

Major Course Requirements

A minimum of 80.5 hours (37 upper-division hours)

► **Required Core Courses (68.5 hours):**

DTSC 101	Intro. to Data Science	4
DTSC 201	Fundamentals of Data Science	4
DTSC 215	Frmwrks & Libs for Data Sci	4
DTSC 290	Sophomore Seminar	.5
DTSC 420	Machine Learning	3
DTSC 425	Legal and Ethical Aspects of Data	2
DTSC 490	Senior Seminar	1
DTSC 494	Internship	1
INFS 115	Introduction to Programming	4
INFS 240	Introduction to GIS	2
INFS 320	Business Intelligence	3
INFS 380	Database Analysis and Design	3
MATH 131+132	Calculus I,II	4+4
MATH 265	Elementary Linear Algebra	4
MATH 267	Multivariable Calculus	5
MATH 269	Elementary Differential Equations	4
MATH 275	Logic and Sets	4
MATH 331	Theory of Probability and Statistics	3
MATH 385	Mathematical Modeling	4
STAT 322	Statistical Methods	3
STAT 323L	Statistical Methods in Data Sci Lab	1

► **Required Core Electives (12 hours):**

At least 12 hours from the following:

- Upper-division MATH courses.
- Upper-division INFS courses.
- Repeat DTSC 494 for additional credit.

Note: Many of the required and elective courses for this major carry pre-requisites; consult with the major advisor to select and sequence all courses.

Student Learning Outcomes

Students can:

- Demonstrate a working knowledge of various computational and statistical problem-solving technologies used in Data Science.
- Build and assess statistical and machine learning models.
- Manipulate and analyze data from a variety of sources and formats.
- Perform as an effective member of a problem-solving team.
- Communicate with peers and the public about data-based investigations using oral, written, and visual modes.
- Apply ethical principles to guide professional practice.

Occupational Information

What can I do with this major?

The Data Science major prepares students to be employed to work with and analyze data in a variety of industries including entertainment, healthcare, technology, and political and social science. The degree also provides a background for further graduate study in data science or related fields.

Additional Education Required?

This program is designed as a preparation for entry-level employment, but graduate study in a university would lead to broader employment opportunities.

Public Sector vs. Denominational

The opportunities to gather and analyze data, especially in the fields of healthcare and finance, provide numerous opportunities in the public sector and within the denomination.

Job Outlook

There are many opportunities for data scientists-related careers as actuaries, operations research analysts, statisticians, mathematicians in business, and industry.

General Education Requirements

To view general education requirements for this major, please refer to page A-01, Summary of General Education Requirements: B.S. Degree.

How to Construct Your Own Program

1. Counsel with your advisor.
2. Consider your aptitudes, interests, and available courses.
3. Schedule major courses and cognates first.
4. Fill the rest of your schedule with G.E. requirements.
5. For the freshman year include English, Religion, and PE courses. Also include Basic Algebra I+II unless waived by previous work.

What the Degree Includes

- A total of 192 quarter hours including:
1. A minimum of 60 upper division hours.
 2. General Education requirements.
 3. Major requirements.
 4. Minimum 2.0 GPA, overall and major.

For More Information

Mathematics and Physics Department
 Pacific Union College
 One Angwin Avenue
 Angwin, CA 94508
 (707) 965-7269

E-mail: datascience@puc.edu
 Website: www.puc.edu/mathematics

Sample Four-Year Program

This sample curriculum is designed to show you how a program may be constructed and to help you select a proper sequence of courses in the major. It is not likely that these courses can always be taken in the order given. Your advisor will help you design a personalized program of studies.

	F	W	S
First Year			
Intro to Data Science	4	-	-
Calculus I,II	4	4	-
College English I,II	4	4	-
Elementary Linear Algebra	-	-	4
Religion Courses	3	3	3
Introduction to Programming	-	-	4
General Education/Electives	1	5	5
	<hr/> 16	<hr/> 16	<hr/> 16
Second Year			
Multivariable Calculus	5	-	-
Elementary Differential Equations	-	4	-
Logic and Sets	-	-	4
Sophomore Seminar	-	0.5	-
Intro to GIS	2	-	-
Funds of Data Science	-	-	4
Frameworks and Libraries for Data Scientists	4	-	-
Religion Courses	-	-	3
General Education/Electives	5	12	5
	<hr/> 16	<hr/> 16.5	<hr/> 16
Third and Fourth Years			
Introduction to Statistics	4	-	-
Statistical Methods	-	4	-
Statistical Methods in Data Sci Lab	-	1	-
Theory of Probability and Statistics	4	-	-
Legal and Ethical Aspects of Data	2	-	-
Business Intelligence	-	4	-
Machine Learning	-	3	-
Database Analysis and Design	-	-	3
Mathematical Modeling	-	-	4
Internship	1	-	-
Senior Seminar	-	-	1
Upper-Division Religion Courses	3	3	3
Senior Assessment Seminar			0.2
General Education/Electives	18	17	21
	<hr/> 32	<hr/> 32	<hr/> 32.7

* Courses marked (even) or (odd) are taught in alternate years only. 2020-2021 is odd, 2021-2022 is even.