

THE JESS AND MILDRED FISHER COLLEGE OF SCIENCE AND MATHEMATICS

Smith Hall 312
 Phone: 410-704-2121
 Fax: 410-704-2604
 Email: fcsm@towson.edu

Inspiring Student Exploration in Science and Mathematics for the 21st Century

The Jess and Mildred Fisher College of Science and Mathematics at Towson University offers a wide variety of undergraduate and graduate majors, as well as interdisciplinary programs. We take pride in our ability to provide an educational environment in which students work closely with faculty and receive quality instruction in small classes.

Science and mathematics are becoming increasingly important as our world evolves and confronts the challenge of rapid technological transformations. Science and mathematics will determine the road into the future, and the Fisher College of Science and Mathematics is helping to build that road through its educational programs and its commitment to teaching, research and scholarship. Our college has a fourfold mission: to prepare students for careers and advanced professional training in the biological or physical sciences, mathematics, computer information systems or computer science; to participate fully in the education mission of the campus; to foster significant scholarly research; and to serve the well-being of the community, state and nation. To accomplish this mission, our college maintains high standards and expectations of performance for its faculty and students. Each student is provided the opportunity to develop competence in a special field of knowledge by learning its principles and perspectives, mastering its methods and acquiring much of its accumulated knowledge.

In addition to offering formal course work, the college is committed to providing students with opportunities to learn through their participation in mentored research, independent study, internships and honors programs. Students gain experience in laboratories, interact with the environment through field studies, conduct student research and receive training in technologically advanced instrumentation. We believe that there is no stronger means of learning than by active participation at the frontiers of scientific knowledge, and we encourage our entire faculty to provide research opportunities for students so that they may embrace the discovery of the secrets in the world around us. A combination of student participation and rigorous classroom instruction gives majors in the college a competitive advantage in career advancement or in the selection of professional or graduate schools. Students majoring outside the college are assured the opportunity to acquire ample scientific knowledge in order to make informed decisions essential to citizens in a science-oriented, technological world.

We recognize our obligation to contribute to the cultural, scientific, educational and economic well-being of our geographic region. Part of this commitment is to improve PreK-12 science and mathematics education in the Baltimore Metropolitan area. We have established programs to attract more students to STEM (Science, Technology, Engineering and Mathematics) majors and to prepare STEM teachers who will be energized to teach in area schools in these much needed

discipline areas. These include the Towson UTEACH program, the Hackerman Academy of Mathematics and Science, and cooperative programs with other metropolitan two- and four-year colleges and universities.

Although we offer degrees in the sciences and mathematics, we recognize that the Towson University experience encompasses more than an academic diploma. We strive to create enriching extracurricular and educational experiences for all in the greater Towson University community. We recognize the importance of science and mathematics, not merely as an aid to understanding the natural world, but also as an aid to understanding ourselves. Each person can benefit greatly from the scientific experience, and it is this sort of experience that we provide our students.

Vonnie Shields, Acting Dean

- Biology (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/biological-sciences>)
- Chemistry (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/chemistry>)
- Computer Science (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/computer-information-sciences>)
- Earth-Space Science (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/physics-astronomy-geosciences>)
- Environmental Science (with FCSM) and Studies (with CLA) (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/environmental-science-studies>)
- Forensic Chemistry (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/chemistry>)
- Geology (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/physics-astronomy-geosciences>)
- Information Systems (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/computer-information-sciences>)
- Information Technology (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/computer-information-sciences>)
- Mathematics (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/mathematics>)
- Molecular Biology, Biochemistry and Bioinformatics (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/molecular-biology-biochemistry-bioinformatics>)
- Physics (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/physics-astronomy-geosciences>)
- "4+1" B.S. Physics/M.S. Computer Science (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/physics-astronomy-geosciences>)
- Dual-Degree Engineering Program (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/engineering-umcp>)
- PreMedical/PreDental (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/preprofessional-programs>)
- Prepharmacy (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/preprofessional-programs>)
- Preveterinary Medicine (<http://catalog.towson.edu/undergraduate/fisher-science-mathematics/preprofessional-programs>)

Towson UTeach

Co-Directors: Linda Cooper (FCSM) and Christine Roland (COE)

7800 York Road, room 368

www.towson.edu/uteach

The Program

The Towson UTeach Program is a secondary school (grades 7-12) mathematics and science teacher preparation program for students majoring in mathematics (<https://catalog.towson.edu/undergraduate/fisher-science-mathematics/mathematics/mathematics-secondary-education>), biology (<https://catalog.towson.edu/undergraduate/fisher-science-mathematics/biological-sciences/secondary-education-biology>), chemistry (<https://catalog.towson.edu/undergraduate/fisher-science-mathematics/chemistry/chemistry-secondary-education>), earth-space science (<https://catalog.towson.edu/undergraduate/fisher-science-mathematics/physics-astronomy-geosciences/earth-science-secondary-education/#text>), or physics (<https://catalog.towson.edu/undergraduate/fisher-science-mathematics/physics-astronomy-geosciences/physics-secondary-education>).

• Compact and Flexible Degree Plans

Towson UTeach offers degree plans that emphasize solid content knowledge woven with pedagogical instruction specific to science and mathematics. Teaching degree plans are streamlined to allow students to complete within four years both a Bachelor of Science degree and all coursework required for secondary school teacher certification in Maryland.

• Early and Intensive Field Experiences

Students begin a carefully scaffolded sequence of intensive teaching opportunities in their first term of the program and continue these field experiences throughout each year in order to accelerate professional development and promote confidence.

• Dedicated Master Teachers

Master teachers, former secondary school teachers with exemplary teaching and leadership experience, are exclusively dedicated to student support throughout the entire program.

• Rigorous, Research-Based Instruction

Courses are designed to develop deep understanding of content of particular importance to future secondary STEM teachers (Common Core Mathematics and Next Generation Science Standards) and build strong connections between educational theory and practice.

The Towson UTeach Sequence of Courses (40-43 units)

In addition to the content courses required for the major, students complete the Towson UTeach sequence of education courses.

Code	Title	Units
Introductory Towson UTeach Courses		
Students must complete either		
SEMS 110 & SEMS 120	INTRODUCTION TO STEM TEACHING I: INQUIRY & APPROACHES TO TEACHING	2
	and INTRODUCTION TO STEM TEACHING II: INQUIRY-BASED LESSON DESIGN	
or SEMS 130	INTRODUCTION TO STEM TEACHING I & II COMBINED	
*Permission of Towson UTeach Department required to take SEMS 130.		
Towson UTeach Foundation Courses		
SEMS 230	KNOWING AND LEARNING	3
SEMS 240	CLASSROOMS INTERACTIONS	3

SEMS 250	PERSPECTIVES IN SCIENCE AND MATHEMATICS	3
SEMS 360	RESEARCH METHODS	3
SEMS 370	PROJECT-BASED INSTRUCTION	3
SEMS 498	INTERNSHIP IN MATHEMATICS AND SCIENCE SECONDARY EDUCATION	3
SCED 460	USING READING AND WRITING IN THE SECONDARY SCHOOLS	4
SCED 461	TEACHING READING IN THE SECONDARY CONTENT AREAS	3

Students must complete one of the upper-level set of courses:

Towson UTeach - Mathematics

MATH 310	FUNCTIONS AND MODELING FOR SECONDARY SCHOOL TEACHERS	3
MATH 426	INTERNSHIP IN SECONDARY EDUCATION-MATHEMATICS	12
MATH 430	SEMINAR IN INTERNSHIP	1

Towson UTeach Courses - Science

SCIE 393	INTERNSHIP IN SECONDARY EDUCATION-SCIENCE	12
SCIE 430	SEMINAR IN STUDENT TEACHING - SCIENCE	1

Formal Admission to Towson UTeach

Students should apply to Towson UTeach when they have met the following criteria:

- completion of a written application available at www.towson.edu/uteach;
- completion of at least 45 college units;
- a minimum cumulative 2.75 overall GPA;
- presentation of either a passing score on Praxis Core (Pre-Professional Skills Test: Reading, Writing, and Mathematics) OR an acceptable score on the Score Reporting Form for either the SAT, ACT, or GRE. Please refer to www.towson.edu/uteach for information on these assessments, including acceptable minimum passing scores.
- completion of a Criminal History Disclosure Form. This form is to be notarized and submitted to the Towson UTeach Office. It will be forwarded and kept on file with the Center for Professional Practice.

Full-Time Internship in Towson UTeach

Students in this concentration should be prepared to do their student teaching in their senior year. Students who wish to deviate from this policy must obtain permission from their home department prior to the beginning of their junior year. The following requirements must be met for student teaching:

- a minimum cumulative GPA of 2.75 in content courses required for the major;
- a minimum cumulative GPA of 3.00 in education courses;
- a minimum cumulative overall GPA of 2.75.

Core Curriculum

Mathematics Secondary Education Concentration

An additional 27-31 units are needed for mathematics secondary education majors to satisfy the Core Curriculum. Specifically, students will need to take TSEM 102 to satisfy Core 1 and either ENGL 102 or ENGL 190 to satisfy Core 2. Additionally, students will need to satisfy categories

4, 6, 8 (unless PHYS 242 was chosen as a content elective), 10, 11, 12, 13, and 14.

Science Secondary Education Concentrations

An additional 27 units are needed for science secondary education majors to satisfy the Core Curriculum. Specifically, students will need to take TSEM 102 to satisfy Core 1 and either ENGL 102 or ENGL 190 to satisfy Core 2. Additionally, students will need to satisfy categories 4, 6, 10, 11, 12, 13, and 14.

Recommended Education Courses to Satisfy Core Curriculum

EDUC 202 Historical and Contemporary Perspectives on America's Urban Schools (Core 10)

EDUC 203 Teaching and Learning in a Diverse Society (Core 13)

SCED 304 Education, Ethics and Change (Core 14)