

The Role of the Mathematics Department in the Mathematical Preparation of Teachers

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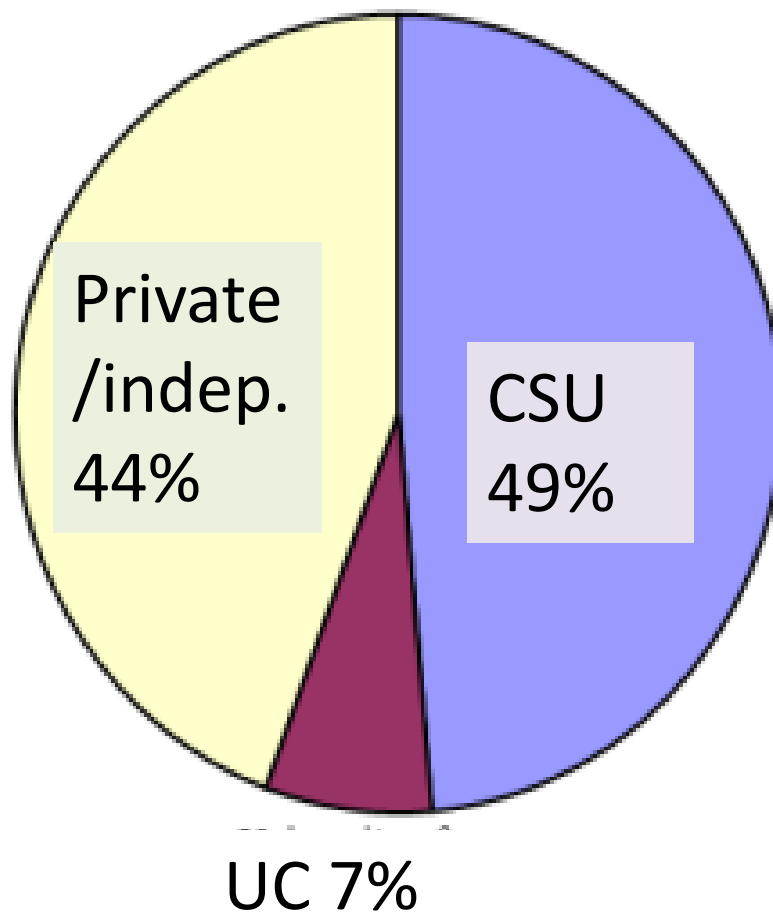
Department of Mathematics and Statistics

California State University System

23 campuses



New Teaching Credentials Prepared by System of Higher Education, 2011-12



Pre-service Math Teaching at SSU

- Elementary -

9 units of math content courses as undergraduates:

- Math 150 – Modern Geometry (General Education)
- Math 300a – Elementary Number Systems
- Math 300b – Data, Chance, and Algebra

+ 3 units math methods course in the credential program

Pre-service Math Teaching at SSU - Secondary -

Complete a B.A. in math with

- 54 units of math courses including 3 (6 units) specifically for future teachers
- 9 units of education courses (pre-reqs for the credential program)

+ 3 units math methods course in the credential program

Math & Stats Department Involvement in Math Education

- Pre-service Teacher Content Courses
- Professional Development for In-service Teachers:
 - North Bay Math Project
 - California Math and Science Partnership Grants 2000 – 2013
- Masters Program in Math Ed
- Other projects in School of Education

Math Education Influence on Math & Stats Department

- Introduced pedagogy and lesson study to other mathematicians in the department.
- Revised our tenure criteria to reflect that we value the work done in teacher preparation.
- Talk to other mathematicians about changing the experiences we give to our math students.
- Involve math faculty in PD work and other teacher ed activities e.g. [IllustrativeMathematics.org](https://illustrativemathematics.org)

Lesson Study Cycle

- Professional development process to examine practice of teaching and become more effective.
- Instructors plan lesson together
- Observe the lesson, collect evidence of student thinking
- Debrief lesson
- Revise lesson
- Teach lesson again (different section or later).

Lesson Study Examples

Elementary Number Systems:

- (1) Introduction of base number system
- (2) Fraction division

Real Analysis:

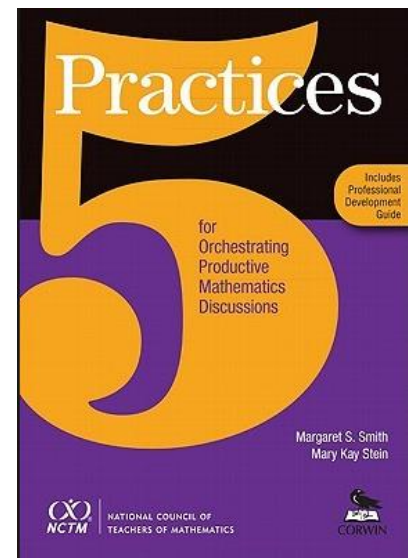
Introduction to Riemann integral

Elementary Statistics:

Designing an experiment

Pedagogy Workshops

- Kick off the semester by discussing teaching.
- All math and stats faculty, lecturers and TT faculty participate.
- Topics:
 - Dan Meyer 3-act math
 - Standards for Mathematical Practice
 - 5 Practices for Orchestrating Productive Mathematics Discussions



Final thoughts

- Our training as Ph.D. students in mathematics is quite typical.
- Our role in teaching pre-service teachers is quite typical for teaching universities in the USA.
- It is our responsibility to adapt our teaching to serve our students.

Contact

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