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/)).

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 1 of the following)*		**3**
AVS 531	Practical Methods in Analzying Animal Science Experiments	
BE 521	Image Processing and Computer Vision	
BIOL 526	Systems Biology	
BIOL 545	Phylogenetics	
BE 541	Instrumentation and Measurements	
BIOL 549	Computer Skills for Biologists	
BIOL 563	Mathematical Genetics	
CE 526	Aquatic Habitat Modeling	
CS 511	Parallel Programming	
CS 515	Computational Biology: Sequence Analysis	
CS 547	Digital Forensics	
CS 570	Artificial Intelligence	
CS 574	Deep Learning	
CS 575	Machine Learning	
CS 577	Python for Machine Learning	
ED 571	Introduction to Quantitative Research	
CS 572	Evolutionary Computation	
CS 578	Neural Network Design	
CS 579	Data Science	
CS 589	Semantic Web and Open Data	
GEOG 507	Spatial Analysis and Modeling	
GEOG 583	Remote Sensing IMAGE ANALYSIS/GIS Integration	
MATH 538	Stochastic Models	
MIS 555	Data Management for Big Data	
STAT 431	Statistical Analysis	
STAT 514	Nonparametric Statistics	
STAT 516	Applied Regression Modeling	
STAT 517	Statistical Learning and Predictive Modeling	
STAT 519	Multivariate Analysis	
STAT 535	Introduction to Bayesian Statistics	
STAT 555	Statistical Ecology	
STAT 565	Computer Intensive Statistics	
ED 584	Univariate Quantitative Research in Education	
ED 587	Multivariate Quantitative Analysis in Education	
ED 589	Theoretical Applications and Designs of Qualitative Research	
ED 590	Data Analysis and Interpretation of Qualitative Research	
ED 591	Indigenous and Decolonizing Research Methods	
ED 592	Decolonizing, Indigenous, and Action-Based Research Methods	
ED 595	Survey Design for Social Science Research	
EDAD 570	Methods of Educational Research	
POLS 558	Research Methods for Local Government and Community Administration	
ENVS 511	Data Wizardry in Environmental Sciences	
ENVS 551	Research Methods in the Environmental Social Sciences	
FOR 514	Forest Biometrics	
FOR 535	Remote Sensing of Fire	
NRS 578	LIDAR and Optical Remote Sensing Analysis	
REM 507	Landscape and Habitat Dynamics	
WLF 552	Ecological Modeling	
WLF 555	Statistical Ecology	
WR 552	Water Economics and Policy Analysis	
Total Hours		**12**

* Students should work with 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.