BRMB 5240 Data Modelling for Business

Albers School of Business and Economics
Seattle University

1. General information

Instructor:	Ben Yeo (Master Yeoda)
Email:	byeo@seattleu.edu
Classroom:	NA
Day/Time:	NA
Office Hours:	Mon/Thu, 09:00 – 10:00 hrs
Pre-requisite:	BRMB 5220

2. Course description

Today, business management involves increasing dependence on the use of data and information, where data analysis tools play a critical role. To support managerial decision making, it is necessary to perform extensive data analyses. The course focuses on a variety of analytical techniques that students can use to solve a variety of business problems. By completing this course, students will be better equipped to apply these techniques to support business decision making.

3. Faculty biographical sketch

Yeoda is a faculty at Seattle University. His research interests include innovation- and technology-driven economic growth and social informatics, using both quantitative and qualitative methods, including traditional statistics and data mining. Prior to academia, Yeoda worked in the industry as a Senior Research Analyst in Economics. He received a Ph.D. in Information Science from the College of Information Sciences and Technology at the Pennsylvania State University. Obviously, a Star Wars nerd, he is ☺

4. Learning objectives

The primary course outcome is to provide students with an understanding of data modelling techniques and apply them to solve different business problems. Specific learning objectives include:

1. Become familiar with the use of Excel (including appropriate add-ins) and R for data analysis.
2. Understand and execute descriptive, predictive, and prescriptive data analytics
3. Determine the most appropriate data modelling technique to address different problems.
4. Become comfortable with formulating analytical approaches when faced with a variety of data.
5. Effectively communicate to a business audience using numbers and data visualisation techniques.
6. Assess business implications from data analyses.

5. Course materials

The following are required throughout the course.

- Evans, J. (2016). Business analytics. Methods, Models, and Decisions (2nd ed.). Pearson.
- Excel 2016[1] (Windows version)
- R/R Studio

In this course, we will use Excel and the appropriate add-ins, as well as the R programming environment and language (time permitting). A laptop computer is highly recommended for the class. Students who own an Apple computer are advised to run Excel 2016 on Windows by logging in SU desktop (https://desktop.seattleu.edu) or installing VMware on your computer. Earlier versions of Excel may work for some problems but may have various limitations on others. R/R studio works on both Windows and Apple computers. Students may use the Albers Desktop if preferred to avoid installations on personal machines.

6. Evidence students will submit

Grades are based on course deliverables. Specifically, there are 4 graded components for the course. These are given as follows.

- Recaps x6
- Project
    - Part 1
    - Part 2
- Mid Term exam
- Final exam

Recaps are self-paced homework on the material covered in that corresponding week[2]. They are designed to keep us up to date with the concepts and force us to revise our notes in preparationfor the mid term and exam.

The project comprises 2 parts of a business problem. Students will work in pairs[3] to apply the appropriate techniques to develop comprehensive solutions. All deliverables should be submitted on Canvas. Feedback will be provided to submitted work on Canvas approximately within one week of submission. **All late submissions of any deliverable without an approved extension[4] will receive a 5% penalty for each day late**. The quality of submissions will be measured using corresponding rubrics, available on the projects themselves. However, some aspects may involve subjective evaluation. As much as possible, the rubrics will frame the assessments[5]. All deliverables will be evaluated on evidence of learning, depth of analysis, organisation and thoroughness. They should

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[1] You may also use Excel 2013, but there may be a few compatibility issues with what we will dofor the course. The text is based on Excel 2013 though

[2] Not every week has an associated Recap assigned. Please check the course schedule.

[3] If you prefer to work individually, or have a larger group, please provide a justification for it.

[4] Extensions on any deliverable have to be very well justified on reasonably valid reasons and with appropriate documentation. The deliverables are assigned well in advance and any delaysshould be anticipated. Last minute extensions are not acceptable except under emergency

[5] All grade disputes (if any) must be addressed immediately. No grade changes to the deliverables are allowed 1 week after the grade for the corresponding deliverable is released.

demonstrate the consideration of key issues and critical thinking with respect to the data analysis techniques applied in a business setting. All written deliverables should be professional prepared, typed, and contain a bibliography of cited sources and appropriate footnotes (where applicable). All ideas, quotes and statistics borrowed from another author/source must be cited. If external content (such as facts or data) are used, please be sure to cite the corresponding authorities. Students may use any citation style, formal or otherwise. The objective here is simply to attribute to corresponding resources accordingly. Given that the project involves group work, students may do an optional peer evaluation at the end of the quarter. This may influence the final project grade.

The mid term and final exams follow a similar format. They comprise a series of conceptual, factual, and applied questions. **Due to the short quarter, there will be no make-up exams except in rare circumstances that are sufficiently and officially documented. If allowed, make-up exams must be completed within a week of the original test date. Make-up exams will be different (i.e. different questions) and thus, may not be at the same level of difficulty**. If a student requires special accommodation, he/she must inform the instructor in advance with the appropriate documentation so special arrangements can be made. Per the University's policy, INCOMPLETE grades can only be given un extenuating circumstances. This does not include missing the deadline for a project because of connection issues or having a common cold on the day of the exam.

6.1 Expectations

Participation and studying outside class times are critical in completing the course. Students are expected to read the assigned materials according to the course schedule.

Each week, students are expected to follow the activities assigned in order. Typically, these include:

1. Read assigned chapter
2. Follow demo in powerpoint slides[6]
   - Slides include screen captures
   - Videos are included to accompany the demos. These include demos for Excel and R.
   - Corresponding data files are available in each week's content on Canvas
3. Complete lab
   - These are ungraded exercises in Excel to test your understanding
   - Compare with given solution
4. Attend Q&A during office hours (as needed; optional)
   - These sessions are geared towards discussing and addressing specific problems and concepts
   - Students should have already completed the preceding steps
5. Complete Homework[7]

   - Recaps are quizzes on Canvas. Some questions require using Excel (or R if preferred) to analyse data.
   - The term project comes in 2 parts and are assigned in specific weeks. The 2 parts are due separately.

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[6] Screen captures and data files are provided.
[7] Where applicable. Some weeks have no recaps assigned, and projects are assigned in specificweeks

6.2 Criteria for assessment

The final grade will be based on the graded deliverables.

Recaps (x6[8]):	6%
Project:	
• Part 1 (Descriptive Analytics)	24%
• Part 2 (Predictive Analytics)	24%
Mid Term:	23%
Final exam[9]:	23%
Total:	**100%**

6.3 Grade descriptions

Grading will follow the Albers School's recommended rigour. Students are expected to follow the rubrics very closely.

Grade	Point	Grade Range	Grade Scale
A	4.0	95% +	The instructor judged the student to have accomplished the stated objectives of the course in an OUTSTANDING manner.
A-	3.7	90 – 94.99%	
B+	3.3	87 – 89.99%	
B	3.0	83 – 86.99%	The instructor judged the student to have accomplished the stated objectives of the course in an ACCEPTABLE manner.
B-	2.7	80 – 82.99%	
C+	2.3	77 – 79.99%	
C	2.0	73 – 76.99%	The instructor judged the student to have accomplished the stated objectives of the course in a POOR manner; but it is still a passing grade.
C-	1.7	70 – 72.99%	
D	1.0	60 – 69.99%	The instructor judged the student to have accomplished the stated objectives of the course in a DREADFUL manner. (A grade of D will not fulfil the requirements in a major field of concentration.)
F	0.0	Less than 60%	The instructor judged the student NOT to have accomplished the stated objectives of the course. TROLL

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[8] If we have less recaps assigned due to time constraints, then only those assigned will be takeninto account for the final grade calculation. The total grade composition (i.e. 12%) remains unchanged.
[9] Cumulative.

7. Course schedule (in Pacific Time)[10]

Classes will comprise a mixture of lectures, demos (Excel and R), and labs. Lectures are geared towards explaining the concepts behind the techniques. Demos illustrate how the techniques work. Labs are hands-on activities where students will solve a business problem in class. These are designed to provide students with sufficient knowledge and experience with these techniques. In addition, homework is assigned on most weeks to provide conceptual reviews and hands-on practice.

Week #	Module	Dates	Topic	Activities[11]
Week 1	Overview part 1	Mar 29 –Apr 2	Course introduction; Analytics on Spreadsheets	Readings: • Evans Ch 2 Activities: • Software installation (Excel 2016) • Self-introduction on Canvas • Lab Homework: • Recap 1 (1st attempt due Apr 4)
Week 2	Overview part 2	Apr 5 – Apr 9	Intro to R	Readings: • Software installation (R) • Intro to R (demo) Activities: • Demo (R)
Week 3	Descriptive Analytics, part 1	Apr 12 – Apr 16	Data visualisations	Readings: • Evans Ch 3 Activities: • Demo (Excel and R) • Lab (Excel) Homework: • Recap 2 (1st attempt due Apr 18) • Project Part 1 (due May 9)

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[10] Class schedules are tentative and are subject to changes as necessary.
[11] Additional readings will be assigned as needed.

Week #	Module	Dates	Topic	Activities[11]
Week 4	Descriptive Analytics, part 2	Apr 19 – Apr 23	Descriptive statistical measures	Readings: • Evans Ch 4 Activities: • Demo (Excel and R) • Lab (Excel) Homework: • Recap 3 (1st attempt due Apr 25)
Week 5	Descriptive Analytics, part 3	Apr 26 – Apr 30	Statistical Inference I	Readings: • Evans Ch 7 Activities: • Demo (Excel) • Lab (Excel) Homework: • Recap 4 (1st attempt due May 2)
Week 6	Descriptive Analytics, part 4	May 3 – May 7	Mid Term; Statistical Inference II	Readings: • Evans Ch 7 Activities: • Mid Term (Taken on Canvas on Mon, May 3[12]) • Demo (R)
Week 7	Predictive Analytics, part 1	May 10 – May 14	Mid term; Regression I	Readings: • Evans Ch 8 Activities: • Demo (Excel) Homework: • No recap this week in view of themid term

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Week #	Module	Dates	Topic	Activities[11]
Week 8	Predictive Analytics, part 2	May 17 – May 21	Regression[13] II	Readings: • Evans Ch 8 Activities: • Demo (Excel) • Lab (Excel) Homework: • Recap 5 (1st attempt due May 23) • Project Part 2 (due Jun 6)
Week 9	Predictive Analytics, part 3	May 24 – May 28	Regression III	Readings: • Evans Ch 8 Activities: • Demo (R) • Lab (R) (optional)
Week 10	Prescriptive Analytics	May 31 – Jun 7	Linear Programming;Review	Readings: • Evans Ch 13 Activities: • Demo (Excel) • Lab (Excel) • Q&A Homework: • Recap 6 (1st attempt due Jun 6)
Week	Finals	Jun 8 – Jun 12	Final exam week	Activities: • **Final Exam** (To be taken on Fri, Jun11 on Canvas[14])

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[13] This is a longer topic. Hence, more time is allocated.

[14] Originally, our final exam should have been scheduled on the same day as our otherwise- would-have-been class day/time. But out finals week goes from Tue-Sat. So to avoid conflictwith your other Bridge classes, we'll schedule this on Fri.

8. Academic resources

- Library and Learning Commons (http://www.seattleu.edu/learningcommons/)
- This includes: Learning Assistance Programs, Research [Library] Services, Writing Center, Math Lab
- Academic Integrity Tutorial (found on Canvas and SU Online)

9. Academic policies

Various Seattle University academic policies can be found at the following URL. Please be sure to review them prior to the course.

https://www.seattleu.edu/redhawk-axis/academic-policies/

- Academic Integrity Policy
- Academic Grading Grievance Policy
- Professional Conduct Policy (only for those professional programs to which it applies)

10. Notice for students concerning disabilities

If you have, or think you may have, a disability (including an 'invisible disability' such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, you are encouraged to arrange support services and/or accommodations through Disabilities Services staff located in Loyola 100, (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process.

11. Notice on religious accommodations

It is the policy of Seattle University to reasonably accommodate students who, due to the observance of religious holidays, expect to be absent or endure a significant hardship during certain days of their academic course or program. Please see, Policy on Religious Accommodations for Students:

https://www.seattleu.edu/media/policies/Policy-onReligious-Accommodations-for-Students---FINAL.PDF

12. Office of institutional equity

Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination based on sex in educational programs or activities that receive Federal financial assistance. This prohibition includes sexual misconduct, which encompasses sexual harassment and sexual violence. Seattle U remains committed to providing a safe and equitable learning, living, and working environment. Seattle U offers emergency, medical, and other support resources, as well as assistance with safety and support measures, to community members who have experienced or been impacted by sexual misconduct.

Seattle U requires all faculty and staff to notify the University's Title IX Coordinator if they become aware of any incident of sexual misconduct experienced by a student.

For more information, please visit https://www.seattleu.edu/equity/. If you have any questions or concerns, you may also directly contact the Title IX Coordinator in the Office of Institutional Equity (email: oie@seattleu.edu; phone: 206.296.2824) University Resources and Policies