

College of Science
Bachelor of Science: Mathematics Major
Applied Discrete Mathematics Option
For students graduating in calendar year 2020

I. Curriculum for Liberal Education (30 credits): All courses used for the Curriculum for Liberal Education must be on the approved Curriculum for Liberal Education list. Area 4 requires a single six-hour sequence in Biology, Chemistry, Geosciences, Environmental Science or Physics. The Area 6 requirement must be met with one 3-credit course, not three 1-credit courses.

Area 1: Writing and Discourse (6 credits)	_____ 3 () _____ 3 ()
Area 2: Ideas, Cultural Traditions, and Values (6 credits)	_____ 3 () _____ 3 ()
Area 3: Society and Human Behavior (6 credits)	_____ 3 () _____ 3 ()
Area 4: Scientific Reasoning and Discovery (6 credits)	_____ 3 () _____ 3 ()
Area 5: Quantitative and Symbolic Reasoning (6 credits)	_____ 3 () _____ 3 ()
Area 6: Creativity and Aesthetic Experience (3 credits)	_____ 3 ()
Area 7: Critical Issues in a Global Context (3 credits)	_____ 3 ()

Foreign Language Requirement: Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.

II. Required Core Mathematics Courses (26 credits)

A. Calculus and Vector Geometry

PATH 1:

MATH 1205 Calculus	3 ()
MATH 1206 Calculus	3 ()
MATH 1224 Vector Geometry	2 ()
MATH 2224 Multivariable Calculus	3 ()

OR

PATH 2:

MATH 1225 Calculus of a Single Variable I	4 ()
MATH 1226 Calculus of a Single Variable II	4 ()
MATH 2204 Intro to Multivariable Calculus	3 ()

B. Linear Algebra, ODE's:

MATH 2114 Introduction to Linear Algebra	3 ()
MATH 2214 Intro. to Differential Equations	3 ()
MATH 3144 Linear Algebra I	3 ()

C. Proofs/Advanced Calculus:

MATH 3034 Intro. to Proofs	3 ()
MATH 3224 Advanced Calculus*	3 ()

*The following substitution is allowed: MATH 4225 for MATH 3224.

III. Required Mathematics Courses for the Applied Discrete Mathematics Option (21 credits)

A. Calculus of Several Variables

MATH 3214 Calc. of Several Variables 3 ()

B. Algebra/Combinatorics

MATH 3124 Modern Algebra 3 ()

MATH 3134 Applied Combinatorics# 3 ()

#The following substitutions are allowed: MATH 4226 for MATH 3214, MATH 4124 for MATH 3124.

C. 12 credit hours of 4000-Level Mathematics Courses, subject to the following restrictions:

- 1) MATH 4134 must be taken.
- 2) At least one of the courses MATH 4124, 4144, 4175, 4176, 5114 must be included.
- 3) At most one of MATH 4044 or 4334 is allowed.
- 4) At most one of MATH 4564 and 4425 is allowed.
- 5) Students must petition the associate head for undergraduate studies to obtain permission to use 4974, 4984, or 4994.
- 6) Any 4000-level math course listed under section IX may NOT be used.

4134 3 () _____ 3 () _____ 3 () _____ 3 ()

IV. Required Computer Science and Statistics Courses (18 credits)

CS 1114 (Introduction to Software Design)

3 ()

CS 2114 (Software Design and Data Structures)

3 ()

CS 2505 (Introduction to Computer Organization)

3 ()

CS 3114 (Data Structures and Algorithms)

3 ()

CS 4104 (Data and Algorithm Analysis)

3 ()

STAT 4714 (Probability and Statistics for EE's)

3 ()

V. Free Electives (sufficient to achieve the 120 credit graduation requirement)

_____ () ()

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VI. Outcomes Assessment: Each student is required to participate in the department's Outcomes Assessment procedures as determined by each year's Undergraduate Program Committee and approved by the Head.

VII. Satisfactory progress toward the B.S. in Mathematics: Upon having attempted 36 semester credits, the student must have completed 12 credits of the University Curriculum for Liberal Education. Upon having attempted 72 credits (including transfer, advanced placement, advanced standing, credit by examination and course withdrawal), the student must have completed 24 credits of the University Curriculum for Liberal Education. In addition, satisfactory progress toward the B.S. in mathematics requires that:

1. Within the previous two semesters, the student must pass at least one mathematics course that is used in the in-major GPA calculation.
2. Upon having attempted 45 semester credits, students must have an in-major GPA of 2.2 or above.
3. **Path 1:** Upon having attempted 72 semester credits (including transfer, advanced placement, advanced standing, credit by examination, course withdrawal), students must have completed the following courses with grades of C- or better: Math 1205, 1206, 1224, 2224, 1114 or 2114, 2214, and 3034 and not have taken any of these courses more than twice, including attempts ending in course withdrawal.
Path 2: Upon having attempted 72 semester credits (including transfer, advanced placement, advanced standing, credit by examination, course withdrawal), students must have completed the following courses with grades of C- or better: Math 1225, 1226, 2114, 2204, 2214, and 3034 and not have taken any of these courses more than twice, including attempts ending in course withdrawal.

VIII. Minimum hours required for graduation: 120 semester credits.

IX. Minimum GPA required for graduation: Students are required to have a 2.0 GPA and a 2.0 in-major GPA for graduation. All Mathematics courses count toward the in-major GPA for this option except MATH 1014, 1015, 1016, 1025, 1026, 1525, 1526, 1535, 1536, 1614, 1624, 2015, 2016, 2024, 2534, 2644, 3624, 4574, 4625, 4626, 4644, 4654, 4664.

NOTE: Please consult the course catalogue for prerequisite requirements.

NOTE: To fulfill the requirements for a minor in Computer Science, students must complete the CS courses listed in Section III, with a C or better in all but CS 4104 and take one additional CS course at or above the 3000 level.