

## Course Descriptions

### **SCIE 1201      Step 1: Inquiry Approaches to Teaching**

Step 1 allows students to explore teaching as a career. Following an introduction to the theory and practice behind excellent inquiry-based science and mathematics instruction, students work in pairs to observe and teach several lessons in elementary classrooms to obtain firsthand experience in planning and implementation. *Prerequisite: None*

### **SCIE 1202      Step 2: Inquiry-Based Lesson Design**

In Step 2, students continue developing the lesson planning skills learned in Step 1 as they become familiar with exemplary middle school science and mathematics curricula. Students work in pairs to observe and teach several inquiry-based lessons to middle school students. *Prerequisite: SCIE 1201*

**SCIE 1334      Step 1 & 2 Combo**      Restricted to juniors & seniors; may be taken in lieu of SCIE 1201 & 1202

### **SCIE 4331      Knowing & Learning**

Psychological foundations of learning; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter; implications of high-stakes testing; and foundations of formative and summative assessment. *Prerequisite: SCIE 1201 or SCIE 1334 (or concurrent)*

### **PHIL 2314      Perspectives on Science & Mathematics**

Topics and episodes in the history of science and mathematics from a philosophical point of view. Students are brought to understand that science has a fascinating history, is underpinned by deep philosophical presuppositions, and depends upon special social and cultural factors for its continued growth and revision. *Prerequisite: None*

### **SCIE 4332      Classroom Interactions**

Principles of delivering effective instruction in various formats (lecture, lab activity, collaborative settings); examination of gender, class, race, and culture in mathematics and science education; overview of policy related to mathematics and science education. Includes field experience hours at the high school level. *Prerequisite: SCIE 1202 or SCIE 1334; SCIE 4331 (or concurrent)*

### **XXXX 4343      Research Methods**      *Cross-listed as: BIOL 4343, CHEM 4343, GEOL 4343, PHYS 4343*

Presents students with the tools scientists use to solve scientific problems, including: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Primarily a laboratory course; topics are developed in connection with four independent inquiries students design and carry out. Written inquiries are evaluated as examples of scientific writing. *Prerequisite: SCIE 1201 or SCIE 1334 (or concurrent); junior or senior standing*

### **SCIE 4333      Multiple Teaching Practices**

Multiple research-based teaching practices including foundations of project-based, case-based, and problem-based learning environments; principles of project-based curriculum development in mathematics and science education; classroom management and organization of inquiry-based, problem-based/project-based learning classrooms. Includes field experience hours at the high school level. *Prerequisite: SCIE 4332*

**MATH 2330 Functions & Modeling** *Taken only by 7-12 Mathematics & 7-12 Physics/Mathematics students*

Students engage in explorations and lab activities designed to strengthen and expand their knowledge of the topics found in secondary mathematics. Students collect data and explore a variety of situations that can be modeled using linear, exponential, polynomial, and trigonometric functions. Activities are designed to take a deeper look at topics exposed to previously; illuminate the connections between secondary and college mathematics; illustrate good, as opposed to typically poor and sometimes counterproductive, uses of technology in teaching; illuminate the connections between various areas of mathematics; and engage in serious (i.e., non-routine) problem solving, problem-based learning, and applications of mathematics. *Prerequisite: SCIE 1201 or SCIE 1334 (or concurrent); MATH 2425*

**SCIE 4607/4107 Capstone Teaching Experience & Seminar**

The Capstone Teaching Experience is a closely supervised full-time field experience in a cooperating high school that requires students to carry out the duties of a secondary teacher. Weekly on-campus seminar discussions include teaching experiences, contemporary critical issues in education, and preparation for the state certification exams. This experience takes place in the graduating semester; all degree coursework must be completed beforehand. *Prerequisite: SCIE 4333*

**Field Experiences**

- TEA requires a minimum of 50 clock hours of pre-clinical field experiences. In UTeach this is fulfilled by SCIE 1201, SCIE 1202, SCIE 4332, and SCIE 4333: each requires observations and teaches in a local school.
- Pre-clinical field experience hours take place outside the course meeting time. The scheduling is somewhat flexible; each visit to the school is arranged between the student and his/her mentor teacher at the school, with direction from the course instructor.
- The Capstone Teaching Experience is a full-time clinical teaching experience in a high school, following the district's calendar. A weekly evening seminar meets at UTA.
- Pre-clinical and Capstone field placements could be in any nearby district, including but not limited to Arlington, Mansfield, HEB, Kennedale, etc. Students do not have choice in placement.
- Students must pass a criminal background check prior to beginning any field placement.

**Program Completion Plan**

- The UTeach coursework is spread evenly throughout a student's degree timeframe.
- For incoming freshmen, the program works out to one UTeach course per semester.
- Students closer to graduation can take multiple UTeach courses per semester. The program can be condensed into as little as 1.5 years.
- All degree coursework (major, UTeach, & general education) must be completed prior to the Capstone semester.
- Below are a just few examples of program completion. There is flexibility depending on each student's timeframe and scheduling needs; the UTeach advisor will assist in creating an individual completion plan for each student.

Examples of program completion:

Graduation	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Term 7	Term 8
<b>4 Years</b>	SCIE 1201	SCIE 1202	SCIE 4331	PHIL 2314	SCIE 4332	XXXX 4343	SCIE 4333	Capstone
<b>3 Years</b>	SCIE 1201	SCIE 1202 SCIE 4331	PHIL 2314	SCIE 4332 XXXX 4343	SCIE 4333	Capstone		
<b>2 Years</b>	SCIE 1334 SCIE 4331	SCIE 4332 PHIL 2314	SCIE 4333 XXXX 4343	Capstone				
<b>1.5 Years</b>	SCIE 1334 SCIE 4331 PHIL 2314	SCIE 4332 SCIE 4333 XXXX 4343	Capstone					

*Note: 7-12 Math & 7-12 Physics/Math students must add MATH 2330*