GWTEACH

The GWTeach Program (http://gwteach.gwu.edu) is a GW initiative based on the nationally recognized UTeach (http://www.uteach-institute.org) program. The program supports the development of excellence in teaching. Students completing the GWTeach program earn a degree in a STEM field – math, science, or engineering – and are eligible for licensure by the District of Columbia as a middle or high school teacher. Some students go directly into the STEM workforce, other teaching professions, or graduate school. and have the option to teach in middle and high schools. Graduates also can use their GWTeach experience in other careers, such as the health professions, college teaching, and training.

The first two 1-credit courses (Step 1 and Step 2) are open to all mathematics, science, and engineering majors, including pre-med students. In those courses, students are exposed to the teaching experience with no obligation to continue in the program.

Students can also complete an 18-credit undergraduate minor, comprising core courses from GWTeach disciplines plus a choice of elective courses.

REQUIREMENTS

Required:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTCH 3101</td>
<td>Knowing and Learning in Mathematics and Science</td>
</tr>
<tr>
<td>GTCH 3201</td>
<td>Perspectives on Math and Science</td>
</tr>
<tr>
<td>GTCH 3202</td>
<td>Research Methods in Math and Science</td>
</tr>
<tr>
<td>GTCH 3203</td>
<td>Functions and Modeling</td>
</tr>
</tbody>
</table>

Six credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTCH 1001</td>
<td>GWTeach Step 1: Inquiry Approaches to Teaching</td>
</tr>
<tr>
<td>GTCH 1002</td>
<td>GWTeach Step 2: Inquiry-based Lesson Design</td>
</tr>
<tr>
<td>GTCH 3102</td>
<td>Classroom Interactions</td>
</tr>
<tr>
<td>GTCH 3103</td>
<td>Project-Based Instruction</td>
</tr>
<tr>
<td>GTCH 3500</td>
<td>Topics in STEM Teaching</td>
</tr>
<tr>
<td>GTCH 3600</td>
<td>Pedagogy for Learning Assistants</td>
</tr>
</tbody>
</table>

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- 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 recruitment course in the GWTeach professional development sequence. Overview of latest methods in teaching. Elementary school teaching experience using lessons written based on district curricula. Restricted to Freshman and sophomore standing.

GTCH 1002. GWTeach Step 2: Inquiry-based Lesson Design. 1 Credit.

Second recruitment course in the GWTeach professional development sequence. Overview of latest methods in teaching. Middle school teaching experience using lessons written based on district curricula. Restricted to Freshman and sophomore standing.

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. Restricted to Sophomore or higher standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GWTeach courses GTCH 1001 - Step 1 and GTCH 1002 - Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3102. Classroom Interactions. 3 Credits.

Introduction to use of curriculum and technology in the classroom for effective teaching of mathematics, science, and engineering. Interplay between teachers, students, content, and the world beyond schools. Design and implementation of instructional activities. Evaluation of outcomes of instructional activities. Restricted to Junior or Senior standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GWTeach courses GTCH 1001 - Step 1, GTCH 1002 - Step 2, GTCH 3101 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3103. Project-Based Instruction. 3 Credits.

Design of full units of connected lessons. Integration of mathematics and science content. Intensive field-based experiences. Restricted to Junior or Senior standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GTCH 1001 (Step 1), GTCH 1002 (Step 2), GTCH 3101, and GTCH 3102. Recommended background: Students will normally be in the GWTeach program.
GTCH 3201. Perspectives on Math and Science. 3 Credits.
Topics and episodes in the history of science and mathematics. Focus on processes by which math and science evolves. Perspectives include biology, physics, geology, astronomy, and chemistry. Historical perspectives on the content and direction of the sciences. Restricted to GWTeach students and to others with permission of the instructor. Restricted to Sophomore or higher standing. Prerequisites: GTCH 1001 - Step 1 and GTCH 1002 - Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3202. Research Methods in Math and Science. 3 Credits.
Design experiments to answer scientific questions and reduce systematic and random errors. Statistics to interpret experimental results. Restricted to Sophomore or higher standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GTCH 1001 - Step 1 and GTCH 1002 - Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3203. Functions and Modeling. 3 Credits.
Mathematics addressing unique needs of future teachers of mathematics. Explore models using linear, exponential, polynomial, and trigonometric functions. Restricted to Sophomore or higher standing. Restricted to GWTeach mathematics students and to others with permission of the instructor. Prerequisites: GTCH 1001 - Step 1 and GTCH 1002 - Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3500. Topics in STEM Teaching. 1 Credit.
Issues in STEM research and education. Topics may include new developments in science and mathematics, emerging ideas and methods of instruction, impacts of STEM on individuals and society. Restricted to Intended primarily for students in the GWTeach program and the Minor in STEM Teaching. Permission of the GWTeach Associate Director required. Prerequisites: Permission of instructor. Recommended background: Enrollment in the GWTeach program or the Minor in STEM Teaching.

GTCH 3600. Pedagogy for Learning Assistants. 2 Credits.
Integrate educational theory, pedagogy, and practice. Classroom discourse, group discussions, disciplinary thinking, questioning, models of cognition, metacognition, formative assessment, classroom presence. Final project directly linked to Learning Assistant placement. For students serving as Learning Assistants in large-enrollment undergraduate science courses. Restricted to Intended primarily for students in the GWTeach program and the Minor in STEM Teaching. Permission of the GWTeach Associate Director required. Prerequisites: Permission of instructor. Recommended background: Enrollment in the GWTeach program or the Minor in STEM Teaching.

GTCH 4000. Apprentice Teaching. 0-7 Credits.
Culminating experience and tools for first teaching positions. Expectations, processes, and rewards of teaching. Field experiences in local schools. Apprentice teachers and university master teachers share experiences and solutions to problems in the field. Feedback from public school mentor teachers and university facilitators. Restricted to Intended for juniors and seniors in the GWTeach program. Restricted to GWTeach apprentice teachers. Prerequisites: GTCH 3101, 3102, 3103, 3201, 3202 Also, GTCH 3203 for students intending to be Mathematics teachers. Recommended background: Intended for students in the GWTeach program as their final preparation for certification.