

2013 Curriculum Grant Awardee

Drs. Fred Hoffman and Terje Hoim

College: Charles E. Schmidt College of Science and the Wilkes Honors College

Department: Mathematical Sciences

Project Description:

The mathematics faculty in Boca Raton and Jupiter, in collaboration, propose to introduce inquiry-based learning into the three required capstone courses in Bachelor's programs in mathematics at the Boca campus and into two corresponding honors courses at the Jupiter campus. These courses currently employ traditional lecture format; students solve homework problems and prove theorems. (The honors versions have traditionally covered similar material more deeply, with a heavier emphasis on proofs.) We plan to incorporate the "Moore Method" into these courses. Students are introduced to topics through a set of definitions, axioms, examples, and theorems. The students are asked to work independently on providing proofs to the theorems and then present these in class. Students are evaluated on their presentations; specifically, how effectively they convince the class members. The goal is to emphasize the skill of creating proofs instead of simply reading and learning a proof, a skill useful for students working on Honors Theses and undergraduate research. Students will also learn how to use mathematics research databases (MathSciNet). Students will be asked to find research articles related to topics in the courses. Students will read for comprehension, create lists of results from the articles, and present these results to the class, thereby developing effective presentation skills. Classwork and presentations will include research projects. After peer review, students are encouraged to participate in Undergraduate Research Symposia and submit to the FAUURJ. The hundred-year-old Moore Method is described and discussed widely in the literature. A quick and useful guide to the method is the paper by Peter Renz: The Moore Method: What Discovery Learning Is and How It Works. FOCUS: Newsletter of the MAA (1999, Aug/Sept). One of many "how-to" references is A Quick-Start Guide to the Moore Method (http://legacyrlmoore.org/reference/quick_start-3.pdf)

List of Courses scheduled for Enrichment:

Modern Algebra (MAS 4301)

- a) Proposed Undergraduate Research Level : Intensive
- b) Listed Student Learning Outcomes Targeted: Knowledge, Formulate Questions, Plan of Action, Critical Thinking, Ethical Conduct, and Communication

Modern Analysis (MAA 4200)

- a) Proposed Undergraduate Research Level : Intensive
- b) Listed Student Learning Outcomes Targeted: Knowledge, Formulate Questions, Plan of Action, Critical Thinking, Ethical Conduct, and Communication

Mathematical Problem Solving (MAT 4937)

- a) Proposed Undergraduate Research Level : Intensive
- a) Listed Student Learning Outcomes Targeted: Knowledge, Formulate Questions, Plan of Action, Critical Thinking, Ethical Conduct, and Communication