Teaching

Overall Teaching Philosophy: My teaching philosophy is appropriately summarized by an old Chinese proverb which states, “Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime.” Great teachers from history such as Jesus Christ, Charles Darwin, Martin Luther King Jr. and others are revered because the impact of their teachings on actions, understanding, and outlooks spanned lifetimes. In my opinion, taking a course at a university is a microcosm of lifetime learning. Students are either intellectually fed for a semester or students are given proper tools which facilitate an enriched lifetime of learning. My goal as a teacher is not to stimulate a student’s mind for a lecture, day, or semester, but to instill knowledge, appreciation, understanding, and confidence that can last a lifetime.

Self Assessment:

- Strengths:

  1. My greatest strength as a teacher stems from my love of the subject matter. I love statistics and I try to radiate that enthusiasm in my teaching. The majority of students who take statistics are required to do so (rather than by choice). Hence, attitudes towards the subject matter range from strongly apprehensive to curious. Exuding my personal excitement for statistics, however, allows me to capture the interest of all students and help them appreciate the value of a statistical education.

  2. I try to engage students during the lecture. On the first day of each class, I have students fill of a 3×5 card detailing their background, interest level, anxiety level, and expectations for the course. Then, rather than simply ask for volunteers to answer a question I pose in class, I will call on students by name in class using these cards. This use of index cards allows me to not only learn students names (a difficult task for large class sizes) but also ensures that the students are paying attention because they don’t know when they’ll be called on to answer a question.

  3. I design my courses to mimic job-like circumstances. Academia can be a different world from industry. Oftentimes, the problems posed in an academic setting are overly simplified and don’t reflect a “real-life” circumstance. For my classes, I strive to bridge the gap between academia and industry by centering my course around real applications. For example, each of my lectures and homework assignments in my Statistics 536 course centered around case studies where advanced statistical methods were required to answer complex questions using real data.

  4. I provide students specific feedback on their learning. I strongly believe that getting the “right” answer is not the goal of an education (oftentimes, there isn’t a “right” answer). Rather, I believe that the goal of an education is to learn how to use the mind
and spirit to guide action. To support this philosophy, I not only require students to show/justify their answers but I also strive to provide justification for deducting points on assignments, exams, and course projects. This allows students the opportunity to express their thinking and receive constructive feedback on where their understanding was incorrect. To this end, I always have a grading rubric that I supply to my students so they know exactly what was wrong and why it was wrong.

- Weaknesses

1. One common theme from the teacher ratings for the 2013-2014 academic year was that I didn't incorporate gospel topics into my lectures. Admittedly, as a teacher of statistics, this is a difficult task to accomplish without getting sidetracked from the course content. I always started my lectures with a prayer but, to the students credit, they expect more of the gospel to be incorporated into lecture than this. This weakness will be a focal point for the 2014-2015 academic year (see goals below).

2. I teach at a fast pace. Admittedly, this can be both a strength and a weakness. It's a strength in that it stretches students to keep up but is also a weakness is that I often gloss over material on which I should spend more time. I need to learn what material students find difficult (and which they find simple) to appropriately pace my teaching.

Report on 2013-2014 Academic Year Teaching Goals: The 2013-2014 year was my first year and, as such, I did not have any specific goals related to teaching. For this academic year, I primarily focused on learning how to teach by attending other professors lectures, attending the faculty development luncheons and discussion teaching strategies with Dr. Kenneth Plummer in the Center for Teaching and Learning (CTL).

2014-2015 Academic Year Teaching Goals: My teaching goals and plans for achieving these goals are as follows:

1. Attend and complete the faculty development series. During Fall semester 2013, I was involved in the bi-weekly luncheons held by the Faculty Center. Currently, I am registered to attend the Spring 2014 development series.

2. Invite my faculty mentor to review my student ratings and attend lectures to evaluate my teaching. After the Fall 2013 semester, I reviewed my student rating comments with Dr. Plummer. I found his feedback to be very constructive in helping me find patterns in the various comments. I plan to continue this method of feedback by reviewing my ratings with the faculty mentor.

3. Develop and implement new ideas for bringing gospel topics into my lecture. The weak point from my Fall 2013 students ratings was that I didn’t frequently incorporate principles from the gospel into my lecture. I plan to discuss ways to do this with my fellow faculty members and chair. Hopefully, these discussions will lead to new ways/ideas that will spiritually uplift the students in a non-religious class.

4. Engage in one-on-one learning through mentoring. I plan to mentor a graduate student on his/her Master’s thesis. At the time of writing, I have already solicited research opportunities and am currently looking for interested to students to mentor.
Scholarship

Research Overview: In the environmental and atmospheric sciences, epidemiology, ecology and many other fields of study, data are often collected at specific spatio-temporal coordinates (e.g., from the environmental sciences, pollution concentrations are measured at several monitoring stations over a specific time domain). Data collected in this manner often exhibit strong dependence in space and time. Thus, proper analysis of such data requires that this dependence be accounted for in the statistical modeling framework. While accounting for such dependence is often challenging, my primary research interests are in exploiting this dependence to enhance statistical inferences of multiple variables. For example, utilizing spatio-temporal dependence to enhance predictive accuracy or uncover complex non-linear spatio-temporal relationships between spatial variables.

My research is primarily published in statistics journal including Journal of the Royal Statistical Society Series C, Journal of Agricultural, Biological and Environmental Sciences, Environmetrics and Biostatistics, to name a few. I also have applied research published in Spatial and Spatio-temporal Epidemiology and Food Chemistry.

Self Assessment:

- Strengths:
  1. I feel my greatest strength as a researcher is my desire to collaborate with others. This desire has led me to reach out to various professors, both within my department and elsewhere, for research collaboration opportunities. I currently have several projects with professors in my department as well as collaborations with faculty members in the Departments of Health Sciences, Life Sciences and Plant and Wildlife Science.
  2. I have lots of ideas. Since graduating with my Ph.D. I have kept a “Next Steps” document detailing research ideas and next steps on various research projects. This document allows me to always have ideas to work on.

- Weaknesses
  1. I am interested in many projects. As such, I often overbook myself in research so I don’t get enough time to sit and finish a project. I need to learn to discipline myself to finish projects and submit them for publication in a timely manner.
  2. I have little experience with grant writing. The funding landscape is vast and confusing. Having never been an active participant in grant writing, I desperately need more experience in this area.

Report on 2013-2014 Academic Year Scholarship Goals: Since arriving at BYU in the Fall of 2013, in the area of scholarship, I:

1. Submitted 4 articles for peer review to statistics and applied journals. Two of these were accepted for publication and two are still under review.

2. Submitted two grant proposals. The first was submitted to the BYU ORCA office and for which I was a Co-PI. The second was a collaborative research proposal submitted to the NSF for which I was the PI for the BYU portion. The ORCA grant was rejected in January 2014 and the NSF grant is still under review.
3. Gave four presentations on my statistical research. Three of these were in academic conferences or seminars (NOLTA13 in Santa Fe, University of Connecticut Department of Civil and Environmental Engineering Seminar, and BYU Department of Statistics Seminar) and one was a consulting presentation to the Federal Highway Administration.

2014-2015 Academic Year Scholarship Goals: My scholarship goals and plans for achieving these goals are as follows:

1. Maintain a “next steps” document with research ideas and directions. I have already created this document but, in order to accomplish this goal, need to continually update its content.

2. Submit three first-author papers for peer review. Currently, I have two well-defined projects that should near completion in 2014 leaving one additional “new” project that needs to be defined and carried-out during the course of the academic year. In order to accomplish this goal I need to schedule large blocks of time to research.

3. Submit a grant proposal to the NIH. Currently, the NIH has a FOA titled “Spatial Uncertainty: Data, Modeling and Communication” which is well suited to my research interests. I plan to write a proposal and submit it in June of 2014.

4. Give at least two presentation of my research in academic settings. I currently have 1 presentation schedule for August at the Joint Statistical Meetings. There are also several conferences during the summer in which I could present research.

5. Actively recruit a graduate student to participate in my research. To accomplish this goal I need to be proactive in announcing research opportunities to students.
Citizenship

Overall Citizenship Philosophy: I believe a great department is built by faculty who are willing to serve within the department, in their respective professional societies and across the academic environment. A willingness to serve shows a greater concern for the whole instead of the individual.

Self Assessment:

• Strengths:

  1. I am actively involved in departmental service. This is reflected in my involvement in the department recruiting and undergraduate curriculum committees.

  2. I am actively involved in professional service. I am frequently asked to review journal articles that are under consideration for publication. I have also been nominated to serve as a treasurer for the Environmental section of the International Society of Bayesian Analysis.

• Weaknesses

  1. My willingness to serve can also be my weakness in that I rarely turn down opportunities to do peer review or serve on a committee. This, occasionally, results in me being burdened with other responsibilities which then hinders my research progress. I need to be disciplined to know when to accept and when to decline service opportunities.

Report on 2013-2014 Academic Year Citizenship Goals: Since arriving at BYU in the Fall of 2013, in the area of citizenship, I:

  1. Have served on the recruiting and undergraduate curriculum committees.

  2. Reviewed 3 articles for professional journals.

  3. Served on the thesis committee for one Masters student.

2014-2015 Academic Year Citizenship Goals: My citizenship goals are as follows:

  1. Act as a reviewer for 4 peer-reviewed articles.

  2. Seek opportunities to serve as a committee member on a student thesis.

  3. Be an active participant in my department committee assignments.

  4. Attend the weekly collegiality lunch with faculty.
Scholarship Proposal
Assistant Professor, Department of Statistics, Brigham Young University

Scholarship Section of Development Plan

Research Overview & Framework: In the environmental and atmospheric sciences, epidemiology, ecology and many other fields of study, data are often collected at specific spatio-temporal coordinates (e.g., from the environmental sciences, pollution concentrations are measured at several monitoring stations over a specific time domain). Data collected in this manner often exhibit strong dependence in space and time. Thus, proper analysis of such data requires that this dependence be accounted for in the statistical modeling framework. While accounting for such dependence is often challenging, my primary research interests are in exploiting this dependence to enhance statistical inferences of multiple variables. For example, utilizing spatio-temporal dependence to enhance predictive accuracy or uncover complex non-linear spatio-temporal relationships between spatial variables.


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3. Submit a grant proposal to the NIH. Currently, the NIH has a FOA titled “Spatial Uncertainty: Data, Modeling and Communication” which is well suited to my research interests. I plan to write a proposal and submit it in June of 2014.

4. Give at least two presentations of my research in academic settings. I currently have 1 presentation scheduled for August at the Joint Statistical Meetings. There are also several conferences during the summer in which I could present research.

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## Goal Strategies and Evaluation Metrics:

<table>
<thead>
<tr>
<th>Goal</th>
<th>Strategy</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Next-Steps Document</td>
<td>The last 10 minutes of each scheduled research time will be used to update this document.</td>
<td>Was the document updated at least weekly?</td>
</tr>
<tr>
<td>2 3 Peer reviewed Papers</td>
<td>Deliberately schedule research time each day.</td>
<td>Did I follow through on scheduling daily research time? Did I submit ≥3 peer reviewed publications?</td>
</tr>
<tr>
<td>3 Grant Proposals</td>
<td>Use PIVOT to find funding opportunities. Collaborate with Candace Berrett to submit the proposal.</td>
<td>Did I submit the intended proposal? Did I identify at least 1 other funding opportunity?</td>
</tr>
<tr>
<td>4 Presentation</td>
<td>Join the ASA’s email list about conferences. Talk with my department chair about possible presentation opportunities within the department.</td>
<td>Did I give at least two presentations?</td>
</tr>
<tr>
<td>4 Student RA</td>
<td>Actively talk with new masters students about research opportunities. Talk with ORCA about mentoring grants.</td>
<td>Do I have a student working with me?</td>
</tr>
</tbody>
</table>
Citizenship Proposal

Assistant Professor, Department of Statistics, Brigham Young University

2014-2015 Academic Year Citizenship Goals: My citizenship goals and plans for achieving these goals are as follows:

1. Act as a reviewer for 4 peer-reviewed articles.
2. Seek opportunities to serve as a committee member on a student thesis.
3. Be an active participant in my department committee assignments.
4. Attend the weekly collegiality lunch with faculty.
5. Attend Dr. Blades 330 class in preparation for teaching 330 in Winter ’15.
6. Continue research collaborations with Drs. Berrett, Christensen and Reese.
Course Information

Winter 2014

TA:

Course Purpose: To develop and present necessary statistical tools to promote statistical learning from complex datasets.

Description: Multiple linear regression, Bayesian linear models, robust regression, nonlinear regression, local regression, generalized additive models, logistic regression, discriminant analysis, tree-structured regression, support vector machines.

Prerequisites: STAT 535, STAT 624

Learning Outcomes: By the end of this course students should be able to:

1. Appropriately explore data to determine an appropriate statistical model.

2. Posit & explain an appropriate statistical model that answers questions related to a dataset.

3. Fit the posited statistical model to the data using statistical software.

4. Appropriately present model results and conclusions from the statistical analysis.

5. Be comfortable submitting a written or oral report of a statistical analysis.

Learning Methods: The following learning methods will be applied in this class.

1. Case Studies (30% of final grade): This course is built around case studies. Case studies are real-life data sets from various clients which require statistical expertise to analyze. New methods and models will be presented and taught in the context of case studies.

   (a) Two due dates are associated with each case study: (i) Conceptualization Sheet and (ii) Final Report.

   (b) The conceptualization is an informal (hand-written is fine) outline of the bullets described in the rubric. If working in pairs (see below) submit one conceptualization sheet with both names attached.
(c) Students may choose to submit the final report in written or oral form.

- Written reports must be no more than 5 single-spaced pages of text and done in \LaTeX. \textbf{Do not include code in your report.}
- At least 1 but no more than 3 case studies can be submitted as a 20 minute oral presentation to the professor. Oral presentations must be approved by the professor \textbf{before} the due date. For oral reports, a copy of the slides must be submitted on the due date. The professor reserves the right to deny permission to submit an oral report. \textbf{Do not include code in the oral report.}
- For both oral and written reports, the target audience are students who will take this class in the future. Therefore, a proper report will describe less familiar terms but still use common statistical jargon.

(d) Except for the midterm and final case study, students can work with 1 other partner on a case study (two people total). If you choose to work with a partner, part of the grade for the case study will be determined by teamwork (see the grading rubric). If you choose to work with a partner on a case study, you may NOT work with that student on a case study again.

(e) A grading rubric for case study reports is available on the course webpage. The same rubric will be used for oral and written reports.

(f) No credit will be given for late reports unless the instructor has given prior consent.

2. Midterm Case Study (35% of final grade): The midterm case study will be a written report of a case study. The grading rubric will be the same as that used for the case studies. Students may not collaborate on the midterm case study.

3. Final Case Study (35% of final grade): The final case study will be an oral presentation of no more than 30 minutes given during finals week to the professor. Students may not collaborate on the final case study. Failure to complete the final case study will result in an incomplete for the course.

Course Materials: The \textit{required} course textbook will be

- An Introduction to Statistical Learning with Applications in R by G. James, D. Witten, T. Hastie and R. Tibshirani (2013).

Other course materials (which can be borrowed from the professor) include:

Course Policies and Expectations:

1. Students will be graded based on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>95%-100%</td>
</tr>
<tr>
<td>A-</td>
<td>91%-94%</td>
</tr>
<tr>
<td>B+</td>
<td>87%-90%</td>
</tr>
<tr>
<td>B</td>
<td>83%-86%</td>
</tr>
<tr>
<td>B-</td>
<td>80%-82%</td>
</tr>
<tr>
<td>C+</td>
<td>77%-79%</td>
</tr>
<tr>
<td>C</td>
<td>73%-76%</td>
</tr>
<tr>
<td>C-</td>
<td>70%-72%</td>
</tr>
<tr>
<td>D+</td>
<td>67%-69%</td>
</tr>
<tr>
<td>D</td>
<td>63%-66%</td>
</tr>
<tr>
<td>D-</td>
<td>60%-62%</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60%</td>
</tr>
</tbody>
</table>

2. Please silence all cell phones before class begins. If your phone goes off during class, you buy the whole class donuts or bagels. If we go the whole semester without a cell phone going off, I buy donuts or bagels.

3. Students are expected to participate in class, when appropriate, by asking questions, answering questions, and providing useful discussion with other students.

4. Honor Code: In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university’s expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

5. Sexual Harassment: Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education and pertains to admissions, academic and athletic programs, and university-sponsored activities. Title IX also prohibits sexual harassment of students by university employees, other students, and visitors to campus. If you encounter sexual harassment or gender-based discrimination, please talk to your professor or contact one of the following: the Title IX Coordinator at 801-422-2130; the Honor Code Office at 801-422-2847; the Equal Employment Office at 801-422-5895; or Ethics Point at http://www.ethicspoint.com, or 1-888-238-1062 (24-hours).

6. Student Disability: Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 422-2767. Reasonable academic accommodations are reviewed for all students who
have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.