

THE JESS AND MILDRED FISHER COLLEGE OF SCIENCE AND MATHEMATICS

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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 TU experience encompasses more than an academic diploma. We strive to create enriching extracurricular and educational experiences for all in the greater TU 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.

David A. Vanko, Dean
Vonnie Shields, Associate Dean

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, biology, chemistry, earth-space science, or physics.

- **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 scaffold 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 (37-40 units)

Complementing 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 and INTRODUCTION TO STEM TEACHING II: INQUIRY-BASED LESSON DESIGN	2
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 370	PROJECT-BASED INSTRUCTION	3
SEMS 498	INTERNSHIP IN MATHEMATICS AND SCIENCE SECONDARY EDUCATION	3
SCED 460	USING LITERACY IN THE SECONDARY SCHOOLS	4
SCED 461	TEACHING LITERACY 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
SEMS 430	SEMINAR IN APPRENTICE TEACHING	1

Towson UTeach Courses - Science

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

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 30 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, 9, 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)

Standards for Teacher Education

The Teacher Education Executive Board, representing all initial teacher education programs at Towson University, utilizes the following **minimum** requirements as conditions for admission into teacher education programs, maintaining candidate status and formal entry into the capstone internship. Programs may include additional requirements for admission into the program and/or the capstone internship.

The College of Education admits students either as freshmen or as undergraduate transfer students from accredited, post-secondary institutions. During the freshman and sophomore years, students are generally engaged in pre-professional courses or courses that fulfill Core Curriculum requirements, as well as all identified prerequisites (e.g., specific and sequential courses in Core Curriculum) for admission to COE screened majors and programs.

All College of Education undergraduate programs are screened majors. As an integral part of the teaching/learning experience, students work with advisers in a strategic planning process across all years at TU. Accordingly, to support student success, all COE students are required to confer prior to registration each term with their assigned advisers.

I. PROCEDURES AND REQUIREMENTS FOR ADMISSION TO ALL TEACHER EDUCATION PROGRAMS

1. Complete a self-disclosure criminal background form to be submitted to the major department with the application.
2. Submit an application for formal admission to the program. Students seeking admission to teacher education programs must contact their department chairperson or program coordinator by 45 credit hours for program-specific procedures and requirements for admission to professional education programs.
3. A cumulative/overall GPA of 3.00 or higher is required for admission to an initial licensure teacher education program.
 - i. Applicants with a GPA between 2.50 - 2.99 may be admitted conditionally if they provide evidence of passing scores on a Basic Skills Assessment* as identified by the Maryland State Department of Education (i.e. SAT, ACT, GRE, Praxis Core) and receive approval from the department chairperson/program coordinator.

**Candidates may apply for a test waiver directly to the department. Such waivers should only be granted if it is predicted, based on the individual candidate's transcript data, that the candidate's final cumulative/overall GPA will be above a 3.00.*

II. REQUIREMENTS FOR MAINTAINING CANDIDATE STATUS

- A. Maintain a semester GPA of 3.00 in required education courses for all programs.
 - i. At the department's discretion, candidates who do not meet the above GPA requirement may continue for one additional semester under probationary status, but must meet the 3.00 GPA requirement at the end of the probationary period. If the GPA requirement is not met at the end of the probationary period, the candidate would be dismissed from the program.
- B. Obtain a grade of C or better in academic major coursework applicable only in programs requiring an academic major. (Middle School; Secondary; Art, Dance, Health, Music, World Languages, Physical Education).

- C. Exhibit behavior that is consistent with the University's Code of Student Conduct, the Educator Preparation Program's Professional Behavior Policy, and established professional practice in educational and clinical settings. (see COE Behavior Policy)

III. PROCEDURES AND REQUIREMENTS FOR ENTRY INTO CAPSTONE INTERNSHIP FOR ALL PROFESSIONAL EDUCATION PROGRAMS.

- A. Complete a criminal background check as required by the school system in which the internship is located.
- B. Complete all required coursework.

The Standards were revised and approved in February 1996, May 1998, February 2000, May 2007, May 2008, April 2009, December 2011, November 2012, February 2014, October 2014, February 2015, November 2015, May 2019, February 2020, and March 2021.