Mathematics

College of Natural Science and Mathematics
Department of Mathematics and Statistics
907-474-7332
www.dms.uaf.edu

B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

The number of new fields in which professional mathematicians find employment grows continually. This department prepares students for careers in industry, government and education.

In addition to the major programs, the department provides a number of service courses in support of other programs within the university. Current and detailed information on mathematics degrees and course offerings is available from the department.

The department maintains a math lab which is available for assistance to all students studying mathematics at the baccalaureate level.

The Department of Mathematics and Statistics also offers programs in statistics (see separate listings).

Major — B.A. or B.S. Degree

1. Complete the following pre-major requirement:
   a. Students must be ready to matriculate into MATH F200X before they will be allowed to declare mathematics as their major.

2. Complete the general university requirements (page 131).

3. Complete the B.A. or B.S. degree requirements. (See page 135 or page 136. As part of the B.S. degree requirements, complete PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)

4. Complete the following program (major) requirements:*
   MATH F200X—Calculus I**...4
   MATH F201X—Calculus II**..4
   MATH F202X—Calculus III 4
   MATH F215—Introduction to Mathematical Proofs.................2
   MATH F314—Linear Algebra...3
   MATH F401W—Introduction to Real Analysis........................3
   MATH F405W—Abstract Algebra 3
   MATH F490O—Senior Seminar 1

5. Complete 21 additional credits of electives.* Acceptable elective courses include any MATH course at the F300-level or above, any STAT course at the F300-level or above, and CS F201. At least 15 credits must be MATH courses. [For exceptions see below.***] The following are some suggested elective packages:
   a. Pure math electives:
   MATH F305—Geometry...3
   MATH F320—Topics in Combinatories 3
   MATH F422—Introduction to Complex Analysis.....................3
   MATH F404—Topology..3
   Additional elective credits 9
   b. Applied math electives:
   MATH F302—Differential Equations 3
   MATH F421—Applied Analysis..4
   MATH F422—Introduction to Complex Analysis.....................3
   MATH F460—Mathematical Modeling 3
   Complete two of the following:
   MATH F307—Discrete Mathematics..3
   MATH F310—Numerical Analysis 3
   STAT F300—Statistics..3
   Additional elective credits 3

   c. Requirements for mathematics teachers (grades 7 – 12):****
   CS F201—Computer Science I..3
   MATH F305—Geometry...3
   MATH F306—Introduction to the History and Philosophy of Mathematics..3
   STAT F300—Statistics (3) or MATH F371—Probability and MATH F408—Mathematical Statistics (6) ....3 – 6
   Two courses chosen from:
   MATH F302—Differential Equations (3)
   MATH F320—Topics in Combinatories (3)
   MATH F321—Number Theory (3)
   MATH F310—Numerical Analysis (3)
   MATH F460—Mathematical modeling (3)...............................6
   Additional elective credits 3
   d. Statistics concentration electives:
   MATH F371—Probability...3
   MATH F408—Mathematical Statistics......................................3
   MATH F460—Mathematical Modeling 3
   STAT F300—Statistics..3
   STAT F401—Regression and Analysis of Variance 4
   Additional elective credits 6

6. Minimum credits required...120

*   Student must earn a C grade (2.0) or better in each course.
**   Satisfies core or B.A. or B.S. degree requirements.
***   In some cases, courses with strong mathematical content from other disciplines may be used as electives. Such an elective package must be approved by an advisor in the Department of Mathematics and Statistics. The requirement that at least 15 credits be math courses still applies.
**** We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Note: All mathematics majors — including double majors — must have an advisor from the Department of Mathematics and Statistics.
Note: At least 12 approved mathematics credits at the F300-level or above must be taken while in residence on the Fairbanks campus.

Minor

1. Complete the following:
   Math F200X—Calculus I...4
   Math F201X—Calculus II..4
   Math F202X—Calculus III 4
   At least 9 additional credits from MATH F215, STAT F300, any F300- or F400-level MATH course; or electives approved by a mathematics advisor 9

2. Minimum credits required 21

Note: Courses completed to satisfy this minor can be used to simultaneously satisfy other major or general distribution requirements.

All degrees (e.g. B.A., B.S., etc.) require additional courses. Refer to specific degree and program requirements.

Baccalaureate Core Requirements

COMMUNICATION (9)
Complete the following:
ENGL F111X ....(3) _____
   ENGL F190H may be substituted.
Complete one of the following:
ENGL F211X **OR** ENGL F213X ....(3) _____
Complete one of the following:
COMM F131X **OR** COMM F141X ....(3) _____

PERSPECTIVES ON THE HUMAN CONDITION (18)
Complete all of the following four courses:
ANTH F100X/SOC F100X ....(3) _____
ECON F100X **OR** PS F100X ....(3) _____
HIST F100X...(3) _____
ENGL/FL F200X ....(3) _____
Complete one of the following three courses:
ART/MUS/THR F200X, HUM F201X **OR** ANS F202X .... (3) _____
Complete one of the following six courses:
BA F323X, COMM F300X, JUST F300X, NRM F303X,
PS F300X **OR** PHIL F322X ....(3) _____
OR complete 12 credits from the above courses PLUS
• two semester-length courses in a single Alaska Native language or
   other non-English language **OR**
• three semester-length courses (9 credits) in American Sign
   Language taken at the university level.

MATHEMATICS (3)
Complete one of the following:
MATH F103X, MATH F107X, MATH F161X **OR**
STAT F200X ....(3 – 4) _____
   * No credit may be earned for more than one of MATH F107X or
   F161X.
OR complete one of the following:*
MATH F200X, MATH F201X, MATH F202X,
MATH F262X **OR** MATH F272X......................................(4) _____
   *Or any math course having one of these as a prerequisite.

NATURAL SCIENCES (8)
Complete any two (4-credit) courses:
ATM F101X...(4) _____
BIOL F100X..(4) _____
BIOL F103X..(4) _____
BIOL F104X..(4) _____
BIOL F111X..(4) _____
BIOL F112X..(4) _____
BIOL F115X..(4) _____
BIOL F116X..(4) _____
CHEM F100X..(4) _____
CHEM F103X..(4) _____
CHEM F104X..(4) _____
CHEM F105X..(4) _____
CHEM F106X..(4) _____
GEOG F111X...(4) _____
GEOS F100X...(4) _____
GEOS F101X...(4) _____
GEOS F112X...(4) _____
GEOS F120X...(4) _____
GEOS F125X...(4) _____
MSL F111X...(4) _____
PHYS F102X..(4) _____
PHYS F103X..(4) _____
PHYS F104X..(4) _____
PHYS F115X..(4) _____
PHYS F116X..(4) _____
PHYS F175X..(4) _____
PHYS F211X..(4) _____
PHYS F212X..(4) _____
PHYS F213X..(4) _____

LIBRARY AND INFORMATION RESEARCH (0 – 1)
Successful completion of library skills competency test **OR**
LS F100X or F101X prior to junior standing..............(0 – 1) _____

UPPER-DIVISION WRITING AND ORAL COMMUNICATION (0)
Complete the following:
Two writing intensive courses designated (W) ....(0) _____
and one oral communication intensive course
designated (O)..(0) _____
   OR two oral communication intensive courses designated
   (O/2), at the upper-division level (see degree and/or major
   requirements)...(0) _____

CORE CREDITS REQUIRED ....38 – 39

Minimum credits required for degree 120