APPLIED DATA ANALYTICS
CSC 120 - 3 Credits

Instructor: Vani Gupta
Office: Virtual (Zoom link on Sakai)
Email: vgupta@providence.edu
Website: On Sakai

Class Times and Location: MWF from 1:30PM to 2:20PM via Zoom (Zoom links on Sakai)
Office Hours: MWF 2:30PM to 3:20PM. Also by appointment.

The instructor reserves the right to make modifications to any part of this syllabus and schedule.

Course Prerequisites: Working knowledge of Excel. Some experience with statistical concepts is recommended.

COURSE DESCRIPTION

Applied data analytics examines how organizations use data to gain insights and make decisions by utilizing data modeling and statistical methods. In this introductory course, students study techniques for descriptive, predictive, and prescriptive data analytics. Students learn efficient result reporting methodologies and develop skills to produce effective data visualizations. Prior experience with Excel or permission of instructor is required.

COURSE GOALS AND LEARNING OUTCOMES

The course will provide the student with the skills to:

• Distinguish between the three main types of analytics: descriptive, predictive, and prescriptive
• Extract relevant data from databases and datasets
• Comprehend data models and statistical methods
• Produce effective data analyses using multiple analytical methods and current software applications
• Create data visualizations and present findings

COURSE GRADING

The final grade for the course will be calculated as follows:

• Exams (35%): Two Midterm Exams (10% each) and one Final Exam (15%)
• Projects (15%): There will be two projects weighted equally (i.e. 7.5% each)
• Homework (40%): There will be several homework assignments throughout the semester. Unless otherwise stated, this should be your own work.
• **Attendance and participation (10%)**: Apart from the lecture, there will be class activities throughout the semester.

**Letter grades will be assigned as follows**: A (93.0-100%), A- (90.0-92.9%), B+ (87.0-89.9%), B (83.0-86.9%), B- (80.0-82.9%), C+ (77.0-79.9%), C (73.0-76.9%), C- (70.0-72.9%), D+ (67.0-69.9%), D (63.0-66.9%), D- (60.0-62.9%), F (<60.0%)

**COURSE MATERIALS**

The textbook for this course is: *Business Analytics (4th edition)* by Jeffrey Camm et al

**TENTATIVE COURSE SCHEDULE BY WEEK**

The following is a tentative plan for the topics to be covered in the course. Please note that the advanced topics scheduled for weeks 13 and 14 of the semester will be covered depending on the time available.

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<thead>
<tr>
<th>WEEK</th>
<th>TOPICS</th>
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<tbody>
<tr>
<td>1/2</td>
<td>Introduction to Applied Data Analytics</td>
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<tr>
<td>1/2</td>
<td>Descriptive Statistics</td>
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<td>3</td>
<td>Data Visualization</td>
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<td>Querying Databases for Data Analysis</td>
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<td>6</td>
<td>MIDTERM1 Querying Databases for Data Analysis</td>
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<td>7</td>
<td>Probability</td>
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<td>8</td>
<td>Probability, Statistical Inference</td>
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<td>9</td>
<td>Linear Regression, Time Series Analysis</td>
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<td>10</td>
<td>Spreadsheet Models MIDTERM 2</td>
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<tr>
<td>11</td>
<td>Spreadsheet Models, Data Mining</td>
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<tr>
<td>12</td>
<td>Data Mining</td>
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<tr>
<td>13</td>
<td>Monte Carlo Simulation</td>
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<td>14</td>
<td>Optimization, Decision Analysis</td>
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<tr>
<td>15</td>
<td>Wrap-up and review</td>
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The final exam is scheduled by the college (Please see [https://registrar.providence.edu/final-exam-schedule/](https://registrar.providence.edu/final-exam-schedule/) for Series J)

**COURSE POLICY AND GUIDELINES**

**Attendance**: Students are expected to attend all classes, except for students who are ill or have a college-sanctioned activity that conflicts with class times. However, missing class is not an acceptable excuse for failure to
complete required material on time. Every meeting will cover material related to assignments and exams. Material that is presented in class will not be covered again outside of class - if you miss class, it is up to you to find out what was covered and to get the notes from Sakai or another student.

**Exam and Homework**

Students are expected to be present for all examinations. Make-up exams will be allowed only with prior permission or a documented emergency or illness. Unexcused absences from an examination will result in a grade of zero for the missed examination. Please check exam dates before reserving tickets for personal travel.

All assignments are due at the listed due date. Assignments submitted within the 24 hours after the due date and time will be penalized by 20%. Assignments will not be accepted after 24 hours after the due date and will receive a zero, unless a documented, approved excuse is submitted.

**Academic Integrity:**

All students at Providence College are expected to maintain high standards of academic honesty and integrity. It is the responsibility of every student to be aware of the college’s Academic Integrity Policy’s content and to abide by its provisions. Academic misconduct is conduct by which a student misrepresents his or her academic accomplishments, or impedes other students' chances of being judged fairly for their academic work. Knowingly allowing others to represent your work as their own is as serious an offense as submitting another's work as your own. Any and all infractions of the Academic Integrity Policy will be reported to the Office of the Dean of Undergraduate Studies and your final grade will be significantly impacted.

Unless specified otherwise, all exams are closed book (this includes notes, phones, etc.). Any suspected cheating on an exam may result in failure for the course. IF an exam is take-home, each student must complete the exam individually- no sharing, copying, or collaboration. For further information, see the section on **Academic Integrity** in the Undergraduate Catalog (http://catalog.providence.edu/mime/media/view/25/888/Undergraduate+Catalog_18-20.pdf)

The I.T. Help Desk is located in Phillips Memorial Library room LL25. Please read the **Information Technology Acceptable Use Policy** available on the IT website: (https://it.providence.edu/).

**Disability Accommodations**

Providence College is committed to providing students with documented disabilities equal access to all college programs and facilities. If you think you have a disability requiring accommodations,
you must register with the Office of Academic Services (OAS). Contact OAS at (401) 865-2494 or visit them in the Phillips Memorial Library - Upper Level. If you have received an accommodation letter for this course from OAS, please provide me with that information privately so that we can review those accommodations.

**Academic Support**

The Office of Academic Services (O.A.S.) offers a variety of programs to assist students in their pursuit of academic excellence. While some programs are tailored to the needs of specific groups, most services, including tutoring and academic mentoring, are available to all PC students. The O.A.S. office is located on the second floor of the Phillips Memorial Library. **Phone:** 401-865-2494

**Copyright Policy**

Materials used in connection with this course may be protected by Copyright Law. Additionally, students may not share class materials without the express permission of the instructor. For more information, including Fair Use guidelines, please see the College's Copyright Policy and Guidelines.

**Acceptable Use**

“Acceptable use of the College’s information technology resources is consistent with the principle of academic freedom. As is the case with the use of all other resources and activities provided or sponsored by the College, however, use of the College’s information technology resources is contingent upon adherence to ethical and legal behavioral expectations, and compliance with policies and procedures outlined in the College’s Handbooks (Student, Faculty, Staff).

When presented with evidence of a violation of College policies, or state or federal laws, or when it is necessary to do so to protect the College against potential legal liability, the College may suspend, block, or restrict the use of its information technology resources. Violators also may be subject to other penalties and disciplinary action, including possible suspension, dismissal, or termination.”

**Syllabus Statement**

In this class, software may be used to audio record live class discussions. As a student in this class, your participation in live class discussions may be recorded. Recordings, if any, will be made for one or more of the following purposes: (1) for access only by students registered in the class; (2) to assist registered students who cannot attend a live session; (3) to serve as a resource for a registered student with a documented disability when the Office of Academic Services (OAS) determines that a recording is a reasonable accommodation. Recordings, if any, will be made unavailable to approved student(s) after the course concludes.

**Privacy Statement**

Privacy Statement Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within
the context of the class will be shared beyond the classroom. As such, recordings, if any, of instructional activities occurring in online or face-to-face classes must be accessed only by an approved student registered for the course; also, recordings, if any, must be used solely for internal class purposes by an approved student registered for the course, and only during the period in which the course is offered.

**Classroom Safety Policy**

Upon activation of the building fire alarm, all occupants must exit to a position safely away from the building. If you will require assistance during an emergency, please contact the instructor so that arrangements can be made in advance. Students are encouraged to become familiar with the locations of emergency exits.