

# DATA ANALYSIS MINOR

## INTRODUCTION

The **Data Analysis Minor** provides a basic introduction to data analysis, including the theory and practical skills needed to collect and prepare data for analysis, explore and visualize data, build models and test hypotheses, discover insights, and communicate results in meaningful ways. The Data Analysis Minor is designed to strengthen the student's ability to apply statistical, mathematical, and programming methods to traditional areas of empirical research within their fields.

## MINOR REQUIREMENTS

Code	Title	Hours
<b>Basic Knowledge Courses</b>		
Select one of the following:		1
BIOL242	Quantitative Methods for the Biological and Environmental Sciences	
MATH132	Elementary Statistics	
PSYC200	Statistics: An Activity-Based Approach	
QAC201	Applied Data Analysis	
QAC201Z	Applied Data Analysis	
QAC211	Digging the Digital Era: A Data Science Primer	
QAC250	An Introduction to Data Journalism	
<b>Mathematical, Statistical, and Computing Foundation Courses</b>		
Select two courses from the following, each from a different group:		2
<b>Mathematical Foundations</b>		
MATH221	Vectors and Matrices	
MATH223	Linear Algebra	
MATH228	Discrete Mathematics	
MATH274	Graph Theory	
QAC220	Applied Vectors and Matrices	
<b>Statistical Foundations</b>		
ECON300	Introductory Econometrics	
MATH231	An Introduction to Probability	
MATH232	Mathematical Statistics	
<b>Computing Foundations</b>		
BIOL265	Bioinformatics Programming	
COMP112	Introduction to Programming	
COMP115	How to Design Programs	
COMP211	Computer Science I	
COMP212	Computer Science II	
<b>Applied Electives</b>		
Select two credits from the following:		2
E&ES280	Introduction to GIS	
ECON385	Advanced Econometrics	
ECON386	Introduction to Forecasting in Economics and Finance	
GOVT366	Empirical Methods for Political Science	
GOVT378	Advanced Topics in Media Analysis	

PHYS340	Computational Physics	
QAC216	Introduction to Survey Design and Analysis	
QAC231	Introduction to (Geo)Spatial Data Analysis and Visualization	
QAC239	Proseminar: Machine Learning Methods for Audio and Video Analysis	
QAC241	Introduction to Network Analysis	
QAC251	Data Visualization: An Introduction	
QAC251Z	Data Visualization: An Introduction	1
QAC305	Exploratory Data Analysis and Pattern Discovery	
QAC307	Experimental Design and Causal Inference	
QAC311	Longitudinal Data Analysis (0.5 credit)	
QAC312	Hierarchical Linear Models (0.5 credit)	
QAC313	Latent Variable Analysis (0.5 credit)	
QAC314	Survival Analysis (0.5 credit)	
QAC320	Applied Time Series Analysis	
QAC323	Bayesian Data Analysis: A Primer (0.5 credit)	
QAC356	Advanced R: Building Open-Source Tools for Data Science	

can count QAC 380 or 381, not both

QAC380	Introduction to Statistical Consulting	
QAC381	QAC Praxis Service Learning Lab	
QAC385	Applications of Machine Learning in Data Analysis	
QAC386	Quantitative Textual Analysis: Introduction to Text Mining	

NOTE: at least one of the electives should be a 300 level course

## ADDITIONAL INFORMATION

- There may be prerequisite courses required for some of the courses that count toward the minor, such as calculus. These prerequisites do not count toward the minor, and students attempting to complete the minor are not recused from these prerequisites.
- Mathematics majors cannot count courses in the foundations groups already covered by their major toward the minor. They must instead complete one course from the statistical foundations group and complete three applied elective courses. Alternatively to completing three applied elective courses, they can take either MATH232 or COMP212 and complete two applied elective courses.
- Computer science majors cannot count courses in the foundations groups already covered by their major toward the minor. They must instead complete one course from the statistical foundations group and complete three applied elective courses. Alternatively, they can complete both MATH231 and MATH232 and complete two applied elective courses.
- Economics majors and minors cannot count ECON300 toward the minor and must instead complete one course from each of the other two foundation groups.
- Students cannot count more than one course toward this minor that is also counted toward completion of any other of their majors or minors.
- One course taken elsewhere may substitute as appropriate for any of the above courses and count toward the minor, subject to the QAC Advisory Committee's approval (where routine approval may be delegated to the QAC Director).
- A more advanced course can substitute for the basic knowledge course, subject to approval. Students with good quantitative skills are strongly encouraged to do this.

- Students cannot receive both the data analysis minor and the Applied Data Science Certificate (<https://catalog.wesleyan.edu/certificates/applied-data-science/>).
- Only graded courses can satisfy the requirements for the data analysis minor and the applied data science certificate. Courses completed with a CR/U grading mode will not satisfy the requirements of the two programs.