# DATA SCIENCE AND ANALYTICS, MINOR

Data science is the study of methods for extracting knowledge from data, combining programming, statistical, and communication skills. The Data Science & Analytics minor is intended for students who wish to complement their major field of study with data science skills. Students will learn the foundational data and programming tools, fundamental statistical inference methods, and modern machine learning approaches – with a focus on application in the social and natural sciences. The minor consists of six courses, three of which are foundational and must fall into specific components (data and programming, statistics, machine learning) and the remaining three are electives that must have a strong link to data science. The minor is not exclusive to a single department, but rather recognizes the wide range of data science courses available in SAS and helps students organize their coursework into a focused data science minor.

## Curriculum

| Code | Title | Course Units |
|---|---|---|
| **Introductory Data Science and Programming** | | **1** |
| *R* | | |
| COMM 1130 | Data Science for Beginners | |
| CRIM 4002 | Criminal Justice Data Analytics (Or) | |
| LING 0700 | Data Science for Studying Language and the Mind | |
| PSCI 1800 | Introduction to Data Science | |
| *Python* | | |
| CIS 1050 | Computational Data Exploration | |
| ENGL 1670 | Data Science for the Humanities | |
| PHYS 1100 | Foundations of Data Science | |
| PHYS 2260 | Introduction to Computational Physics | |
| STAT 4700 | Data Analytics and Statistical Computing | |
| **Math and Statistics** | | **1** |
| BIOL 2510 | Statistics for Biologists | |
| CRIM 1200 | Statistics for the Social Sciences I | |
| ECON 2300 | Statistics for Economists | |
| ENM 3600 | Introduction to Data-driven Modeling | |
| ENM 3750 | Biological Data Science I - Fundamentals of Biostatistics | |
| ESE 3010 | Engineering Probability | |
| PHYS 3358 | Data Analysis for the Natural Sciences I: Fundamentals | |
| PSCI 1801 | Statistical Methods PSCI | |
| SOCI 2010 | Social Statistics | |
| STAT 1120 | Introductory Statistics | |
| **Applied Data Science** | | **1** |
| *R* | | |
| BIOL 4511 | Biological Data Analysis | |
| ECON 4330 | Econometric Machine Learning Methods and Models | |
| PSCI 3800 | Applied Data Science | |
| STAT 4420 | Introduction to Bayesian Data Analysis | |
| STAT 4710 | Modern Data Mining | |
| *Python* | | |
| CIS 4190 | Applied Machine Learning | |
| PHYS 3359 | Data Analysis for the Natural Sciences II: Machine Learning | |
| **Electives** | | **3** |
| ASTR 1250 | Astronomical Techniques | |
| BIOL 4536 | Introduction to Computational Biology & Biological Modeling | |
| COMM 3130 | Computational Text Analysis for Communication Research | |
| ENVS 3700 | GIS: Mapping Places & Analyzing Spaces | |
| CIS 4210 | Artificial Intelligence | |
| CIS 4500 | Database and Information Systems | |
| COGS 4290 | Big Data, Memory and the Human Brain | |
| LING 2220 | Phonetics II: Data Science | |
| LING 2250 | Computer Analysis and Modeling of Biological Signals and Systems | |
| PHIL 0341 | Ethics of Artificial Intelligence | |
| PHYS 2280 | Physical Models of Biological Systems | |
| PSCI 3801 | Survey Research and Design | |
| SOCI 2220 | Health of Populations | |
| STAT 4240 | Text Analytics | |
| URBS 3300 | GIS Applications in Social Science | |
| **Total Course Units** | | **6** |

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2023 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.