PROFESSIONAL APPLICATIONS OF DATA SCIENCE GRADUATE ACADEMIC CERTIFICATE

All required coursework must be completed with a grade of 'B' or better (O-10-b [https://catalog.uidaho.edu/general-requirements-academic-procedures/o-miscellaneous/]).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>INTR 509</td>
<td>Introduction to Applied Data Science</td>
<td>3</td>
</tr>
<tr>
<td>BCB 521</td>
<td>Communicating with Data</td>
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<tr>
<td>BCB 520</td>
<td>Foundations of Data Visualization</td>
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<tr>
<td>BCB 522</td>
<td>Data Science Portfolio</td>
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<td>Electives (Choose 1 of the following)*</td>
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<tr>
<td>AVS 531</td>
<td>Practical Methods in Analyzing Animal Science Experiments</td>
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<tr>
<td>BE 521</td>
<td>Image Processing and Computer Vision</td>
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<tr>
<td>BIOL 526</td>
<td>Systems Biology</td>
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<td>BIOL 545</td>
<td>Phylogenetics</td>
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<tr>
<td>BE 541</td>
<td>Instrumentation and Measurements</td>
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<tr>
<td>BIOL 549</td>
<td>Computer Skills for Biologists</td>
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<tr>
<td>BIOL 563</td>
<td>Mathematical Genetics</td>
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<tr>
<td>CE 526</td>
<td>Aquatic Habitat Modeling</td>
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<tr>
<td>CS 511</td>
<td>Parallel Programming</td>
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<tr>
<td>CS 515</td>
<td>Computational Biology, Sequence Analysis</td>
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<tr>
<td>CS 547</td>
<td>Digital Forensics</td>
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<tr>
<td>CS 570</td>
<td>Artificial Intelligence</td>
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<tr>
<td>CS 574</td>
<td>Deep Learning</td>
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<td>CS 575</td>
<td>Machine Learning</td>
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<td>CS 577</td>
<td>Python for Machine Learning</td>
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<tr>
<td>ED 571</td>
<td>Introduction to Quantitative Research</td>
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<tr>
<td>CS 572</td>
<td>Evolutionary Computation</td>
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<tr>
<td>CS 578</td>
<td>Neural Network Design</td>
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<tr>
<td>CS 579</td>
<td>Data Science</td>
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<tr>
<td>CS 589</td>
<td>Semantic Web and Open Data</td>
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<tr>
<td>GEOG 507</td>
<td>Spatial Analysis and Modeling</td>
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<tr>
<td>GEOG 583</td>
<td>Remote Sensing IMAGE ANALYSIS/GIS Integration</td>
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<td>MATH 538</td>
<td>Stochastic Models</td>
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<td>MIS 555</td>
<td>Data Management for Big Data</td>
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<tr>
<td>STAT 431</td>
<td>Statistical Analysis</td>
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<td>STAT 514</td>
<td>Nonparametric Statistics</td>
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<td>STAT 516</td>
<td>Applied Regression Modeling</td>
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<tr>
<td>STAT 517</td>
<td>Statistical Learning and Predictive Modeling</td>
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<tr>
<td>STAT 519</td>
<td>Multivariate Analysis</td>
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<tr>
<td>STAT 535</td>
<td>Introduction to Bayesian Statistics</td>
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<td>STAT 555</td>
<td>Statistical Ecology</td>
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<td>STAT 565</td>
<td>Computer Intensive Statistics</td>
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<tr>
<td>ED 584</td>
<td>Univariate Quantitative Research in Education</td>
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<tr>
<td>ED 587</td>
<td>Multivariate Quantitative Analysis in Education</td>
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Total Hours 12

* Students should work with advisors for potential substitution waivers.

Courses to total 12 credits for this certificate

Student Learning Outcomes:

- Use open-source software to reproducibly manage, analyze, and visualize large, complex, and noisy data sets.
- Practice high quality and ethical data stewardship.
- Understand and execute data exploration.
- Effectively communicate data driven insights to experts and non-experts.
- Demonstrate their skills with an online portfolio of analyses and visualizations relevant to their field of specialization.