Data Science Major with Geoinformatics Cognate Requirements
Catalog Year:  2015-16
Degree: Bachelor of Science
Credit Hours: 76+

“PR” indicates a pre-requisite. “CO” indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses

- DATA 101 Introduction to Data Science (3) PR: None
- DATA 210 Dataset Organization and Management (3) PR: None
- DATA 495 Data Science Capstone (3) PR: DATA 210, CSCI 470, and MATH 441

Math Requirement

- MATH 120 Introductory Calculus (4) PR: Placement or C- or better in MATH 111
- MATH 203 Linear Algebra (3) PR: MATH 120 or instructor permission
- MATH 207 Discrete Structures I (3) PR: MATH 105, MATH 111, or MATH 120
- MATH 220 Calculus II (4) PR: MATH 120 or HONS 115
- MATH 250 Statistical Methods I (3) PR: MATH 111 or MATH 120 or instructor permission
- MATH 350 Statistical Methods II (3) PR: MATH 120, MATH 250
- MATH 440 Statistical Learning I (3) PR: MATH 203, MATH 220, and MATH 350
- MATH 441 Statistical Learning II (3) PR: MATH 440

Computer Science Requirement

- CSCI 220 Computer Programming I (3) PR: CSCI 120 or CSCI 180 or MATH 111 or higher or department permission; CO: CSCI 220L
- CSCI 220L Computer Programming Lab I (1) CO: CSCI 220
- CSCI 221 Computer Programming II (3) PR: CSCI 220 with a C- or better, CSCI 220L with a C- or better; CO or PR: MATH 207
- CSCI 230 Data Structures and Algorithms (3) PR: CSCI 221 with a C- or better, MATH 207
- CSCI 310 Advanced Algorithms (3) PR: CSCI 230 with a C- or better, MATH 207
- CSCI 334 Data Mining (3) PR: CSCI 221 with a C- or better, MATH 207, MATH 250
- CSCI 470 Principles of Artificial Intelligence (3) PR: CSCI 230 with a C- or better

Select a cognate from the following: Accounting, Biomechanics, Customer Relationship Management, e-Commerce, Economics, Exercise Physiology, Finance, Geoinformatics, Molecular Biology, Organismal Biology, Physics and Astronomy, Psychology, Sociology or Supply Chain Management.

Geoinformatics Cognate Requirements (22+ credit hours). This cognate has three tracts to choose from: Geospatial Informatics, Hydro-Geophysical, and Applied Environmental Geoinformatics.

- GEOL 103 Environmental Geology (3) PR: None; CO: GEOL 103L
- GEOL 103L Environmental Geology Lab (1) CO: GEOL 103
- GEOL 105 Earth History (3) PR: GEOL 103 and 103L or HONS 155 and 155L; CO: GEOL 105L
- GEOL 105L Earth History Lab (1) PR: GEOL 103L or HONS 155L; CO: GEOL 105
Geospatial Informatics Track
- GEOL 314 Introduction to Remote Sensing (4) PR: GEOL 103; GEOL 105 or HONS 155 and 156
- GEOL 442 Geological Application of Remote Sensing (4) PR: GEOL 103; GEOL 105 or HONS 155 and 156
- GEOL 449 Geographical Information Systems (4) PR: GEOL 103; GEOL 105 or HONS 155 and 156; or permission of the instructor
- GEOL XXX A geophysics elective, chosen in consultation with cognate advisor.

Hydro-Geophysical Track
- GEOL 412 Crustal Geophysics (3) PR: MATH 120; GEOL 103 or HONS 155; GEOL 105 or HONS 156; and GEOL 352; or instructor permission
- GEOL 438 Hydrogeology (4) PR: GEOL 103; GEOL 105 or HONS 155 and 156; MATH 111 or 120; or instructor permission
- GEOL 441 Pollution in the Environment (4) PR: GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and CHEM 111 and 111L and CHEM 112 and 112L or GEOL 250; GEOL 291; or the equivalent; or instructor permission
- GEOL 444 Quantitative Hydrogeology (3) PR: MATH 220, GEOL 438, or instructor permission

Applied Environmental Geoinformatics Track
- GEOL 314 Introduction to Remote Sensing (4) PR: GEOL 103; GEOL 105 or HONS 155 and 156
- GEOL 438 Hydrogeology (4) PR: GEOL 103; GEOL 105 or HONS 155 and 156; MATH 111 or 120; or instructor permission
- GEOL 441 Pollution in the Environment (4) PR: GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and CHEM 111 and 111L and CHEM 112 and 112L or GEOL 250; GEOL 291; or the equivalent; or instructor permission
- GEOL 449 Geographical Information Systems (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; or instructor permission