## Science and Mathematics Education

### Overview
The Graduate Group in Science and Mathematics Education (SESAME) is an interdisciplinary academic unit dedicated to advancing the understanding and practice of learning and teaching in science, engineering, and mathematics. It acts in most respects like a regular department, carrying out research, teaching courses, and offering a graduate program leading to a PhD degree in science or mathematics education. The faculty of the group consists of professors from several of the Berkeley science and engineering departments and the School of Education, and instructors associated with other units on campus, such as the Lawrence Hall of Science. The group operates under the auspices of the Graduate Division.

SESAME is closely related to the LSHD (Learning Sciences and Human Development) program and shares many courses with LSHD. A major difference in the programs is that SESAME students are expected to obtain at least master's level competency in their mathematical or scientific disciplines. It produces scholars who can communicate well with scientists and engineers, as well as with educational researchers and practitioners. The program includes studies that connect human development, cognitive science, and educational technology with the learning of science, mathematics, and engineering.

SESAME PhDs have frequently taken positions in college science, mathematics, and engineering departments, teaching courses in the discipline but also serving as the "education person" in the department and doing research on the teaching and learning of the subject matter. Through the years SESAME students have also focused on learning in informal settings and have gone on to careers in institutions such as museums and science centers.

### Undergraduate Program
There is no undergraduate program in Science and Mathematics Education.

### Graduate Program
Science and Mathematics Education (http://guide.berkeley.edu/graduate/degree-programs/science-mathematics-education/): PhD

## SCMATHE 210 Practicum in Science and Math Education Research and Development 1 - 4 Units
Terms offered: Fall 2022, Spring 2022, Fall 2021
Practical experience on an educational research or development project on campus or elsewhere for 8-12 hours per week. Class meetings augment research experience with discussions of readings and interaction with guest speakers.

### Rules & Requirements
- **Prerequisites:** Consent of instructor
- **Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format
- **Fall and/or spring:** 15 weeks - 0 hours of fieldwork per week

### Additional Details
- **Subject/Course Level:** Science and Mathematics Education/Graduate
- **Grading:** Letter grade.

## SCMATHE 220C Instructional Design in Science and Mathematics Education 3 Units
Terms offered: Spring 2021, Spring 2019, Spring 2017
Survey of literature on design of instruction in science and mathematics, including development of computer-based instruction. Includes consideration of evaluation methods and development of instruction modules for topics in science and mathematics.

### Rules & Requirements
- **Prerequisites:** 220B or consent of the instructor

### Hours & Format
- **Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details
- **Subject/Course Level:** Science and Mathematics Education/Graduate
- **Grading:** Letter grade.
SCMATHE 292 Research Seminar and Colloquium 1 Unit
Terms offered: Fall 2022, Spring 2022, Fall 2021
Discussion of current education research carried on by students, faculty, and guest speakers. A written analysis of several presentations required.
Research Seminar and Colloquium: Read More [+]

Rules & Requirements
Prerequisites: Consent of instructor
Repeat rules: Course may be repeated for credit without restriction.

Hours & Format
Fall and/or spring: 15 weeks - 2 hours of colloquium per week

Additional Details
Subject/Course Level: Science and Mathematics Education/Graduate
Grading: Offered for satisfactory/unsatisfactory grade only.
Research Seminar and Colloquium: Read Less [-]

SCMATHE 294 Formulation of Educational Research 1 - 3 Units
Terms offered: Fall 2022, Spring 2022, Fall 2021
Development of thesis proposal under supervision of faculty member.
Formulation of Educational Research: Read More [+]

Rules & Requirements
Prerequisites: Consent of instructor
Repeat rules: Course may be repeated for credit without restriction.

Hours & Format
Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details
Subject/Course Level: Science and Mathematics Education/Graduate
Grading: Letter grade.
Research: Read Less [-]

SCMATHE 295 Research 1 - 12 Units
Terms offered: Fall 2022, Spring 2022, Fall 2021
Independent research activities under supervision of a faculty member.
Research: Read More [+]

Rules & Requirements
Prerequisites: Consent of instructor
Repeat rules: Course may be repeated for credit without restriction.

Hours & Format
Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details
Subject/Course Level: Science and Mathematics Education/Graduate
Grading: Letter grade.
Research: Read Less [-]

SCMATHE 299 Individual Reading and Study 1 - 5 Units
Terms offered: Fall 2022, Spring 2022, Fall 2021
Individual reading and study under the supervision of a faculty member.
Individual Reading and Study: Read More [+]

Rules & Requirements
Prerequisites: Consent of instructor
Repeat rules: Course may be repeated for credit without restriction.

Hours & Format
Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details
Subject/Course Level: Science and Mathematics Education/Graduate
Grading: Letter grade.
Individual Reading and Study: Read Less [-]
SCMATHE 602 Individual Study for Qualifying Examination 1 - 8 Units
Terms offered: Fall 2022, Spring 2022, Fall 2021
Individual study, under the supervision of a faculty member, designed to prepare the student for Ph.D qualifying examination.
Individual Study for Qualifying Examination: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

Credit Restrictions: Course does not satisfy unit or residence requirements.

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details

Subject/Course Level: Science and Mathematics Education/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.

Individual Study for Qualifying Examination: Read Less [-]