Data Science, M.S.

The M.S. in Data Science (M.S.D.S) offers students who hold bachelor's degrees in mathematics, statistics, computer science, engineering, business, health or related fields an opportunity to broaden their knowledge in the field of data science. Data Science is an interdisciplinary field consisting of mathematics, statistics, computer programming, data management, machine learning, and visualization. Data scientists are trained to capture, maintain, process, and analyze data from large and complex data. Students in the M.S.D.S. program will learn to extract and communicate meaningful information from data sets and become capable of communicating their findings in a way that positively affects decisions in business, healthcare, industry, government, and the defense industry. Graduates with the ability to understand and use big data are already being employed by institutions and industries including government, healthcare, scientific research facilities, and colleges and universities. Students who graduate with the M.S.D.S. will be able to manipulate, manage, and interpret data suitable to the employer's needs. The M.S.D.S. program is designed for students seeking careers in science, industry, or government; or for students who plan to pursue doctoral studies.

Admission Requirements

The selection of the applicants in Data Science tracks is based on the appropriate department approval. Hal Marcus College of Science and Engineering will determine the selection of applicants in the Analytics and Modeling track. The Lewis Bear Jr. College of Business will determine the selection of students in the Analytics of Business Decisions track; and the Usha Kundu, MD College of Health will determine the selection of students in the Health Analytics track.

In addition to the University graduate admission requirements described in the <u>Admissions section</u> of the catalog, the applicant must meet the following minimum departmental admission requirements for regular admission:

- have obtained a Bachelor's degree from an accredited institution.
- have a minimum of 3.0 GPA ("B" or better average) on the undergraduate credits.

If an applicant does not meet the above requirements, they may be considered for conditional admission. Please contact the department for more information.

- An applicant may be fully admitted if the student has all required undergraduate proficiency courses.
- An applicant may be provisionally admitted subject to completing the required undergraduate proficiency courses.

With the approval of the department, a maximum of six credit hours may be transferred into the program.

Prerequisite Course Requirements

Students seeking the M.S. in Data Science must have completed the following courses below prior to admission:

- Introduction to Statistics (STA 2023)
- Calculus I (MAC 2311) or equivalent
- One programming course (i.e., COP 2253, COP 2334, COP 2830, or equivalent)

All students in the Master of Science in Data Science program must complete the following core courses. A grade of 'C' or better is required in all courses with an institutional GPA of 3.0 or higher.

Core Requirements

STA 5176	Statistical Modeling	3
STA 6235	Modeling in Regression	3
IDC 6940	Capstone Projects in Data Science	3
Total Hours		**9**

Track Options

In addition to fulfilling core requirements, students will choose to pursue one of three tracks:

Analytics and Modeling Track

Department approved 5/6000-level electives. A maximum of 9 semester hours may be at the 5000-level.		9
Choose four courses from the following list. Selection is based on Hal Marcus College of Science and Engineering advisor approval.		12
MAP 5471	Advanced Probability and Inferences	
COP 5725	Database Systems	
MAP 6114	Machine Learning [*]	
IDC 6210	Machine Learning for Data Science [*]	
CAP 6789	Advanced Big Data Analytics [**]	
IDC 6145	Big Data Analytics for Data Science [**]	
CAP 6771	Data Mining	
STA 6707	Multivariate Methods	
MAD 6306	Complex Networks	
STA 6856	Time Series Analysis	
STA 6349	Applied Bayesian Analysis	
IDC 6146	Deep Learning for Data Science	
Total Hours		**21**

[*] MAP 6114 and IDC 6210 can not be taken together.
[**] CAP 6789 and IDC 6145 can not be taken together.

Analytics of Business Decisions Track

Department approved 5/6000-level electives. A maximum of 9 semester hours may be at the 5000-level.		9
Choose four courses from the following list. Selection is based on Lewis Bear Jr. College of Business advisor approval.		12
MAN 6511	Operations Management Problems	
ISM 6405	Advanced Business Intelligence Applications	
ISM 6136	Big Data Mining: A Managerial Perspective	
GEB 5872	MBA Foundations: Financial Management I [*]	
GEB 5875	MBA Foundations: Management Skills and Applications [*]	
ACG 6309	Accounting for Decision Making [**]	
Total Hours		**21**

[*] GEB 5872 and GEB 5875 are 1.5 semester hours; students must take both courses.
[**] GEB 5872 must be taken before ACG 6309.

Health Analytics Track

Department approved 5/6000-level electives. A maximum of 9 semester hours may be at the 5000-level.		9
Choose four courses from the following list. Selection is based on Usha Kundu, MD, College of Health advisor approval.		12
BSC 5459	Bioinformatics and Data Science	
PHC 6000	Epidemiology for Public Health Professionals	
PHC 6251	Disease Surveillance and Monitoring	
HSA 6197	Health Informatics	
HSA 6752	Quantitative Foundations and Data Analysis for Health Admin	
HSA 6385	Quality Improvement Processes in Health Organizations	
PHC 6194	GIS Applications in Public Health	
Total Hours		**21**

Certificate in Advanced Data Science

The Certificate in Advanced Data Science is an online program. Online courses are offered asynchronously. Students admitted to the certificate program must complete the three courses (for a total of 9 semester hours) listed below earning a grade of "C" or better in each course and secure a combined grade point average of 3.0 or higher. Students are expected to complete the program in at most 3 semesters.

Admission Requirements

To be considered for admission into the University of West Florida's online Data Science Certificate program, you must be admitted into the University as a graduate non-degree seeking student.

Program Requirements

Prospective students for this certificate must contact the graduate advisor from the Department of Mathematics & Statistics to start the Declaration of Certificate process before the drop/add period of the semester of completion. To earn the certificate, students must complete the courses listed below within five years of admission into the program, earn a grade of 'C' or better in each of the three courses, and have a grade point average of 3.0 or higher for the combined courses.

All students in the Advanced Data Science certificate program must complete the following three courses:

IDC 6210	Machine Learning for Data Science	3
IDC 6146	Deep Learning for Data Science	3
IDC 6145	Big Data Analytics for Data Science	3
Total Hours		**9**

Data in the Workplace Certificate

The Data in the Workplace Graduate Certificate program is offered in a convenient online format and includes three courses for a total of nine credit hours. Through this certificate program, students will build data literacy to understand how organizations gather and interpret complex data and lay a foundation for further study of data science, business analytics, or data management. Students will benefit from one-on-one guidance from educators in small classes focusing on data fluency.

STA 5015	Data in Society	3
STA 6094	Data in the Workplace	3
PHI 5687	Ethics of AI	3
Total Hours		**9**

Certificate in Data Science

The Certificate in Data Science is an online program. Online courses are offered asynchronously. Students admitted to the certificate program must successfully complete the four courses (for a total of 12 semester hours) listed below earning a grade of "C" or better in each course and secure a combined grade point average of 3.0 or higher. Students are expected to complete the program in at most 3 semesters.

Admission Requirements

To be considered for admission into the University of West Florida's online Data Science Certificate program, you must be admitted into the University as a graduate non-degree seeking student.

Program Requirements

Prospective students for this certificate must contact the graduate advisor from the Department of Mathematics & Statistics to start the Declaration of Certificate process before the drop/add period of the semester of completion. To earn the certificate, students must complete the courses listed below within five years of admission into the program, earn a grade of 'C' or better in each of the four courses, and have a grade point average of 3.0 or higher for the combined courses. Students who obtain the certificate of Data Science must have a minimum GPA of 3.0 for the four core courses to be eligible for the Data Science Master's program.

All students in the Data Science certificate program must complete the following four courses.

Core Requirements

Students will take the following four courses:

CAP 5756	Tools for Data Science	3
STA 5126	Statistics for Data Science I	3
STA 6232	Statistics for Data Science II	3
CAP 5775	Databases for Data Science	3
Total Hours		**12**