NOTE to prospective students: This syllabus is intended to provide students who are considering taking this course an idea of what they will be learning. A more detailed syllabus will be available on the course Canvas site for enrolled students and may be more current than this sample syllabus.

Course Name: Data Exploration and Visualization
Course Number: BA575
Credits: 3
Instructor name: Evan Smouse, PhD
Instructor email: evan.smouse@bus.oregonstate.edu
instructor bio: http://business.oregonstate.edu/users/evan-smouse

Course Catalog Description: BA 575. DATA EXPLORATION AND VISUALIZATION (3).
In this course we concentrate on the initial, exploratory phases of business analytic data analysis. We explore different types of data and the types of analysis they allow; aggregating and disaggregating data and issues of validity with both selecting and collecting data. We also start exploring one or more datasets relating to our Integrated Business Analytics Project (BA 577). PREREQS: BA 573 [C]

For more information, contact: CAROL LEDER (Undergrad), 541-737-3716; JAMES COAKLEY (Grad), 453 AUSTIN HALL, 541-737-3716

Communication
Please post all course-related questions in the General Discussion Forum so that the whole class benefits from the conversation. Please email your instructor for anything more personal. I will reply to course-related questions and email very quickly. I will return assignments and grades for course activities to you within a day or two.

Course Credits - 3
This course combines approximately 90 hours of instruction, online activities, and assignments for 3 credits.

Technical Assistance
If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email osuhelpdesk@oregonstate.edu or visit the OSU Computer Helpdesk online.

Learning Resources
There is no textbook for this class. Readings are assigned in Canvas for each week and are available from online sources.

NOTE: For textbook accuracy, please always check the textbook list at the OSU Bookstore website. Sample syllabi may not have the most up-to-date information.

Canvas
This course will be delivered via Canvas where you will interact with your classmates and with your instructor. Within the course Canvas site you will access the learning materials, such as the syllabus, class discussions, assignments, projects, and quizzes. To preview how an online course works, visit the Ecampus Course Demo. For technical assistance, please visit Ecampus Technical Help.

• COURSE DEMO

This course is offered through Oregon State University Extended Campus. For more information, contact:
Web: ecampus.oregonstate.edu Email: ecampus@oregonstate.edu Tel: 800-667-1465
• **GETTING STARTED**

**COURSE SITE LOGIN INFORMATION**
Information on how to login to your course site can be found [HERE](#).

**REFUND POLICY INFORMATION**
Please see the [Ecampus website](#) for policy information on refunds and late fees.

**Measurable Student Learning Outcomes**
After successful completion of this course, you will be able to:

- associate specific Business Analytics questions with the types of data and analysis methods best suited to answer those questions
- associate different types of data with families of analysis techniques best used to explore them
- assess the suitability of data sets for answering specific Business Analytic questions
- provide advice about an initial set of exploratory statistics and visualizations that will help in the exploration of data for patterns and trends
- use iPython Notebook and Tableau to quickly compute/generate those statistics and visualizations
- specify a plan for data collection, data cleanup, data aggregation and/or disaggregation to answer Business Analytic questions

**Evaluation of Student Performance**
Learning outcomes will be measured as follows:

- Discussions – 100 points
- Homework – 200 points
- Executive Brief – 100 points
- Term Project – 600 points
- **Total – 1000 points**

**Grading Scale**
An A in this course is earned if a student earns 900-1000 points; 800-899 results in a B. Students should not take this graduate course if they don’t intend to earn an A or B.

**Course Content**
Typical schedule - the official schedule is maintained in Canvas.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Hands-on Assignments</th>
<th>Learning Activities/Deliverables</th>
</tr>
</thead>
</table>
| 1    | • Course overview & introductions  
      • Dimensions of data science and business analytics | Install and get started with Python and iPython Notebook | • Face-to-face class  
                                                      • Assigned readings  
                                                      • Term project data Online Discussion  
                                                      • Data Analytics Profile |
| 2    | • Visualization goals  
      • Data types and dimensionality  
      • Graph types | Install and get started with Tableau Desktop | • Narrated Powerpoints  
                                                      • Assigned readings & reflections  
                                                      • Graph type effectiveness Online Discussion |
| 3    | • Visual attributes  
      • Color | Python for data analytics | • Narrated Powerpoints  
                                                      • Assigned videos |
<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
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</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Exploring data</td>
<td>Exploring data using both Python pandas and Tableau</td>
<td>Narrated Powerpoints, Assigned readings &amp; reflections, Key takeaways assignment, Visualization design principles Online Discussion</td>
</tr>
<tr>
<td>5</td>
<td>Cleaning, wrangling &amp; munging data</td>
<td>Python for data preparation, Mapping in Tableau</td>
<td>Narrated Powerpoints, Assigned readings, Assigned video, Key takeaways assignment, Term project plan deliverable, Data wrangling Online Discussion</td>
</tr>
<tr>
<td>6</td>
<td>Extracting data from the Web</td>
<td>APIs and Web scraping</td>
<td>Narrated Powerpoints, Assigned readings, Key takeaways assignment, Term project Online Discussion, Executive brief Online Discussion</td>
</tr>
<tr>
<td>7</td>
<td>Visualizing higher dimensional data, Clustering &amp; reducing dimensionality</td>
<td>Facets and small multiples, Clustering &amp; data reduction</td>
<td>Narrated Powerpoints, Assigned readings &amp; reflections, Key takeaways assignment, Small multiples Online Discussion</td>
</tr>
<tr>
<td>8</td>
<td>Exploring &amp; visualizing data models</td>
<td>Linear regression, K-NN and K-Means</td>
<td>Narrated Powerpoints</td>
</tr>
<tr>
<td>9</td>
<td>Text analytics, MapReduce &amp; Hadoop, Plotly + Tableau review</td>
<td>Text analytics, Plotly</td>
<td>Narrated Powerpoints, Watch assigned video</td>
</tr>
<tr>
<td>10</td>
<td>Term project presentations</td>
<td></td>
<td>Face-to-face class</td>
</tr>
<tr>
<td>Finals</td>
<td></td>
<td></td>
<td>Term project (written version) due, Executive brief due</td>
</tr>
</tbody>
</table>

**Guidelines for a Productive and Effective Online Classroom**

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university’s regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to
be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course. Pay particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

**Statement Regarding Students with Disabilities**
Accommodations are collaborative efforts between students, faculty, and Disability Access Services. Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

**Accessibility of Course Materials**
All materials used in this course are accessible. If you require accommodations please contact Disability Access Services (DAS).

Additionally, Canvas, the learning management system through which this course is offered, provides a vendor statement certifying how the platform is accessible to students with disabilities.

**Expectations for Student Conduct**
Student conduct is governed by the university's policies, as explained in the Student Conduct Code.

**Academic Integrity**
Students are expected to comply with all regulations pertaining to academic honesty. For further information, visit Student Conduct and Community Standards, or contact the office of Student Conduct and Mediation at 541-737-3656.

OAR 576-015-0020 (2) Academic or Scholarly Dishonesty:

a) Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.

b) It includes:

i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.

ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.

iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means,
including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).

iv) TAMPERING - altering or interfering with evaluation instruments or documents.

v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

Conduct in this Online Classroom
Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the university's regulations regarding civility.

Tutoring
NetTutor is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Students connect to live tutors from any computer that has Internet access. NetTutor provides a virtual whiteboard that allows tutors and students to work on problems in a real time environment. They also have an online writing lab where tutors critique and return essays within 24 to 48 hours. Access NetTutor from within your Canvas class by clicking on the Tools button in your course menu.

OSU Student Evaluation of Teaching
Course evaluation results are extremely important and are used to help me improve this course and the learning experience of future students. Results from the 19 multiple choice questions are tabulated anonymously and go directly to instructors and department heads. Student comments on the open-ended questions are compiled and confidentially forwarded to each instructor, per OSU procedures. The online Student Evaluation of Teaching form will be available toward the end of each term, and you will be sent instructions via ONID by the Office of Academic Programs, Assessment, and Accreditation. You will log in to “Student Online Services” to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted.