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/)).

### Code | Title | Hours
---|---|---
INTR 509 | Introduction to Applied Data Science | 3
BCB 521 | Communicating with Data | 2
BCB 520 | Foundations of Data Visualization | 3
BCB 522 | Data Science Portfolio | 1
**Electives (Choose one of the following)** | | 3
AVS 531 | Practical Methods in Analyzing Animal Science Experiments | 1
BE 521 | Image Processing and Computer Vision | 1
BIOL 526 | Systems Biology | 1
BIOL 545 | Phylogenetics | 1
BE 541 | Instrumentation and Measurements | 1
BIOL 549 | Computer Skills for Biologists | 1
BIOL 563 | Mathematical Genetics | 1
CE 526 | Aquatic Habitat Modeling | 1
CS 511 | Parallel Programming | 1
CS 515 | Computational Biology: Sequence Analysis | 1
CS 547 | Digital Forensics | 1
CS 570 | Artificial Intelligence | 1
CS 574 | Deep Learning | 1
CS 575 | Machine Learning | 1
CS 577 | Python for Machine Learning | 1
ED 571 | Introduction to Quantitative Research | 1
CS 572 | Evolutionary Computation | 1
CS 578 | Neural Network Design | 1
CS 579 | Data Science | 1
CS 589 | Semantic Web and Open Data | 1
GEOG 507 | Spatial Analysis and Modeling | 1
GEOG 583 | Remote Sensing/GIS Image Analysis | 1
MATH 538 | Stochastic Models | 1
MIS 555 | Data Management for Big Data | 1
STAT 431 | Statistical Analysis | 1
STAT 514 | Nonparametric Statistics | 1
STAT 516 | Applied Regression Modeling | 1
STAT 517 | Statistical Learning and Predictive Modeling | 1
STAT 519 | Multivariate Analysis | 1
STAT 535 | Introduction to Bayesian Statistics | 1
STAT 555 | Statistical Ecology | 1
STAT 565 | Computer Intensive Statistics | 1
ED 584 | Univariate Quantitative Research in Education | 1
ED 587 | Multivariate Quantitative Analysis in Education | 1
**Total Hours** | **12**

1 Students should work with their advisors for potential substitution waivers.

### Courses to total 12 credits for this certificate

### Student Learning Outcomes

Upon completion of the certificate, students will be able to:

- 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.