

# Joseph Alfred Spivey

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## Education

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**Doctor of Philosophy in Mathematics, Duke University, Spring 2008 (expected)**

**Master of Science Degree in Mathematics, Duke University, 2005**

**Bachelor of Science Degree in Mathematics, Emory University, 2002**

I graduated with highest honors in mathematics. My honors thesis summarized why it is impossible to classify compact 4-manifolds.

**Associate of Arts Degree from Oxford College of Emory University, 2000**

## Research Interests

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**Thesis Title: “Twisted Cohomology of Hyperelliptic Mapping Class Groups”**

On-going thesis work concerns the topology of the moduli space of hyperelliptic Riemann surfaces of genus  $g$ . My advisor is Dr. Richard Hain.

## Awards and Honors

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**L.P. Smith Teaching Award (Fall 2006)**

This is awarded annually to one or two mathematics graduate students for outstanding teaching.

**Nominated by Duke Mathematics Department for a Dean’s Award for Excellence in Teaching (Spring 2007)**

Each department can nominate one graduate student per year for this award.

**L.P. Smith Mini-Teaching Award (Fall 2007)**

This was awarded for my “continuing outstanding contribution to the teaching of undergraduates.”

## Teaching Experience

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### Courses Taught:

- Linear Algebra and Differential Equations (Summer 2007)
- Calculus II with Laboratory (Fall 2006)
- Calculus II (Spring 2006)
- Calculus I with Laboratory (Fall 2005)
- Calculus II with Laboratory (Fall 2004)

I prepared lectures, wrote tests and quizzes, designed some course policies, and graded. I used lecture, handouts, and guided in-class group work to teach students. I taught two very different Calculus II courses—one included a lab component and focused on concepts, group work, and applications, while the other was more computational and focused on rigor and techniques of integration. Graphing calculators were used only in the laboratory courses.

The Linear Algebra course is for engineers. The course combined algorithms with theory. Tests involved computational problems as well as proofs and problems testing familiarity of definitions.

In addition I spent time in the Mathematics Help Room for students in Calculus I and II over four semesters. I answered homework questions and helped students overcome difficulties by working with them one-on-one.

### Teaching Assistant for Calculus II Lab (Fall 2003)

I helped students to understand the labs, wrote and graded quizzes, and supervised group work.

## Service

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### Course Supervisor for Calculus II with Laboratory (Fall 2006)

I supervised and coordinated the four lecture sections. I led teacher meetings and lab assistant meetings every week.

### Calculus Committee (Fall 2005 to Present)

I serve on the Department Calculus Committee, which is responsible for curriculum development. The mission of the Department Calculus Committee is to improve the way Calculus is taught at Duke.

**Graduate Student Calculus Committee (Fall 2006 to Spring 2007)**

I served on a graduate student Calculus Committee for curriculum development. This committee was conceived and managed by graduate students. We proposed ways to improve the department's Calculus courses based on the members' experiences teaching and assisting with the courses. We designed a new course that we felt would better serve students. We chose a textbook, wrote a syllabus, and designed basic policies for this proposed course. We submitted a report to faculty members discussing our findings. The department decided to offer an experimental section of this new course in Fall 2007. I will be teaching this course in Spring 2008. A copy of the report can be found under the "Teaching" section of my personal website: <http://www.math.duke.edu/~jaspive/>.

**Wrote a Calculus Lab**

The lab was titled "Approximating Definite Integrals" and was written under the supervision of Dr. Jack Bookman, a faculty member. The lab introduces basic approximation techniques like Midpoint Rule and Trapezoidal Rule, as well as error bounds. A copy of the lab can be found under the "Teaching" section of my personal website: <http://www.math.duke.edu/~jaspive/>.

**Professional Development**

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**Lilly South Conference on College and University Teaching (Spring 2007)**

I attended this weekend conference to learn more about teaching techniques and to interact with fellow teachers.

**Fellow for the "Preparing Future Faculty Program" (Fall 2005 to Spring 2006)**

I participated in a program that examined the lives of faculty members at several academic institutions, which ranged from Community Colleges to Research I Universities. I also attended many and varied teaching workshops.

**Talks Given**

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**"A How-To Guide to Building Your Very Own Moduli Spaces" (Fall 2006)**

This was for the Graduate-Faculty Seminar at Duke. I defined the moduli space  $\mathcal{M}_{g,1}$  of genus  $g$  curves with one marked point. I outlined a construction of a cell complex structure of  $\mathcal{M}_{g,1}$  based on ribbon graphs.