Mathematics BS – Sample Programs of Study

The following are examples of just a few possibilities. The first example shows that nothing has really changed; a degree identical to what we already offer can still be earned. The remaining examples highlight the focus a student might wish to follow.

The flexibility of the (increased) 42 credits of electives permits mathematics majors to be highly specialized (mathematical sciences) or interdisciplinary (one or more other disciplines).

Example 1: Preparation for Graduate Studies in the Mathematical Sciences

GERs (35 credits)

Includes 8 credits of Physics

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)

MATH S410 Complex Variables (3 credits)
MATH S460 Mathematical Modeling (3 credits)
STAT S373 Probability and Statistics (3 credits)

Electives/Minor/Double Major (42 credits)

Additional UAS or exchange/transfer upper division mathematics and/or statistics courses – 15 credits

Selected lab courses in the sciences – 12 credits

Additional interdisciplinary electives involving the use of technology – 15 credits

Possibilities include GIS courses from ENVS/GEOG and/or programming courses from CIS.

Total credits – 120
Example 2: Preparation for Secondary School Teaching

GERs (35 credits)

*Includes 8 credits of Physics*

_and Social Science GER – PSY 101 and PSY 250_

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)

MATH S305 Geometry (3 credits)
MATH S411 History of Mathematics (3 credits)
MATH S460 Mathematical Modeling (3 credits)

Electives/Minor/Double Major (42 credits)

Selected Psychology courses – 15 credits

Selected Education courses – 9 credits

Science and Social Science courses – 18 credits

  * BIOL S105 Fundamentals of Biology (4 credits)
  * CHEM S105 General Chemistry I (4 credits)
  * CIS S105 Computer Literacy (3 credits)
  * ECON S202 Principles of Microeconomics (3 credits)
  * ENVS S102 Earth and the Environment (4 credits)

Total credits – 120
Example 3: Double Major with Biology

GERs (35 credits)

Includes 8 credits of Physics

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)

MATH S460 Mathematical Modeling (3 credits)
STAT S400 Statistical Computing with R (2 credits)
STAT S401 Regression and Analysis of Variance (4 credits)

Biology Major (60 credits)

BIOL S105 and BIOL S106 – 8 credits

Biology Major Requirements (32 credits)

Excludes STAT S200 and 8 Physics credits (covered for Math BS)

Biology Breadth Electives (20 credits)

Electives (0 credits needed)

Covered by Math BS major requirements

Total credits – approximately 120 + 18 = 138

Note: Total credits may be a little higher or a little lower.
Example 4: Double Major with Marine Biology

GERs (35 credits)

Includes 8 credits of Physics

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)

MATH S460 Mathematical Modeling (3 credits)
STAT S400 Statistical Computing with R (2 credits)
STAT S401 Regression and Analysis of Variance (4 credits)

Marine Biology Major (60 credits)

BIOL S105 and BIOL S106 (8 credits)

Marine Biology Major Requirements (35 credits)

Excludes STAT S200 and 8 Physics credits (covered for Math BS)

Marine Biology core courses (11 credits)

Biology Breadth Electives (6 credits)

Electives (0 credits needed)

Covered by Math BS major requirements

Total credits – approximately $120 + 18 = 138$

Note: Total credits may be a little higher or a little lower.
Example 5: Double Major with Environmental Science

GERs (35 credits)

*Includes 8 credits of Physics*

Major Requirements (43 credits)

- MATH S251 Calculus I (4 credits)
- MATH S252 Calculus II (4 credits)
- MATH S253 Calculus III (4 credits)
- MATH S265 Introduction to Mathematical Proofs (3 credits)
- MATH S302 Differential Equations (3 credits)
- MATH S311 Modern Algebra (3 credits)
- MATH S314 Linear Algebra I (3 credits)
- MATH S324 Advanced Calculus (3 credits)
- MATH S392 Junior Seminar (2 credits)
- MATH S492 Senior Seminar (2 credits)
- STAT S200 Elementary Statistics (3 credits)
- MATH S460 Mathematical Modeling (3 credits)
- STAT S400 Statistical Computing with R (2 credits)
- STAT S401 Regression and Analysis of Variance (4 credits)

Environmental Science Major (53 credits)

- BIOL S105 and ENVS S102 (8 credits)

Environmental Sciences Major Requirements (27 credits)

*Excludes STAT S200 and 8 Physics credits (covered for Math BS)*

Quantitative and Spatial Analysis (0 credits needed)

*Covered by Math BS major requirements*

Concentration Areas (18 credits)

Electives (0 credits needed)

*Covered by Math BS major requirements*

Total credits – 120 + 11 = 131

Note: Total credits may be a little higher or a little lower.
Example 6: Double Major with Geography and Environmental Resources

GERs (35 credits)

Includes 8 credits of Physics

and Social Science GER GEOG S101

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)
STAT S460 Mathematical Modeling (3 credits)
STAT S400 Statistical Computing with R (2 credits)
STAT S401 Regression and Analysis of Variance (4 credits)

Geography and Environmental Resources Major (54 credits)

BIOL S105 and GEOL S104 (8 credits)

Major Requirements (46)

Use Mathematics BS major requirements toward 10 credits of Geographic Analysis

Electives (0 credits needed)

Covered by Math BS major requirements

Total credits – 120 + 12 = 132

Note: Total credits may be a little higher or a little lower.
Example 7: Interest in Business and Economics

GERs (35 credits)

Includes 8 credits of Physics

and Social Science GER ECON S201 and ECON S202

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)

MATH S460 Mathematical Modeling (3 credits)
STAT S400 Statistical Computing with R (2 credits)
STAT S401 Regression and Analysis of Variance (4 credits)

Electives plus Economics and Business Minors (42 credits)

Economics Minor (12 credits)

Business Minor (15 credits)

Additional upper division coursework in statistics, economics, business, accounting, and computer information systems (15 credits)

Total credits – 120
Example 8: Interest in Social Sciences

**GERs (35 credits)**

*Includes 8 credits of Physics and Social Science GER ANTH S101 and ANTH S102*

**Major Requirements (43 credits)**

- MATH S251 Calculus I (4 credits)
- MATH S252 Calculus II (4 credits)
- MATH S253 Calculus III (4 credits)
- MATH S265 Introduction to Mathematical Proofs (3 credits)
- MATH S302 Differential Equations (3 credits)
- MATH S311 Modern Algebra (3 credits)
- MATH S314 Linear Algebra I (3 credits)
- MATH S324 Advanced Calculus (3 credits)
- MATH S392 Junior Seminar (2 credits)
- MATH S492 Senior Seminar (2 credits)
- STAT S200 Elementary Statistics (3 credits)

- MATH S460 Mathematical Modeling (3 credits)
- STAT S400 Statistical Computing with R (2 credits)
- STAT S401 Regression and Analysis of Variance (4 credits)

**Anthropology and Geography Electives (42 credits)**

- ANTH S211 Fundamentals of Archeology (3 credits)
- ANTH S311 Methods and Theories in Archeology (3 credits)
- ANTH S312 Humans and the Environment (3 credits)
- ANTH S314 Archeology of Southeast Alaska (3 credits)
- GEOG S102 Earth and Environment (4 credits)
- GEOG S110 Introduction to ArcGIS (1 credit)
- GEOG S210 Temperate Rainforest Ecosystems (3 credits)
- GEOG S212 Natural Hazards (3 credits)
- GEOG S309 Mobile GIS Technology and Applications (2 credits)
- GEOG S338 Introduction to GIS (3 credits)
- GEOG S406 Remote Sensing (3 credits)
- GEOG S409 Projects in GIS and Remote Sensing (3 credits)
- GEOG S410 Advanced Geographic Information Systems (3 credits)
- GEOG S415 Biogeography and Landscape Ecology (3 credits)
- GEOG S491 Geography Internship (2 credits)

**Total credits – 120**
Example 9: BS in Mathematics plus a second BA or BBA degree

GERs (35 credits)

Includes 8 credits of Physics and appropriate selection of Humanities and Social science GER courses

Major Requirements (43 credits)

MATH S251 Calculus I (4 credits)
MATH S252 Calculus II (4 credits)
MATH S253 Calculus III (4 credits)
MATH S265 Introduction to Mathematical Proofs (3 credits)
MATH S302 Differential Equations (3 credits)
MATH S311 Modern Algebra (3 credits)
MATH S314 Linear Algebra I (3 credits)
MATH S324 Advanced Calculus (3 credits)
MATH S392 Junior Seminar (2 credits)
MATH S492 Senior Seminar (2 credits)
STAT S200 Elementary Statistics (3 credits)

Appropriate Upper division MATH/STAT electives (9 credits)

Coursework leading toward second BA or BBA degree (42 credits)

Must include upper division credits as needed

Total credits - 120

Second Degree – BA or BBA

Requires a minimum of 24 additional credits beyond the 120 credits used above for the mathematics BS and applicable to the BA or BBA degree.