Future Rivers Approved Data Science Courses

Programming/ Software Development for Data Science

- **AMATH 583:** High Performance Scientific Computing (5 credits)
- **ChemE 546:** Software Engineering for Molecular Data Scientists (3 credits)
- **CSE 583:** Software Development for Data Scientists (4 credits)
- **CS SS 508**: Introduction to R for Social Scientists (1 credit)
- **ESS 520**: Application in Geophysical Analysis with Python for Earth Sciences (4 credits)
- **FISH 497/549:** In Introduction to Environmental Data Science (3 credits)
- **FISH 552**: Introduction to R Programming for Natural Scientists (2 credits)
- **FISH 553**: Advanced R Programming for Natural Scientists (2 credits)
- **ME 574:** Introduction to Applied Parallel Computing for Engineers (3 credits)
- **SMEA 580**: Intro to coding in R (3 credits)

Advanced Statistics and/or Statistical Modeling

- **AMATH 515**: Fundamentals of Optimization (5 credits)
- **AMATH 563:** Inferring Structure of Complex Systems (5 credits)
- **AMATH 582:** Computational Methods for Data Analysis (5 credits)
- **ATM S 552:** Objective Analysis (3 credits)
- **ATM S 559**: Climate Modeling (3 credits)
- **ATM S 565**: Atmospheric Chemistry Modeling (3 credits)
- **ATM S 582**: Advanced Numerical Modeling of Geophysical Flows (3 credits)
- **CEE 465**: Data Analysis in Water Sciences (4 credits)
- **CET 521**: Inferential Data Analysis for Engineers (3 credits)
- **CEWA 599**: Geospatial Data Analysis (1-5 credits)
- **CSE 546:** Machine Learning (4 credits)
- **CSE 599:** Deep Reinforcement Learning (special topics 1-5 credits)
- **FISH 458:** Advanced Ecological Modeling (5 credits)
- **FISH 507:** Applied Time Series Analysis (4 credits)
- **FISH 556:** Spatio-temporal Models for Ecologists (5 credits)
- **FISH 560:** Applied Multivariate Statistics for Ecologists (5 credits)
- **FISH 576/577** Applied Stock Assessment (4-5 credit)
- **GEOG 526:** Advanced Quantitative Methods in Geography (5 credits)
- **Genome 559**: Introduction to Statistical and Computational Genomics
- **HCDE 411/ 511**: Information Visualization/Data Visualization and Exploratory Analytics (4 credits)
- **ME/EE 578:** Convex Optimization (3 credits)
- **ME 599:** Machine Learning Control (special topics 1-5 credits)
- **QERM 514:** Analysis of Ecological and Environmental Data I (4 credits)
- **QSCI/ESRM 451**: Analytical Methods in Wildlife Science (3 credits)
- **SEFS 540**: Optimization Techniques for Natural Resources (5 credits)
- **SEFS 590**: Bayesian Modeling for Ecologists (1-5 credits)
- **STAT/CSE 416:** Introduction to Machine Learning (4 credits)
- **STAT 435:** Introduction to Statistical Machine Learning (4 credits)
- **STAT 509:** Introduction to Mathematical Statistics: Econometrics I (5 credits)
- **STAT 512-513:** Statistical Inference (4 credits each)
- **STAT 535: Statistical Learning: Modeling, Prediction, and Computing (3 credits)**

Data Management and/or Data Visualization

- **CEWA 565**: Data Analysis in Water Science (4 credits)
- **CSE 412:** Introduction to Data Visualization (4 credits)
- **CSE 414:** Introduction to Database Systems (4 credits)
- **CSE 442/512:** Data Visualization (4 credits)
- **CSE 544:** Principles of DBMS (4 credits)
- **ENVH 590**: Special Topics: Scientific Programming, Modeling, and Data Visualization with Environmental Health Applications
- **FISH 546:** Bioinformatics for Environmental Sciences (3 credits)
- **FISH 554:** Beautiful Graphics in R (2 credits)
- **HCDE 411/511:** Information for Visualization (4 credits)
- **INFX 562**: Interactive Information Visualization (4 credits)
- **INFO474**: Interactive Information Visualization (5 credits)
- **OCEAN 502:** Marine Geospatial Information Science (3 credits)
- **SEFS 520:** Geographic Information Systems in Forest Resources (5 credits)
- **SEFS 532/ CEE 432:** Advanced Remote Sensing (4 credits)