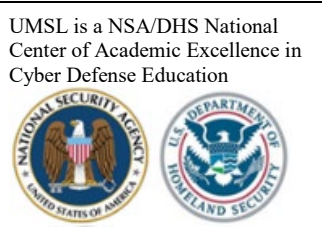


**GRADUATE**  
**Certificate in**  
**Data Science**



College of Arts and Sciences  
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# Graduate Certificate in Data Science



The graduate certificate in Data Science is a four-course (12 credit-hours) program. It provides skills, both statistical and computational, and technologies for the growing and popular fields involving data science and analysis. All students must take three required courses and one elective, subject to the [graduate school regulations](#).

A minimum of three courses must be taken from UMSL. A maximum of two courses can be counted from the 4000-level. Courses may be substituted with the permission of the certificate coordinator. For more information, students can contact the department chair or email <mailto:info@arch.umsl.edu>.

Required core courses		Availability
<a href="#">CMP SCI 4200</a>	Python for Scientific Programming and Data Science	FP
<a href="#">CMP SCI 5340</a>	Machine Learning	F
<a href="#">CMP SCI 5342</a>	Data Mining	P
Choose one elective		
<a href="#">CMP SCI 5151</a>	Statistical Methods for Data Science	F
<a href="#">CMP SCI 5411</a>	Data Visualization	F
<a href="#">CMP SCI 5320</a>	Evolutionary Computation	P
<a href="#">CMP SCI 5370</a>	Biological Data Science	F
<a href="#">CMP SCI 5390</a>	Deep Learning	P
<a href="#">MATH 4005</a>	Exploratory Data Analysis with R	F
<b>Total courses (credit hours)</b>		<b>4(12)</b>

For more information visit [umsl.edu/cs](http://umsl.edu/cs). For career information visit [umsl.edu/cs/careers](http://umsl.edu/cs/careers).  
 For electronic version of this document and more info visit <http://www.umsl.edu/cs/certificates>  
**Availability:** Summer (S), Fall (F), Spring (P)  
**Mode:** Online Evening **E**  
 For course rotation visit <https://www.umsl.edu/cmpsi/graduate-studies/3yeacourse.html>