
  Detailed requirements for the project will be provided.

- **Term Paper**
  This assignment will require an integrative analysis. The purpose of the term paper aims to demonstrate your thinking in terms of conducting a real scientific study using statistical techniques taught in class. Students will have hands-on experience of identifying data pattern and predicting future outcomes. Students will be reviewing NDP Retail Consumer Data (I will provide you this data set) and write a 10-page report, including abstract, introduction/background of the problem, methods, results, discussion/conclusion, and references. Students should clearly state the problem you have chosen to examine.

  All Components of the paper need to be put together clearly and professionally. Detailed requirements for the project will be provided.

**Incomplete (for entire course)**
Grades of incomplete will only be given to those students who have participated fully in the majority of the class and are under extenuating circumstances of which the instructor must be notified and provided adequate documentation of the excuse. An option to receive an incomplete will be at the discretion of the instructor. In addition, the reason for the incomplete must be verified and there must be a written agreement with the student that specifies the work to be performed and an according timetable for completion must be submitted.

ACADEMIC INTEGRITY

Students will be expected to do his/her own original work for exams and assignments. Students are responsible for familiarizing themselves with the UNCG policy on issues such as cheating, plagiarism, misuse of academic resources, falsification and facilitation of dishonest conduct. Procedures and penalties related to these and other violations of the Academic Honor Policy are found in the undergraduate bulletin as well as via the following web site: http://academicintegrity.uncg.edu/. Any violation of the Honor Policy may result in failure of the assignment and subsequently the entire course. Therefore, DO NOT JEOPARDIZE YOUR ACADEMIC FUTURE by participating in, or facilitating, any act of academic dishonesty.

ACADEMIC ACCOMMODATIONS

The University of North Carolina at Greensboro respects and welcomes students of all backgrounds and abilities. If you feel you will encounter any barriers to full participation in this course due to the impact of a disability, please contact the Office of Accessibility Resources and Services (OARS). The OARS staff can meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations. You can learn more about OARS by visiting their website at https://ods.uncg.edu/ or by calling 336-334-544 or visiting them in Suite 215, EUC.

CARS DEPARTMENT STATEMENT ON STUDENT CONDUCT AND COMPLAINT BEHAVIOR

The Department of Consumer, Apparel, and Retail Studies (CARS) expects that all students enrolled in the CARS major will behave professionally and in a manner that reflects positively on the department, the school, and the university. This expectation applies to conduct within CARS courses, when working at internship sites, and attending events where students are acting as representatives of the CARS program.

Complaints pertaining to a specific course must first be brought up with the instructor. Per the UNCG University Catalog, if a student wishes to appeal an assigned grade, the student should first discuss the concerns with the instructor. If desired, the student may further appeal to the department head, the dean of the school or college, and the provost, in that order. See the University Catalog for further details on Grade Appeals.

HEALTH AND WELLNESS

Health and well-being impact learning and academic success. Throughout your time in 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 or 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

**COVID-19 HEALTH AND SAFETY ISSUES**

As UNCG returns to face-to-face course offerings in spring 2021, the campus community must recognize and address concerns about physical and emotional safety. As such, all students, faculty, and staff are required to uphold UNCG’s culture of care by actively engaging in behaviors that limit the spread of COVID-19. Such actions include, but are not limited to, the following:

- Wearing a face covering that covers both nose and mouth
- Observing social distance in the classroom
- Engaging in proper hand washing hygiene when possible
- Self-monitoring for symptoms of COVID-19
- Staying home if you are 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.

**COVID-19 Spartan Shield Video**

UNCG Chancellor Frank Gilliam has challenged us to create a Culture of Care at UNCG where we all wear face coverings and social distance, less to protect ourselves but rather more to protect everyone around us. It shows that you care about the well being of everyone around you. We have created this video featuring your student body presidents to better explain how and why this is so important.

Please watch this video before the first day of classes.

https://youtu.be/Mb58551qxEk
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Course Topics and Tentative Course Schedule for Spring 2021

Please note:
- **This is an online course.** It is important that you check the course website Canvas regularly for any new course information.
- You are responsible for any information posted on Canvas.
- Please make sure you can get access to software through UNCG
- The assignments, paper and project are due on Canvas by 11:59pm on the due date.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics and Assignments</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 19-24</td>
<td>Introduction to the course</td>
<td>Read Syllabus and materials on Canvas</td>
</tr>
<tr>
<td>2</td>
<td>Jan 25-31</td>
<td>Data Management and Data Analytics in the Retail Industry Guest Speaker <em>Assignment #1</em></td>
<td>Assignment #1 Due on 01/31</td>
</tr>
<tr>
<td>3</td>
<td>Feb 01-07</td>
<td>Data Inspection and Preparation <em>Assignment #2</em></td>
<td>Assignment #2 Due on 02/07</td>
</tr>
<tr>
<td>4</td>
<td>Feb 08-14</td>
<td>Revisit Descriptive Analysis <em>Assignment #3</em></td>
<td>Assignment #3 Due on 02/14</td>
</tr>
<tr>
<td>5</td>
<td>Feb 15-21</td>
<td>Data Visualization and Summary Measures <em>Assignment #4</em></td>
<td>Assignment #4 Due on 02/21</td>
</tr>
<tr>
<td>6</td>
<td>Feb 22-28</td>
<td>Data Visualization and Summary Measures (Cont.) <em>Assignment #5</em></td>
<td>Assignment #5 Due on 02/28</td>
</tr>
<tr>
<td>7</td>
<td>Mar 01-07</td>
<td>Midterm Exam</td>
<td><strong>Midterm Exam Due on 03/07</strong></td>
</tr>
<tr>
<td>8</td>
<td>Mar 08-14</td>
<td>Statistical Inference and Hypothesis Testing <em>Assignment #6</em></td>
<td>Assignment #6 Due on 03/14</td>
</tr>
<tr>
<td>9</td>
<td>Mar 15-21</td>
<td>Regression Analysis <em>Assignment #7</em></td>
<td>Assignment #7 Due on 03/21</td>
</tr>
<tr>
<td>10</td>
<td>Mar 22-28</td>
<td>Introduction to Data Mining <em>Assignment #8</em></td>
<td>Assignment #8 Due on 03/28</td>
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<tr>
<td>Week</td>
<td>Dates</td>
<td>Topics</td>
<td>Assignments</td>
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<tr>
<td>11</td>
<td>Mar 29 - Apr 04</td>
<td>Introduction to Analytic Solver Assignment #9</td>
<td>Assignment #9 Due on 04/04</td>
</tr>
<tr>
<td>12</td>
<td>Apr 05-11</td>
<td>Introduction to SAS and JMP Assignment #10 Term Paper and Portfolio Analysis</td>
<td>Assignment #10 Due on 04/11</td>
</tr>
<tr>
<td>13</td>
<td>Apr 12-18</td>
<td>Introduction to Python Term Paper and Portfolio Analysis</td>
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<tr>
<td>14</td>
<td>Apr 19-25</td>
<td>Introduction to R Studio Term Paper and Portfolio Analysis</td>
<td>Term Paper and Portfolio Analysis Due on 04/25</td>
</tr>
<tr>
<td>15</td>
<td>Apr 26-29</td>
<td>Q&amp;A Session and Preparation of the Final Exam</td>
<td></td>
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<tr>
<td>16</td>
<td>Apr 30 - May 04</td>
<td>Final Examination Due on Tuesday, May 4 (before 11:59pm)</td>
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The schedule and procedures in this course, as outlined in this syllabus, are subject to change in the event of extenuating circumstances and/or as deemed appropriate by the professor.