Bachelor of Science in Mathematics

As an alternative to the Bachelor of Science and Arts and the Bachelor of Arts degrees, the Bachelor of Science in Mathematics is designed with a twofold purpose: to offer students a more extensive scientific program that may better prepare them for graduate study or employment, and to recognize students who choose to pursue a more demanding program. Students are given the opportunity to develop greater breadth and depth in their mathematical programs as well as to combine mathematics with a concentration in another scientific discipline.

Students seeking the Bachelor of Science in Mathematics select one of the following Options: Actuarial Science, Mathematics for Secondary Teaching, Mathematics Honors, or Mathematics. Students who plan to follow Option VI, mathematics Honors, must be admitted to the Dean's Scholars Honors Program.

Prescribed Work Common to All Options

In the process of fulfilling degree requirements, all students must complete:

a. Core curriculum

b. Skills and experience flags:
   i. Writing: two flagged courses beyond Rhetoric and Writing 306 or its equivalent, including one at the upper-division level
   ii. Quantitative reasoning: one flagged course
   iii. Global cultures: one flagged course
   iv. Cultural diversity in the United States: one flagged course
   v. Ethics: one flagged course
   vi. Independent inquiry: one flagged course

Courses that may be used to fulfill flag requirements are identified in the Course Schedule. They may be used simultaneously to fulfill other requirements, unless otherwise specified. Please note, students may not earn the cultural diversity in the United States and the global culture flags from the same course. Students are encouraged to discuss options with their academic advisors.

c. Forty-two semester hours of upper-division coursework. At least 21 semester hours of upper-division coursework must be completed in residence at the University.

d. Eighteen semester hours in mathematics must be completed in residence at the University.

Additional Prescribed Work for Each Option

Option I: Actuarial Science

5. Eight semester hours of majors-level coursework in one of the following areas: astronomy, biology, chemistry, geological sciences, and physics.

6. Complete one of the following:
   i. Mathematics 408C* and 408D
   ii. Mathematics 408N and 408S
   iii. Mathematics 408K and 408L
   *Mathematics 408N, and 408S, or 408K and 408L, may substitute for 408C

7. Economics 304K and 304L

8. Accounting 310F or both 311 and 312

9. Finance 357

10. Computer Science 303E

11. Upper-division mathematics courses, including:
    a. Mathematics 325K or 328K. Mathematics 328K is recommended for students with substantial experience in writing proofs.
    b. Mathematics 341. Mathematics 340L may be substituted for 341 if the course was completed prior to entry into the mathematics entry-level major.
    c. Mathematics 362K, and either 358K or 378K
    d. Mathematics 329F, 339D, 339J, and 339U
    e. Two courses from the following: Mathematics 339V, M 339W, 349P
    f. One additional course chosen from the following: Mathematics 339C, 339V, M 339W, 349P, 349R, 378K

    One of the courses fulfilling requirement 11a through 11f must be taught in the inquiry based learning (IBL) format or with an independent inquiry flag. IBL courses are identified each semester through a notation under the unique number in the course schedule and through a list maintained in the mathematics advising office in Robert Lee Moore Hall, room 4.101. Courses with an independent inquiry flag are identified in the Course Schedule.

12. At least six semester hours of upper-division coursework must be outside both mathematics and the fields of study listed in requirement 1. Philosophy courses in logic, computer science courses in discrete mathematics, engineering courses, and actuarial foundation courses may not be used to fulfill this requirement.

13. Enough additional coursework to make a total of 120 semester hours.

Option V: Teaching

This option is designed to fulfill the course requirements for certification as a middle grades or secondary school mathematics teacher in Texas; the student chooses mathematics certification or mathematics, physical science, and engineering certification. However, completion of the course requirements does not guarantee the student's certification. For information about additional certification requirements, students should consult the UTeach-Natural Sciences academic advisor.

Students are encouraged to become familiar with a variety of mathematical software relevant to middle grades or secondary teaching, such as computer geometry systems, spreadsheets, and statistical software. Whenever possible, the student should take courses and sections of courses that use these types of software.

5. History 329U or Philosophy 329U

6. One of the following sequences:
   i. Mathematics 408C* and 408D
   ii. Mathematics 408N and 408S
   iii. Mathematics 408K and 408L

   *Mathematics 408N and 408S, or 408K and 408L, may substitute for 408C

7. Mathematics 315C

8. Biology 337 (Topic 2: *Research Methods: UTeach)*, Chemistry 368 (Topic 1: *Research Methods: UTeach)* or Physics 341 (Topic 7: *Research Methods: UTeach)*

9. The requirements of one of the following certification areas:
   a. For mathematics certification:
      i. Mathematics 340L or 341
      ii. Mathematics 325K or 328K, 333L, 358K, and 362K. Mathematics 328K is recommended for students with substantial experience in writing proofs.
      iii. Mathematics 375D
      iv. Mathematics 361K or 365C
      v. Mathematics 343K or 373K
      vi. Mathematics 427J.
      vii. Two courses chosen from: Mathematics 328K, 339J, 339U, 343K, 343L, 348, 361, 365C, 365D, 368K, 373K, 373L, 378K. A course used to fulfill requirements 9ai through 9avi may not also be counted toward requirement 9avii
      viii. A three-semester-hour supporting course that uses mathematics but is in a field other than mathematics. The following courses may be used to fulfill this requirement: Accounting 310F or 311, Architectural Engineering 323K, Astronomy 307, 352K, 352L, 358, 367M, Chemistry 301 or CH 301H, 303, Civil Engineering 321, 341, Computer Science 303E, 313E, Economics 420K, Electrical and Computer Engineering 302, 366, 366L, Geological Sciences 346C, 354, 476K, GRG 360L, Government 341M, Human Development and Family Sciences 322, Mechanical Engineering 320, 326, 366L, 366Q, 366R, Petroleum and Geosystems Engineering 311, Physics 301, 303K, 303L, Psychology 325K, 332
   b. For mathematics, physical science, and engineering certification:
      i. Mathematics 325K or 328K, 427J, 333L, 341, 358K, and 362K. Mathematics 328K is recommended for students with substantial experience in writing proofs
      ii. Mathematics 361K or 365C
      iii. Mathematics 375D
      iv. Physics 301, 101L, 316, 116L, 315, and 115L
      v. Chemistry 301 or CH 301H, 302 or CH 302H, and 204
      vi. Engineering Studies 301; and Mechanical Engineering 377K upon approval of the projects by the UTeach Program.

10. Eighteen semester hours of professional development coursework consisting of:
    a. Curriculum and Instruction 651S (Topic 3: Secondary School Teaching Practicum: Math)
    b. Curriculum and Instruction 365C or UTeach-Natural Sciences 350
    c. Curriculum and Instruction 365D or UTeach-Natural Sciences 355
    d. Curriculum and Instruction 365E or UTeach-Natural Sciences 360
    e. UTeach-Natural Sciences 101, 110, and 170

11. Students seeking middle grades certification must complete the following courses: Educational Psychology 350G, or Psychology 301 and 304; and Curriculum and Instruction 339E. Students seeking mathematics, physical science, and engineering certification may not seek middle grade certification.

12. Enough additional coursework to make a total of at least 120 semester hours

Option VI: Mathematics Honors

5. Breadth requirement: An honors mathematics course; one of the following two-semester sequences: Biology 315H and 325H, CH 301H and CH 302H, or Physics 301, 101L, 316, and 116L; and nine additional semester hours chosen from the preceding courses,

Physics 315 and 115L. Credit earned by examination may not be counted toward this requirement

6. An honors section of Mathematics 427J, and six semester hours of coursework chosen from Mathematics 365C, 367K, and 373K

7. Twenty additional semester hours of upper-division coursework in mathematics approved by the departmental faculty advisor

8. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors advisor

9. A section of Rhetoric and Writing 309S that is restricted to students in the Dean Scholars Honors Program

10. Mathematics 379H

11. Thirty additional semester hours of coursework approved by the departmental honors advisor

12. Six semester hours of coursework from the College of Liberal Arts and/or the College of Fine Arts

13. Enough additional coursework to make a total of 120 semester hours.

Option VII: Mathematics

5. Eight semester hours of majors-level coursework in one of the following areas: astronomy, biology, chemistry, geological sciences, and physics

6. Computer Science 303E

7. One of the following sequences:
   i. Mathematics 408C* and 408D
   ii. Mathematics 408N and 408S
   iii. Mathematics 408K and 408L

   *Mathematics 408N and 408S, or 408K and 408L, may substitute for 408C

8. Three of the following: Mathematics 408M or 427L, 427J, 341, 362K. Mathematics 340L may be substituted for 341 if the course was taken prior to entry into the mathematics entry-level major

9. Mathematics 325K or 328K. Mathematics 328K is recommended for students with substantial experience in writing proofs

10. One of the following: Mathematics 343K, 361K, 365C, 367K, 373K.

11. Complete 33 hours of upper-division mathematics, from requirements 8, 9, 10, and the following: Mathematics 325K, 427J or 427K, 427L, 328K, 329F, 333L, 339C, 339D, 339J, 339U, 339V, M 339W, 340L or 341, 343K, 343L, 344K, 346, 348, 349P, 349R, 358K, 361, 361K, 362K, 362M, 365C, 365D, 365G, 367K, 367L, 368K, 371E, 372K, 373K, 373L, 374G, 374M, 375D, 375T, 378K, and 379H. Mathematics 374M may not count toward both requirement 11 and 13.

12. One upper-division mathematics course identified as taught in the inquiry based learning (IBL) format or with an independent inquiry flag. IBL courses are identified each semester through a notation under the unique number in the Course Schedule and through a list maintained in the mathematics advising office in Robert Lee Moore Hall, room 4.101. Courses with an independent inquiry flag are identified in the Course Schedule. Courses counted toward requirements 8, 9, 10, and 11 may also count toward this requirement.

13. Mathematics in context. One course chosen from:
    a. Mathematics 374M
    b. Chemistry 353, 354
    c. Computer Science 341, 342, 345, 346, 353, 367
    d. Electrical and Computer Engineering 411, 325, 360C, 362K
    e. Physics 329, 336K, 352K

Courses in requirements 13b through 13e may require additional prerequisites. Mathematics 374M may not count toward both requirement 11 and 13.

14. At least six semester hours of upper-division coursework must be outside both mathematics and the fields of study listed in requirement 5. Philosophy courses in logic, computer science courses in discrete mathematics, engineering, and actuarial foundation courses may not be used to fulfill this requirement.

15. Enough additional coursework to make a total of 120 semester hours

Special Requirements

Students in all Options must fulfill both the University's General Requirements for graduation and the college requirements. They must also earn a grade of at least *C-* in each mathematics and science course required for the degree, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in the General Information Catalog.

To graduate and be recommended for certification, students who follow the Teaching Option must have a University grade point average of at least 2.50. They must earn a grade of at least *C-* in the supporting course in requirement 5 and 8 and in each of the professional development courses listed in requirement 10 and must pass the final teaching portfolio review; those seeking middle grades certification must also earn a grade of at least *C-* in each of the courses listed in requirement 11. For information about the portfolio review and additional teacher certification requirements, students should consult the UTeach-Natural Sciences academic advisor.

To graduate under Option VI, students must remain in good standing in the Dean's Scholars Honors Program, must submit an honors thesis approved by the departmental honors advisor, and must present their research in an approved public forum, such as the college's annual Undergraduate Research Forum.