

Frequently Asked Questions

About the Mathematics and Science Education Ph.D. Program (MSED)

Operated Jointly by San Diego State University & University of California at San Diego

1. Can I keep my job while in the program?

Our program is much more than coursework and requires participation in the student and faculty community in San Diego, research apprenticeship experiences that typically involve data collection in the San Diego area, and the learning of fundamental research skills through research assistantships on externally-funded research projects that require engagement with a team in San Diego. These experiences exclude the possibility of working outside of the teaching or research assistantships that students hold during the program. Exceptions to this policy may be granted on a case-by-case basis, if the student has successfully defended his/her dissertation proposal, is working well with the dissertation chair or co-chairs, and has received university approval of a dissertation committee.

2. Does the program offer distance learning options?

We are a close-knit community where students support each other, and faculty value and solicit students' contributions. Students take responsibility for presenting their ideas and engage in discussions in graduate seminars. The MSED program is designed around an apprenticeship model, in which students participate in cutting-edge research projects and work with faculty to analyze data and co-author articles. These activities require physical presence, and thus do not allow for distance learning.

3. Can I attend the program part-time?

The MSED program accepts students with master's degrees in a mathematical or scientific domain and then trains them in a new discipline of math/science educational research to such a high level that they are able to land jobs at top research universities upon graduation. This level of rigorous training demands year-round, full-time commitment from students.

4. I want to be a better teacher, is this program right for me?

MSED cultivates effective, reflective teachers and educational leaders through several avenues. First, many MSED students collaborate with expert practicing teachers and help train prospective teachers. Second, the program offers opportunities to design instruction in a variety of settings, including science museums, tutoring centers, public schools, and universities. Finally, doctoral students learn to base teaching on a deep understanding of their students' thinking.

If your career goal is to attain a teaching position that requires no research (such as many community college teaching positions), then many aspects of this rigorous research-oriented program will not translate into job skills for you. You may want to look into Ed.D. (Doctor of Education) programs, which often have a greater focus on the needs of practitioners.

5. What can I do with this degree?

- Most MSED graduates secure tenure-track positions at universities or liberal arts colleges, in departments of science, mathematics, or education to:
 - Research learning and teaching at the K-12 or college level
 - Teach and develop curricula for college-level courses
 - Train prospective teachers
 - Develop innovative tools to support learning (e.g., technological tools)
- MSED also trains graduates for positions in educational consulting, state-level offices of education, or non-project educational research and development organizations, serving as curriculum specialists, researchers, and/or test developers.
- Another avenue of employment is as specialists at museums or technology firms responsible for developing science exhibits or computer-based instructional materials

6. I have a bachelor's in math/science, why isn't that sufficient?

MSED was founded on the principle that deep content knowledge of mathematics or science (at the master's degree level) is an important foundation for becoming a flexible, high-quality mathematics or science education researcher. This is why we require a master's degree. Because it is not possible to earn a master's degree concurrently with our Ph.D., the master's degree is a requirement of admission.

7. I have a master's in education, why isn't that sufficient?

The content that students study during a master's degree program in education is relevant and valued. However, we believe that deep content knowledge of mathematics or science (at the master's degree level) is also an important foundation for becoming a flexible, high-quality mathematics or science education researcher. Thus, we require a master's degree in mathematics, biology, chemistry, physics, or a "math heavy" mathematics education master's degree. Additionally, if your goal after graduation is to end up in a math or science department, then you are likely to face a requirement to have a math or science master's degree by those departments.

8. Can I be admitted with a master's degree in engineering and study engineering education?

Engineering education is an exciting, emergent area in educational research. However, we currently are unable to admit students outside of our four approved specializations of math, biology, chemistry and physics. We hope to be able to expand our areas of specialization sometime in the future.

9. Can I be admitted with a master's degree in computer science and study computer science education?

Several MSED faculty conduct computer science education research. However, we currently are unable to admit students outside of our four approved specializations of math, biology, chemistry and physics. We hope to be able to expand our areas of specialization sometime in the future.

10. Can you recommend the best master's degrees to be accepted?

Science. Students entering MSED with a science specialization are required to have a master's (MS or MA) degree in biology, chemistry, or physics. This includes a range of programs, such as biochemistry, ecology, microbiology, cell and molecular biology, evolutionary biology, and so on.

Mathematics. For students entering MSED with a mathematics specialization, we recommend a master's degree in mathematics. A degree program that offers a year of abstract algebra, a year of real analysis and some geometry or topology provides the strongest foundation. However, we also accept applied mathematics master's degrees (including statistics). If you are currently in such a degree program and there is still time to shape your program, try to take at least one semester of abstract algebra and real analysis.

Students can also enter with a particular type of mathematics education master's degree. These are often called Master of Teaching Arts degree programs and are offered in departments of mathematics. They are "math heavy," in that at least half the units are mathematics courses. For admission to MSED you must have at least one semester of graduate level abstract algebra and one semester of real analysis, as well as a course at the advanced undergraduate or graduate level in geometry. Once in MSED, you are required to take additional graduate level mathematics courses at both SDSU and UCSD, as detailed in the document located on the Admissions pages of the MSED web site.

11. Do you have any tips for creating a competitive application?

- Make sure your application materials are complete. Follow all the steps at: <https://apply.interfolio.com/91265>
- Be sure to complete the Cal State portion of the application by Dec. 31 and the MSED program application by January 7.
- Select at least two faculty to write letters of recommendation who can speak to your abilities in your content domain – mathematics, physics, biology or chemistry. The third can speak to any teaching, presentation, or research activities that you have engaged in.
- Due to the Covid-19 pandemic, the requirement that applicants submit scores for the GRE are suspended for the Fall 2022 admissions cycle. Consequently your two essays will be very important as indicators of your written communication skills. Proofread your two essays and/or ask someone who is an excellent writer to proofread them for you.
- The second essay asks about your research interests. We are not asking for dissertation questions. Our program is designed so that you can explore the field for two years and nurture a variety of interests before settling on a dissertation topic. We are interested in the types of math/science education research you have been exposed to and what topics you are drawn to. Peruse the People page of the MSED website. Are there particular faculty whose research interests you? The web site also includes research articles on both the People page and the Field page if you need exposure to mathematics and science education research before writing your essay.

12. What scholarship and financial aid options are available for students – U.S. citizens and international students?

For **ALL** students (including international students) that we accept, we seek to provide a salary for a research assistantship or teaching assistantship and in-state tuition, for 4 years (and when needed, a 5th year). For out-of-state U.S. citizens, we have a few out-of-state tuition waivers each year.

For 2020-21, the financial package is about \$31,500 and includes:

- \$24,164 stipend for a research- or teaching-assistantship (with annual 2.5% increase)
- \$4200 for in-state tuition
- \$989 for mandatory campus fees for one semester
- Up to \$1900 for ACA medical insurance
- About \$270 for USCD parking passes

It is possible, but unlikely, that we will have funds to support non-resident tuition waivers (NRTW) for international students. This costs \$4800 - \$7,000 per year, and international students are not able to establish California residency. We have only received funds for an NRTW for one international student since 2008. Contact Dr. Susan Nickerson (snickerson@sdsu.edu) for more information. One source of funding for non-resident tuition may be from a government agency in the international student's home country.

13. I am an international student; what TOEFL score do I need?

Demonstrated proficiency in the English language is required for all international applicants whose native language is not English and who have not studied full-time for one uninterrupted academic year at a university-level institution in which English is the language of instruction and in a country in which English is a dominant language.

The minimum score for admission on the Test of English as a Foreign Language (TOEFL) is 550 for the paper based test (PBT) or 85 for the Internet Based Test. TOEFL information and forms are available at the TOEFL website.

14. My verbal GRE score is marginal, will that matter?

MSED has a heavy reading and writing component as well as multiple required oral and written presentations. Furthermore, publishing in the field requires high-quality writing for refereed journals. Thus, very strong English language skills are an integral part of success in the program and in the field after graduation. However, due to the Covid-19 pandemic, the requirement that applicants submit scores for the GRE are suspended for the Fall 2022 admissions cycle.

Consequently your two essays will be very important as indicators of your written communication skills.

15. I'm in my 40s. Is that too old to get a Ph.D?

There's no need to worry about your age with respect to our program. Students entering Ph.D. programs in math or science education tend to be older than Ph.D. students in, say, chemistry or biology. That's because it is common for our students to have some other types of experiences between degrees, such as teaching school or serving in the Peace Corps.