



# STEM EDUCATION P-6 MINOR

for  
Elementary Education, Special Education  
and Child and Family Studies Majors



A MEMBER OF THE MINNESOTA STATE COLLEGES AND UNIVERSITY SYSTEM

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SCHOOL OF EDUCATION  
ST. CLOUD STATE UNIVERSITY

The STEM Education P-6 Minor Program is a six-course program for future educators interested in becoming specialized teachers of Science, Technology, Engineering, and Mathematics (P-6).

### Program Features

- A student can complete the certificate program in three to six semesters, taking one or two courses each semester during the academic year and one to two courses in the summer.
- Upon completion of the program, students will be a certified Project Lead the Way Launch teacher.
- Special emphasis is placed on effective instruction and assessment for P-6 students of all abilities.
- Prospective students should have successfully completed MATH301, SCI226 or SCI227, and ED200 or SPED200 or CFS200.

THE STEM EDUCATION P-6 MINOR IS OFFERED THROUGH THE STEM EDUCATION COLLABORATIVE IN THE COLLEGE OF SCIENCE AND ENGINEERING. STEM EDUCATION PROGRAMS ARE ACCREDITED BY THE FOLLOWING:

- National Council for the Accreditation of Education Preparation (CAEP)
- Minnesota Board of Teaching (BOT)

STEM EDUCATION P-6 MINOR IS COMPLETED WITH SIX COURSES

*SPED 413 OR SPED 445 \*only one SPED course is required for the program*

### **SPED 413\***

#### **Mathematics Instruction for Students with Special Needs**

3 credits

Offered: Summers and DEMAND

This course is designed to introduce effective classroom methods and strategies for assessing, instructing, and monitoring mathematical performance of diverse students within a classroom setting. An emphasis will be placed on practical classroom techniques to facilitate, maintain, retain, and generalize skill acquisition. Computation and problem solving techniques will also be covered.

### **SPED 445\***

#### **Social and Natural Sciences for Special Educators**

3 credits

Offered: Fall and Spring Semesters

Research-supported strategic teaching practices, adaptations and modifications for students with disabilities in content area classes and in oral and written expression, and listening comprehension.

### **STEM 425**

#### **Engineering and Technology for the P-6 Classroom**

3 credits

Offered: Fall Semesters and Summer

The STEM teacher's role in the P-6 classroom, focusing on engineering and technology. Hands-on, problem solving activities for the P-6 classroom. Curriculum development, instructional strategies, and use of technology.

*THIS COURSE IS A CAPSTONE COURSE, IT SHOULD BE TAKEN IN THE FINAL SEMESTER OF THE PROGRAM.*

### **STEM 431**

#### **Physics for the P-6 Classroom**

3 credits

Offered: Fall Semesters and Odd-Year Summers

Physics topics from mechanics, thermodynamics, waves and sound, electricity and magnetism, and optics. Problem solving and laboratory skills for the P-6 classroom.

### **STEM 442**

#### **Teaching and Learning Life, Earth, and Space Science for the P-6 Classroom**

3 credits

Offered: Spring Semesters and Even-Year Summers

Research, modeling, and investigations of the Minnesota Science Standards K-6 in life and earth science.

Content, methods, materials, assessment, integration of STEM into science education.

### **STEM 451**

#### **Reasoning and Proof for the P-6 Classroom**

3 credits

Offered: Fall Semesters and Odd-Year Summers

Explore the roles of problem solving, conjecture, generalization, and proof in effective teaching of STEM. Students discover mathematical reasoning as an iterative process of conjecturing, generalizing, and investigating. Topics are drawn from set theory, logic, arithmetic, algebra, geometry and STEM fields.

### **STEM 452**

#### **Data and Chance for the P-6 Classroom**

3 credits

Offered: Spring Semesters and Even-Year Summers

Explore the roles of data and chance in effective teaching of STEM. Topics are drawn from: data collection, organization, and analysis; measures of center and variance, inferences and convincing arguments; subjective, theoretical, experimental, and conditional probability; simulation; counting principles; mathematical expectation.

Questions regarding curriculum and/or registration should be emailed to [mhanzsek@stcloudstate.edu](mailto:mhanzsek@stcloudstate.edu).

