GWTEACH PROGRAM AND MINOR IN STEM TEACHING

The GWTeach program is designed for undergraduate science, technology, engineering, and mathematics (STEM) majors interested in exploring careers in teaching. GWTeach, which is based on the nationally recognized UTeach (http://www.uteach-institute.org/) program, integrates secondary school teacher preparation into the student's major studies.

GW undergraduate students can complete one of two pathways toward the minor in STEM teaching through the GWTeach program. Through the first pathway, GW students with a STEM major complete all requirements for their major as well as 25 to 28 credits in required GWTeach coursework. Upon graduation, students who have completed all GWTeach requirements are eligible for licensure by the District of Columbia as middle or high school teachers. A second pathway allows students to complete 18 credits of GWTeach coursework to earn a minor in STEM teaching without eligibility for teacher licensure.

It is recommended that students start the program by enrolling in GTCH 2003 Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design where they are introduced to the basics of teaching and experience teaching firsthand in local classrooms. Students who wish to complete the GWTeach program work with their departmental advisor and the GWTeach advisor to integrate the remaining GWTeach courses into their major program of study. Science, technology, engineering, and mathematics majors, including pre-med students, are eligible for the teacher licensure pathway, with exceptions made for some additional majors that emphasize STEM coursework.

Students are encouraged to begin the GWTeach program during their freshman or sophomore year. Visit the GWTeach Program (http://gwteach.gwu.edu/) website for additional information and to schedule a meeting with a GWTeach advisor to discuss program options.

STEM Teaching Minor Pathways

There are two pathways to earn a STEM teaching minor:

1. GW students with a STEM major complete all requirements for their major as well as 25 or 28 credits in required GWTeach coursework to earn a minor in STEM teaching. Upon graduation, students who have completed all GWTeach requirements are eligible for licensure by the District of Columbia as a middle or high school teacher.
2. Any GW student can complete 18 credits of GWTeach coursework to earn a minor in STEM teaching without eligibility for teacher licensure. The 18-credit pathway comprises core courses and a choice of elective courses.

MINOR REQUIREMENTS

Curriculum Requirements, Minor in STEM Teaching

The following requirements must be fulfilled: 18 credits in required and elective courses for the minor in STEM teaching; 25 credits in required courses for the minor in STEM teaching with science teacher licensure eligibility; or 28 credits in required courses for the minor in STEM teaching with math teacher licensure eligibility.

Code	Title	Credits
Minor in STEM teaching: 18 credits		
Required		
GTCH 1001 & GTCH 1002	GWTeach Step 1: Inquiry Approaches to Teaching and GWTeach Step 2: Inquiry-based Lesson Design	
or GTCH 2003	Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design	
GTCH 3101	Knowing and Learning in Mathematics and Science	
GTCH 3102	Classroom Interactions	
GTCH 3103	Project-Based Learning	
Electives		
6 credits in elective courses selected from the following:		
GTCH 3201W	Perspectives on Mathematics and Science	
GTCH 3202	Research Methods in Mathematics and Science	
GTCH 3203	Functions and Modeling	
GTCH 3300	Anti-Racist STEM Education	
GTCH 3500	Topics in STEM Teaching	
GTCH 3600	Pedagogy for Learning Assistants	
GTCH 4000	Apprentice Teaching	
Minor in STEM teaching (with science teacher licensure eligibility): 25 credits		
Required		
GTCH 1001 & GTCH 1002	GWTeach Step 1: Inquiry Approaches to Teaching and GWTeach Step 2: Inquiry-based Lesson Design	
or GTCH 2003	Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design	
GTCH 3101	Knowing and Learning in Mathematics and Science	
GTCH 3102	Classroom Interactions	

GTCH 3103	Project-Based Learning
GTCH 3201W	Perspectives on Mathematics and Science
GTCH 3202	Research Methods in Mathematics and Science
GTCH 4000	Apprentice Teaching

Minor in STEM teaching (with math teacher licensure eligibility): 28 credits

Required	
GTCH 1001 & GTCH 1002	GWTeach Step 1: Inquiry Approaches to Teaching and GWTeach Step 2: Inquiry-based Lesson Design
or GTCH 2003	Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design
GTCH 3101	Knowing and Learning in Mathematics and Science
GTCH 3102	Classroom Interactions
GTCH 3103	Project-Based Learning
GTCH 3201W	Perspectives on Mathematics and Science
GTCH 3202	Research Methods in Mathematics and Science
GTCH 3203	Functions and Modeling
GTCH 4000	Apprentice Teaching

FACULTY

Faculty

Courses in the GWTeach program are taught by a blend of faculty, with experts from the Graduate School of Education and Human Development and the Columbian College of Arts and Sciences.

Directors: G. Feldman, M. Feuer, J. Grooms
Master teachers: S. Choi, M. Hollibaugh Baker
CCAS faculty: G. Feldman, L. McClary
GSEHD faculty: J. Grooms, C. Pyke

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-level undergraduate courses that can also be taken for graduate credit with permission and additional work assigned
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GTCH 1001. GWTeach Step 1: Inquiry Approaches to Teaching. 1 Credit.
First experiential course in the GWTeach program. Introduces the basics of teaching, with a focus on using inquiry to teach lessons. Includes teaching experiences in a local elementary school.

GTCH 1002. GWTeach Step 2: Inquiry-based Lesson Design. 2 Credits.
Builds on the basics of teaching learned in GTCH 1001, with a focus on inquiry-based lesson design, teaching with technology, classroom management, and analyzing student performance data. Includes teaching experiences in a local middle school. Prerequisites: GTCH 1001.

GTCH 2003. Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design. 3 Credits.
Combination of GTCH 1001 and GTCH 1002, with emphasis on inquiry lesson design, teaching with technology, classroom management, and analyzing student performance. Includes teaching experiences in a local middle school.

GTCH 3101. Knowing and Learning in Mathematics and Science. 3 Credits.
Introduction to models of knowing and learning for classroom practice. Focus on secondary mathematics and science.

GTCH 3102. Classroom Interactions. 3 Credits.
Use of curriculum and technology in the classroom. Interplay between teachers, students, content, and the world beyond schools. Design, implement, and evaluate outcomes of instructional activities. Includes local high school teaching experiences. Prerequisites: GTCH 1001 and GTCH 1002; or GTCH 2003.

GTCH 3103. Project-Based Learning. 3 Credits.
Design of full units of connected lessons. Integration of mathematics and science content. Intensive field-based high school teaching experiences in a local school are embedded into the course. Restricted to Students in the GWTeach program with junior or senior standing or with permission of the instructor. Prerequisites: GTCH 3102. Recommended background: This is a service learning course, for more information email gwteach@gwu.edu.

GTCH 3201. Perspectives on Math and Science. 3 Credits.
Topics and episodes in the history of science and math. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Same As: PHIL 3201.

GTCH 3201W. Perspectives on Mathematics and Science. 3 Credits.
Topics and episodes in the history of mathematics and science. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Prerequisites: GTCH 1001 or permission of the instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GTCH 3202. Research Methods in Mathematics and Science. 3 Credits.
Designing experiments to answer scientific questions and reduce systematic and random errors; using statistics to interpret experimental results. Application and implementation of science and math research in K-12 classrooms.

GTCH 3203. Functions and Modeling. 3 Credits.
Designed to strengthen and expand knowledge of secondary mathematics topics and address the unique needs of future math teachers. Explores models using linear, exponential, polynomial, and trigonometric functions. Euclidean geometry. Prerequisites: GTCH 1001 and MATH 1231 or permission of the instructor.

GTCH 3300. Anti-Racist STEM Education. 3 Credits.
Anti-racist STEM education examines what it means to believe in and teach for the success of all students. Students examine their own beliefs and explore the ways in which teachers can advance social justice.

GTCH 3500. Topics in STEM Teaching. 1-3 Credits.
Issues in STEM research and education. Topics vary by semester. May be repeated for credit if topic differs. Consult the Schedule of Classes for more details.

GTCH 3600. Pedagogy for Learning Assistants. 2 Credits.
For learning assistants in large undergraduate science courses. Integrating educational theory, pedagogy, and practice to facilitate productive classroom interactions. Credit cannot be earned for this course and CPED 6100.

GTCH 4000. Apprentice Teaching. 7 Credits.
Culminating experience for teacher certification. Twenty-five hours per week of field experience in a local school teaching in content certification area are required. Students attend a weekly seminar to discuss topics related to the profession of teaching. Restricted to GWTeach apprentice teachers with junior or senior standing. Prerequisites: GTCH 3101 and GTCH 3102; or GTCH 3103.