**APPLIED STATISTICS UNDERGRADUATE CERTIFICATE**

**Introduction**

Please click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/mathematical-statistical-sciences/) to see Mathematical and Statistical Sciences department information.

There is a growing need for qualified statistical analysts of the ever-increasing amounts of data collected in business, industry, and government. The Certificate in Applied Statistics program is designed to give students a strong background in statistical methodology and data analysis in preparation for opportunities in the workforce or for graduate studies.

Students will gain competence in such topics as descriptive statistics, estimation, confidence intervals, probability and inferential techniques, simple and multiple regression, analysis of variance, and more advanced topics. Students can focus on a particular application area such as economics, psychology, sociology, geology or environmental science through the choice of an elective course and the data analysis project.

Program Delivery

This is an on-campus program.

**Declaring This Certificate**

- Admission requirements: Completion of calculus 1, 2 and 3 as well as linear algebra, each at a B- or above. Students enrolled in the certificate program will be expected to utilize concepts from calculus and linear algebra without the use of technology, e.g., evaluation of limits, derivatives and integrals.
- The certificate can be declared by contacting the Director of Statistical Programs.

**Coordinator:** Joshua French Ph.D.
**Telephone:** 303-315-1709
**E-mail:** Joshua.French@ucdenver.edu
**Web site:** https://clas.ucdenver.edu/mathematical-and-statistical-sciences/undergraduate-certificate-applied-statistics

**General Requirements**

Students must satisfy all requirements as outlined below and by the department offering the certificate.

- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/) for information about Academic Policies.

**Certificate Requirements**

1. Students must complete a minimum of 13 credits hours.
2. All credits for the certificate must be taken at the upper division level (3000-level and above).
3. Students must earn a minimum grade of B-(2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. Since a certificate is a University of Colorado Denver certification of a student’s specialized knowledge in an advanced subject area, all courses in the certificate program are expected to be taken in residency at the University of Colorado Denver.

**Program Restrictions, Allowances and Recommendations**

1. Students must be enrolled in one course per year to maintain their status in the certificate program.
2. Certificates must be completed within 3 years from matriculation.

**Required Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 4810</td>
<td>Introduction to Probability (recommended) or MATH 3800 Probability and Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3382</td>
<td>Statistical Theory</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4387</td>
<td>Applied Regression Analysis</td>
<td>3</td>
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</tbody>
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**Electives**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>ECON 4030</td>
<td>Data Analysis with SAS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 4150</td>
<td>Economic Forecasting</td>
<td>3</td>
</tr>
<tr>
<td>ECON 4811</td>
<td>Introduction to Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 4770</td>
<td>Applied Statistics for the Natural Sciences</td>
<td>3</td>
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</table>

1. (must be pre-approved by the Certificate Coordinator). MATH 4830 Applied Statistics cannot apply toward the certificate.

**Data Analysis Project**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 4840</td>
<td>Independent Study</td>
<td>1</td>
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</table>

An independent data analysis project is required with a report and presentation to demonstrate proficiency with data analysis techniques.
and a statistical computing software package. Enroll for one hour of
MATH 4840, Independent Study, or in an equivalent course pre-approved
by the Certificate Coordinator.

To learn more about the Student Learning Outcomes for this program,
please visit our website (https://clas.ucdenver.edu/mathematical-and-
statistical-sciences/undergraduate-certificate-applied-statistics/).