

DATA ANALYTICS - MASTER OF DATA ANALYTICS

Data analytics is an inherently interdisciplinary discipline, dealing with methods and systems to synthesize knowledge or insights from large quantities of data collected from heterogeneous sources and diverse spatial and time scales. Data analytics employs theories, methodologies, and tools drawn from many fields, within the broad areas of mathematics, statistics, and computer and information sciences, and applies them to a diversity of data-rich domains, such as life sciences, medicine, physical sciences, social sciences, engineering, business, and education.

The PMS in Data Analytics will provide students with a strong foundation in data management and analysis, the computational and statistical thinking, and understanding of computer systems. After completing this program, students will have gained the skills and ability to:

- Analyze real-life data from diverse sources and domains
- Effectively apply analytics tools to large data sets
- Apply mathematical and statistical models to data analysis problems
- Apply computational thinking to develop effective data analytics solutions
- Apply programming and debugging skills to problem solving
- Understand and use computer technology and software in solving real-life data analysis problems
- Understand and address unfamiliar problems related to data analytics
- Develop effective instrument to communicate solutions to diverse audiences

Program

The professional focus of the degree will prepare students for success in the workplace, with an emphasis on enriching the preparation of students who are already in the workplace and are seeking technical skills to advance their careers in the data analytics domain.

Program Features

- Degree granted from New Mexico State University
- Asynchronous courses delivery to accommodate student schedules & needs
- 30 credits [3 semesters and a summer, 9 credits/semester; students may enroll part time]
- In person courses are permissible
- Industry experience encouraged

Curriculum

The curriculum for the degree program is composed of 30 graduate credits. It is divided into different categories. One course can be used to satisfy only one category.

Prefix	Title	Credits
Foundation		
CSCI 4520	Python Programming I	3
or CSCI 4525	Python Programming II	
A ST 511	Statistical Methods for Data Analytics <small>Can be replaced by A ST 505 and A ST 507</small>	3
Select one of the following courses		3

CSCI 4530	R Programming I	
A ST 515	Statistical Analysis with R	
Methodologies		
CSCI 5415	Introduction to Data Mining	3
CSCI 5420	Applied Machine Learning I	3
or E E 565	Machine Learning I	
Select one of the following courses		3
CSCI 5140	Database Management Systems I	
BCIS 575	Database Management Systems	
ICT 458	Web Development and Database Applications	
Advanced Topics and Applications		
Choose nine credits from the following:		9
A ST 555	Applied Multivariate Analysis	
A ST 616	Computational Statistics	
ASTR 630	Statistical and Numerical Methods in Astrophysics	
ASTR 671	Solar Astrophysics	
BIOL 566	Advanced Bioinformatics and NCBI Database	
BCIS 566	Business Analytics II	
BCIS 585	Enterprise Resource Planning & Business Processes	
CSCI 4525	Python Programming II	
CSCI 4540	Computer Science I Transition	
CSCI 4550	Introduction to Data Structures Transition	
CSCI 5310	Bioinformatics Programming	
CSCI 5305	Bioinformatics	
CSCI 5410	Computer Graphics I	
CSCI 5820	Database Management Systems II	
E E 540	Photovoltaic Devices and Systems	
E E 590	Selected Topics (Numerical Computational Methods for Smart Grid)	
E E 596	Digital Image Processing	
ENGL 543	Multimedia Theory and Production	
or COMM 5220	Communication Technologies	
I E 545	Characterizing Time-Dependent Engineering Data	
or BCIS 561	Business Analytics I	
I E 515	Stochastic Processes Modeling	
or I E 522	Queuing Systems	
I E 567	Design and Implementation of Discrete-Event Simulation	
MATH 5220	Fourier Series and Boundary Value Problems	
or STAT 5230	Elementary Stochastic Processes	
RGSC 585	Land Cover Analysis for Natural Resources	
SOCI 5150	Seminar in Social Networks	
SOCI 5155	Seminar in Text Analysis for the Social Sciences	
SOCI 5160	Seminar in Data Visualization	
Capstone Experience		
Select one of the following courses <small>Can be replaced by one course from the Advanced Topics and Applications group</small>		3
CSCI 5994	Master's Project	
CSCI 5991	Special Research Problems	
MATH 5999	Master's Thesis	
A ST 596	Independent Study	
A ST 598	Special Research Problems	
BCIS 598	Independent Study	
E E 598	Master's Technical Report	

IE 598	Special Research Programs	
SOCI 5991	Special Research Problems	
Internship		
Total Credits		30

A Suggested Plan of Study

Additional classes may be needed based on placement test results and course prerequisites. Visit with an advisor for help with creating a customized plan.

First Year

Fall		Credits
A ST 511	Statistical Methods for Data Analytics	3
CSCI 4520	Python Programming I	3
CSCI 5415	Introduction to Data Mining	3
Credits		9
Spring		Credits
CSCI 5420	Applied Machine Learning I	3
CSCI 4530	R Programming I	3
One Elective Course from the list of Advanced Topics and Applications courses		3
Credits		9

Second Year

Fall		Credits
Two Elective Courses from the list of Advanced Topics and Applications courses		6
CSCI 5140 or ICT 458	Database Management Systems I or Web Development and Database Applications	3
Credits		9
Spring		Credits
One from the Capstone experience group or one course from Advanced Topics and Applications		3
Credits		3
Total Credits		30