February 10, 2023

Proposal: Revisions to Applied Mathematics BS

Overview: The change in the major consists of adding one or two courses to one of the tracks (Track 2: Statistics). We would like to add one of the following:

1. Mat 158 and Mat 258
2. Mat 179 and Mat 258
3. Mat 318

Justification: Track 2 of the Applied Math BS includes courses Mat 357 and Mat 358, which both have Mat 258 or Mat 318 as a prerequisite. These courses are not program requirements, thus leading to hidden prerequisites. Adding the courses to the track will fix the problem.

Change in resources: none

Current: Applied Mathematics BS (52-55 cr)	**Proposed: Applied Mathematics BS (52-61 cr)**
A. Core Requirements (28-31cr) MAT210 – Calculus I (4cr) MAT 215 – Introduction to Discrete Mathematics (3cr) MAT 220 – Calculus II (4cr) MAT 230 – Matrix Algebra (3cr) MAT 240 – Multivariable Calculus (4cr) MAT 347 – Analysis A (3cr) MAT 354 – Mathematical Statistics A (3cr) MAT 496 – Capstone Project (1cr) Taken concurrently with one of the following four Choices: MAT 498 – Internship in Mathematics (3cr) MAT 499 – Independent Study (3cr) ADO 420 – Student Teaching Grades 7-12 (6cr) An additional three-credit, 400-level Mathematics course (instructor and advisor approval needed) **B. Elective Requirements (12cr)** One 300- or 400-level mathematics course from the approved electives list below. (3cr) MAT 300 – History of Mathematics (3cr) MAT 310 – Introduction to Linear and Integer Programming (3cr) MAT 320 – Numerical Analysis I (3cr) MAT 330 – Introduction to Algebra (3cr) MAT 332 – Cryptology (3cr) MAT 335 – College Geometry (3cr) MAT 348 – Ordinary Differential Equations (3cr) MAT 351 – Introduction to Forecasting (3cr) MAT 353 – Mathematical Modeling (3cr) MAT 357 – Applied Regression Analysis (3cr) MAT 358 – Design and Analysis of Experiments (3cr) MAT 373 – Number Theory (3cr) MAT 379 – Environmental Statistics (3cr) MAT 399 – Independent Study (3cr) MAT 409 – Mathematical Economics Problem Seminar (3cr) MAT 430 – Algebra (3cr) MAT 442 – Complex Analysis (3cr) MAT 447 – Analysis B (3cr) MAT 448 – Partial Differential Equations and Orthogonal Functions (3cr) MAT 454 – Mathematical Statistics B (3cr) MAT 499 – Independent Study (3cr)	**A. Core Requirements (28-31cr)** MAT210 – Calculus I (4cr) MAT 215 – Introduction to Discrete Mathematics (3cr) MAT 220 – Calculus II (4cr) MAT 230 – Matrix Algebra (3cr) MAT 240 – Multivariable Calculus (4cr) MAT 347 – Analysis A (3cr) MAT 354 – Mathematical Statistics A (3cr) MAT 496 – Capstone Project (1cr) Taken concurrently with one of the following four Choices: MAT 498 – Internship in Mathematics (3cr) MAT 499 – Independent Study (3cr) ADO 420 – Student Teaching Grades 7-12 (6cr) An additional three-credit, 400-level Mathematics course (instructor and advisor approval needed) **B. Elective Requirements (12-18cr)** One 300- or 400-level mathematics course from the approved electives list below. (3cr) MAT 300 – History of Mathematics (3cr) MAT 310 – Introduction to Linear and Integer Programming (3cr) MAT 320 – Numerical Analysis I (3cr) MAT 330 – Introduction to Algebra (3cr) MAT 332 – Cryptology (3cr) MAT 335 – College Geometry (3cr) MAT 348 – Ordinary Differential Equations (3cr) MAT 351 – Introduction to Forecasting (3cr) MAT 353 – Mathematical Modeling (3cr) MAT 357 – Applied Regression Analysis (3cr) MAT 358 – Design and Analysis of Experiments (3cr) MAT 373 – Number Theory (3cr) MAT 379 – Environmental Statistics (3cr) MAT 399 – Independent Study (3cr) MAT 409 – Mathematical Economics Problem Seminar (3cr) MAT 430 – Algebra (3cr) MAT 442 – Complex Analysis (3cr) MAT 447 – Analysis B (3cr) MAT 448 – Partial Differential Equations and Orthogonal Functions (3cr) MAT 454 – Mathematical Statistics B (3cr) MAT 499 – Independent Study (3cr)

Select one track from the following: Track 1: Applications. Select 3 from the following list. MAT 320 – Numerical Analysis (3cr) MAT 348 – Ordinary Differential Equations (3cr) MAT 448 – Partial Differential Equations and Orthogonal Functions (3cr) MAT 454 – Mathematical Statistics B (3cr) Track 2: Statistics MAT 357 – Applied Regression Analysis (3cr) MAT 358 – Design and Analysis of Experiments (3cr) MAT 454 – Mathematical Statistics B (3cr) Track 3: Foundations. Select 3 courses from the following list. MAT 330-Introduction to Algebra (3cr) MAT 373 – Number Theory (3cr) MAT 442 – Complex Analysis (3cr) MAT 447 – Analysis B (3cr) **C. Cognate Requirement (12cr)** An advisor approved program of three electives in one academic area (9cr) The courses should contain significant applications of mathematics. Suggested areas include biology, chemistry, computer science, earth sciences, economics, management science, physics, or statistics CSC 212 – Principals of Programming (3cr) Note: A C- grade or better must be earned in all 200- level mathematics courses credited to the major.	Select one track from the following: Track 1: Applications. Select 3 from the following list. MAT 320 – Numerical Analysis (3cr) MAT 348 – Ordinary Differential Equations (3cr) MAT 448 – Partial Differential Equations and Orthogonal Functions (3cr) MAT 454 – Mathematical Statistics B (3cr) Track 2: Statistics Select one Introductory Statistics option: Option 1: MAT 158 – Introduction to Statistics A (3cr) MAT 258 – Introduction to Statistics B (3cr) Option 2: MAT 179 – Measuring Life (3cr) MAT 258 – Introduction to Statistics B (3cr) Option 3: MAT 318 – Statistics in the Sciences (3cr) Additionally complete all three of the following courses: MAT 357 – Applied Regression Analysis (3cr) MAT 358 – Design and Analysis of Experiments (3cr) MAT 454 – Mathematical Statistics B (3cr) Track 3: Foundations. Select 3 courses from the following list. MAT 330-Introduction to Algebra (3cr) MAT 373 – Number Theory (3cr) MAT 442 – Complex Analysis (3cr) MAT 447 – Analysis B (3cr) **C. Cognate Requirement (12cr)** An advisor approved program of three electives in one academic area (9cr) The courses should contain significant applications of mathematics. Suggested areas include biology, chemistry, computer science, earth sciences, economics, management science, physics, or statistics CSC 212 – Principals of Programming (3cr)

	Note: A C- grade or better must be earned in all 200- level mathematics courses credited to the major.