

FACULTY ACTIVITY REPORT 2014

Rose-Hulman Institute of Technology

Name: Eric Reyes

Title: Assistant Professor of Mathematics

TEACHING, STUDENT ADVISING AND CURRICULUM DEVELOPMENT

COURSES TAUGHT

<u>Quarter</u>	<u>Course Name and Number</u>	<u>Enrollment</u>
201410	MA223-02 Engineering Statistics I	31
	MA223-03 Engineering Statistics I	31
	MA383-01 Engineering Statistics II	9
	MA496-05 Senior Thesis I	1
201430	BE482-01 Bioengineering Statistics	1
	MA223-05 Engineering Statistics I	31
	MA223-06 Engineering Statistics I	29
	MA482-01 Bioengineering Statistics	4

General Comments

Family Medical Leave during Winter Term (AY 2013-2014)

COURSE DEVELOPMENT

COURSE

A new module, representing a change to 20% of the content, was added to MA482/BE482 Bioengineering Statistics to introduce statistical models for repeated measures data. On multiple occasions, students in other departments have brought analysis problems to my attention involving repeated measures, which was not currently covered in any of our courses. As this setting occurs often in biomedical applications, it seemed appropriate to introduce the material in Bioengineering Statistics.

ADVISING

OTHER

Advisee Count: 3

Advised Kimberly Boucher (MA) on her mathematics senior thesis during the Fall and Winter terms. This project was not completed; Kimberly accepted a position prior to graduating and has yet to complete the requirements for graduation (her senior thesis).

Advised Garrett Meyer (ME) regarding the analysis of various data gathered during the assessment of the Human Powered Vehicle design. The analyses were used to consider improvements to the design prior to competition.

Conducted an analysis on behalf of Ali Almajed (CSSE) describing the distribution of image characteristics. This was used in his senior project developing a method of classifying images taken during sunset.

THESIS ADVISEES

Advisee Count: 1

Committee Member for Brian Sutterer, Master's thesis for Biomedical Engineering titled "An Investigation of the Relationship Between Plantar Weight Distribution and the Condition of Osteoarthritic Knees During Quiet Standing."

PROFESSIONAL DEVELOPMENT ACTIVITIES

PROFESSIONAL DEVELOPMENT

PUBLICATIONS

PAPERS PUBLISHED

Role of Diuretics, Beta-Blockers, and Statins in Increasing the Risk of Diabetes in Patients with Impaired Glucose Tolerance: Reanalysis of Data from the NAVIGATOR Study, British Medical Journal (BMJ)

Statistician on clinical paper. This was consulting work I did for Duke Clinical Research Institute.

SEMINARS

CONFERENCES ATTENDED

Attended RHIT, Mathematical Association of America Rose-Hulman Undergraduate Mathematics Conference

Attended OTHER, Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Electronic Conference on Teaching Statistics

WORKSHOPS ATTENDED

Rose-Hulman Training for Online and Blended Courses, Rose-Hulman Institute of Technology

OTHER

COURSE PARTICIPATION

Applying the QM (Quality Matters) Rubric

I completed the online course teaching the fundamentals of using the Quality Matters rubric. Many of these ideas have been implemented in my face-to-face courses as a result.

NON FUNDED RESEARCH

Complete Least Squares with Applications to Variable Screening

Extended previous results regarding Complete Least Squares, a statistical estimation method for linear regression. The extension accounts for non-linear relationships both between the response and predictors as well as between the predictors. This has applications to variable screening.

Variable Selection in Missing Data

Developed a program for performing variable selection in the presence of missing data. Cody Roberts (MA) will continue work on testing the methodology as a senior thesis during the upcoming academic year.

RESEARCH PROFILE

Scholarship Subject	statistics, variable selection, statistics education
Study Area	I am interested in the application of statistics to medicine. In particular, I focus on variable selection - determining which factors (variables) are associated with a particular response. I am investigating a new method for variable selection in the presence of missing data, as well as variable screening prior to variable selection when the number of factors exceeds the sample size. I have also taken an interest in statistics education, regarding best practices for conveying statistical concepts.
Keywords	Biomedical Research, Multidisciplinary Education/Instructional Programs Educational Evaluation/Assessment Educational Improvement Statistics

PROFESSIONAL SERVICE ACTIVITIES

COMMITTEES

DEPARTMENTAL

Statistics and Operations Research Curriculum Development Group, MA (Member)

INSTITUTIONAL

Quality of Education (Member)

PROFESSIONAL SERVICE

ON CAMPUS SERVICE

High School Mathematics Competition

Helped set-up for the event, meet with high-school teachers who brought students, grade the exam, and distribute prizes.

Rose-Hulman Undergraduate Mathematics Conference

Helped set-up for the event and distribute snacks.

REVIEWER

Journal Articles, Rose-Hulman Undergraduate Mathematics Journal

Reviewed article with significant statistical content.
