STATISTICS

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

Graduate Certificate, MS Degree

Minimum Requirements for Certificate: 12 credits; MS: 30 credits

Statistics is a collection of methods and theories used to make decisions or estimate unknown quantities from incomplete information. Statistical techniques are useful, for example, in estimating plant, animal and mineral abundances; forecasting social, political and economic trends; planning field plot experiments in agriculture; performing clinical trials in medical research; and maintaining quality control in industry. Employment opportunities are excellent for statisticians in many of these areas.

As a postbaccalaureate program, the certificate in statistics is equivalent to a full year of graduate statistics courses and is ideal for current graduate students in disciplines other than statistics (especially the sciences). The graduate certificate in statistics encourages a more in-depth study of statistics and provides students a credential recognizing their quantitative expertise.

The MS degree program in statistics builds upon UAF's strength in the sciences and our setting in Alaska by introducing a strong quantitative alternative or supplement to existing programs. The curriculum is built around four statistics core courses and flexibility in selection of elective courses. The core courses are designed to blend mathematical statistics course work typical of most MS programs in statistics with real applications. We believe this blending provides a substantial improvement in the graduate's skills.

Graduates of this program could be labeled quantitative biologists, biometricians, quantitative geologists, geostatisticians, or mathematical statisticians depending upon their specific course work. In addition, this program prepares individuals for PhD level work in statistics or their area of application.

The statistics program is administered by the Department of Mathematics and Statistics.

Graduate Certificate

1. Complete the following admission requirements:
    a. Hold a baccalaureate degree from an accredited institution
    b. Complete MATH F200X, MATH F201X and MATH F202X or equivalent*
    c. Complete STAT F401 or equivalent*
2. Complete the general university requirements (page 200).
3. Complete the graduate certificate requirements (page 204).
4. Complete the following:
    STAT F651—Statistical Theory I 3
5. Complete one of the following options:
    a. Complete one of the following:
    STAT F652—Statistical Theory II (4)
    or STAT F653—Statistical Theory III (3) 3–4
    b. Complete two of the following:
    STAT F602—Experimental Design.......................................3
    STAT F605—Spatial Statistics 3
    STAT F611—Time Series 3
    STAT F621—Distribution-Free Statistics..............................3
    STAT F631—Categorical Data Analysis................................3

6. Complete one or more from the following electives to total 12 credits for the certificate:
    STAT F641—Bayesian Statistics...3
    PHYS F628—Digital Time Series Analysis..............................3
    WLF/FISH F625—Analysis of Vertebrate Populations
    Survival and Movement..3
    FISH F601—Quantitative Fishery Science..............................3
    ECON F626—Econometrics 3
    ECON F627—Advanced Econometrics 3
    ESM F621—Operations Research 3
    MATH F641—Real Analysis..4
    MIN/GE F635—Geostatistical Ore Reserve Estimation 3
7. Minimum credits required 12
*   Student must earn a C grade or better in each course.

MS Degree

1. Complete the following admission requirements:
    a. Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
    b. Submit complete transcripts for all college-level work.
    c. Submit a resume.
    d. Submit a written statement of goals.
    e. Submit GRE scores.
    f. The applicant must have completed a bachelor's degree from an accredited institution with a GPA of at least 3.0.
    g. Must have completed the following courses or their equivalent with a B grade or better: full calculus sequence (MATH F200X, F201, F202); or students completing MATH F262X or F272 must take MATH F201X and F202X before acceptance; and a course in linear algebra (MATH F314), at least one introductory statistics or probability course (STAT F200X, F300 or MATH F371, F408). Students lacking MATH F314 may be accepted on probation.

2. Complete the general university requirements (page 200).
3. Complete the master's degree requirements (page 204).
4. Complete the following statistics (core) courses:
    STAT F651—Statistical Theory I 3
    STAT F652—Statistical Theory II 4
    STAT F653—Statistical Theory III—Linear Models 3
    STAT F654—Statistical Consulting Seminar.......................1
    STAT F698— Non-thesis Research/Project.........................3
5. Complete two of the following courses:
    STAT F461—Applied Multivariate Statistics.....................3
    STAT F602—Experimental Design.......................................3
    STAT F605—Spatial Statistics 3
    STAT F621—Distribution Free Statistics...............................3
    STAT F631—Categorical Data analysis................................3
    STAT F641—Bayesian Statistics...3
    STAT F661—Sampling Theory 3
    STAT F611—Time Series 3
6. Complete at least 6 credits of approved courses from an application area or courses with substantial statistical and/or mathematical content.*
7. Minimum credits required 30
*   Students working in subject areas involving significant non-English literature will be expected to read the appropriate foreign language.
Note: Each student must take and pass a two-part comprehensive exam. The first part, written by the statistics faculty, is a written exam (not a take-home exam) covering the material in the core statistics courses. The second part is an oral exam covering follow-up questions from the written exam as well as any material from courses the student has taken along with their project.