

# Natural Sciences

**NATS 1101** Natural Sciences & Mathematics Freshman Seminar (1 semester hour) This course is designed to introduce incoming freshmen to the intellectual and cultural environment of the School of Natural Sciences and Mathematics (NS&M). Students will learn about plans of study and career paths for majors in Biology, Chemistry, Physics, Mathematics, Geosciences, and Science and Mathematics Education. Basic study, problem solving and other skills needed to succeed as an NSM major will be covered. An overview of the connections within the disciplines of Natural Sciences & Mathematics will be presented, as well as their relationship to engineering, medicine and health, and other fields. Required for all first time in college freshmen in NS&M. Corequisite: [UNIV 1010](#). (1-0) Y (2015-08-27 21:12:51)

**NATS 1111** From the Cosmos to Earth Laboratory (1 semester hour) A laboratory to accompany [NATS 1311](#). Corequisite: [NATS 1311](#). (0-3) Y (2015-08-27 21:12:51)

**NATS 1141** UTeach STEP 1 (1 semester hour) Introduction to mathematics and science teaching as a career. Master teachers introduce students to examples of high quality inquiry-based lesson design as well as model various pedagogical concepts and behavior management strategies. Students are also introduced to the portfolio project. Fieldwork consists of two classroom observations plus planning and teaching three inquiry-based lessons to students in grades four to six in local elementary schools. One and one-half class hours a week for one semester; at least ten hours of fieldwork a semester are also required. Prerequisites: A university grade point average of at least 2.750 and admission to the UTeach Dallas program by consent of the UTeach advisor. (1-0) S (2015-08-27 21:12:51)

**NATS 1143** UTeach STEP 2 (1 semester hour) Continued exploration into mathematics and science teaching as a career. Topics include various teaching methods that are designed to meet instructional goals; use of various technologies; and learner outcomes. Fieldwork consists of classroom observations and teaching three inquiry-based math or science lessons in a middle school classroom. One and one-half class hours a week for one semester; at least twenty hours of fieldwork a semester are also required. Prerequisites: A university grade point average of at least 2.750, a grade of B- or better in [NATS 1141](#), and consent of the UTeach advisor. (1-0) S (2015-08-27 21:12:51)

**NATS 1311** From the Cosmos to Earth (3 semester hours) A multidisciplinary study of nature expressly designed for those who have chosen not to major in the natural sciences or engineering. Early models of the solar system and the transformation to current models are examined, as are order in the universe, the nature of matter and the planets, sun, and life cycle of stars. The course will be enhanced by frequent demonstrations of the principles underlying the origin and evolution of the universe. Corequisite: [NATS 1111](#). (3-0) Y (2015-08-27 21:12:51)

**NATS 2333** Energy, Water, and the Environment (3 semester hours) An introduction to the impacts that humans have on the environment, with emphasis on impacts resulting from energy and water use. The course is designed for students who are not seeking a technical major and who wish to enhance their use of science and engineering principles and techniques in making decisions affecting both their own use of energy and water and use by the United States and the world. The course includes discussions of ways to ameliorate and/or adapt to the impacts. (3-0) Y (2015-08-27 21:12:51)

**NATS 2v10** Special Topics in Natural Sciences (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Instructor consent required. ([1-6]-0) S (2015-08-27 21:12:51)

**NATS 3330** The Basis of Evolution (3 semester hours) Wide-ranging discussions of the unifying theory of the origin and modification through time of all organisms. Pertinent history, the fossil record, evolution as concerns the human experience, processes and mechanisms and a look at the future are major topics. This course is specifically designed for non-majors and may not be used for credit by Natural Science and Mathematics students. (3-0) S (2015-08-27 21:12:51)

**NATS 3331** The Clash of Cosmologies (3 semester hours) Science and revelation in the nineteenth century. A study of the 19th-century rise of scientific inquiry into the origins of life, and the reaction and response to its discoveries by the Victorian culture that both maintained biblical authority and celebrated man's achievements. A study abroad component supplements this course. (3-0) Y (2015-08-27 21:12:51)

**NATS 3341** Knowing and Learning in Mathematics and Science (3 semester hours) This course expands the prospective teacher's understanding of current theories of learning and conceptual development. Students examine their own assumptions about learning. Topics include 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. Three lecture hours a week for one semester; additional hours may be required. Restricted to students in the UTeach Dallas program. Prerequisites: A university grade point average of at least 2.750, a GPA of 3.000 or better in UTeach coursework, and consent of the UTeach advisor. (3-0) S (2015-08-27 21:12:51)

**NATS 3343** Classroom Interactions (3 semester hours) This course moves from a focus on thinking and learning to a focus on teaching and learning. Topics include 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. Students participate in an intensive, highly coached high school field experience comprised of 3 observations and 2 co-teaching events, including a multiple-period or day, connected lesson. Three lecture hours a week for one semester; at least twenty hours of fieldwork a semester are also required. Students should also expect to dedicate out-of-class time to video transfer, lesson planning, and working on the portfolio project. Restricted to students in the UTeach Dallas program. Prerequisites: A university grade point average of at least 2.750, credit or registration for **NATS 3341**, a GPA of 3.000 or better in UTeach coursework, and consent of the UTeach advisor. (3-0) S (2015-08-27 21:12:51)

**NATS 4141** UTeach Apprentice Teaching Seminar (1 semester hour) Discussions include student teaching experiences, and contemporary critical issues in education. Time is also allocated for completion of the portfolio project. One class hour a week for one semester. Prerequisites: (**NATS 3343** and **NATS 4390** and **NATS 4341**), a university grade point average of at least 2.750, a GPA of 3.000 or better in UTeach coursework, and consent of the UTeach advisor. Corequisite: **NATS 4694** or **NATS 4696**. (1-0) S (2015-08-27 21:12:51)

**NATS 4310** Advanced Writing in the Natural Sciences and Mathematics (3 semester hours) A writing-intensive course on questions or problems in natural sciences and mathematics; satisfies the advanced writing requirement for graduation. (3-0) S (2015-08-27 21:12:51)

**NATS 4341** Project-Based Instruction (3 semester hours) Students explore topics including foundations of project-based, case-based, and problem-based learning environments; principles of project-based

curriculum development in mathematics and science education; and, classroom management and organization of project-based learning classrooms are covered. Fieldwork usually includes 2 observation days and 3 teaching days. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisites: [NATS 3343](#), a university grade point average of at least 2.750, a GPA of 3.000 or better in UTeach coursework, and consent of the UTeach advisor. Prerequisite or corequisite: [NATS 4390](#). (3-0) Y (2015-08-27 21:12:51)

[NATS 4390](#) Research Methods (3 semester hours) Independent research and advanced writing content course in the UTeach sequence. Satisfies the advanced writing requirement for UTeach student majoring in Biology, Chemistry, Physics or Geosciences. Prerequisites: [NATS 3341](#), a university grade point average of at least 2.750, a GPA of 3.000 or better in UTeach coursework, upper-level standing, and consent of the UTeach advisor. Prerequisite or corequisite: [NATS 3343](#). (3-0) S (2015-08-27 21:12:51)

[NATS 4694](#) UTeach Apprentice Teaching, 8-12 Science and Mathematics (6 semester hours) Closely supervised observation and teaching in a science or mathematics classroom for Grades 8-12. Experience includes carrying out the duties of a high school teacher and requires a minimum of four hours of fieldwork a day for 12 weeks. Students must apply for Apprentice Teaching the semester prior to enrollment. Prerequisites: ([NATS 4341](#) and [NATS 4390](#)), a university grade point average of at least 2.750, a GPA of 3.000 or better in UTeach coursework, and consent of the UTeach advisor. Admission to the university's teacher certification program by the Teacher Development Center. Corequisite: [NATS 4141](#). Additional fee attached to course. (6-0) S (2015-08-27 21:12:51)

[NATS 4696](#) UTeach Apprentice Teaching, 4-8 Science and Mathematics (6 semester hours) Closely supervised observation and teaching in a science or mathematics classroom for Grades 4-8. Experience includes carrying out the duties of a middle grades teacher and requires a minimum of four hours of fieldwork a day for 12 weeks. Students must apply for Apprentice Teaching the semester prior to enrollment. Prerequisites: ([NATS 4341](#) and [NATS 4390](#)), a university grade point average of at least 2.750, a GPA of 3.000 or better in UTeach coursework, and consent of the UTeach advisor. Admission to the university's teacher certification program by the Teacher Development Center. Corequisite: [NATS 4141](#). Additional fee attached to course. (6-0) S (2015-08-27 21:12:51)

[NATS 4v41](#) Independent Study in Science and Math Education (1-6 semester hours) Independent study under a faculty member's direction. Student must obtain approval from participating SME faculty member and the undergraduate advisor. May be repeated for credit (6 hours maximum). Prerequisite: Instructor consent required. ([1-6]-0) S (2015-08-27 21:12:51)

[NATS 4v90](#) Special Topics in Natural Sciences (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Instructor consent required. ([1-6]-0) S (2015-08-27 21:12:51)