DATA SCIENCE (CERT)

Graduate Certificate in Data Science
Unit: Speed School of Engineering (http://engineering.louisville.edu) (GS)
Department: Computer Science and Engineering (https://engineering.louisville.edu/academics/departments/computer/)
Academic Plan Code(s): DTMGCDM, DTMGCDMO

Program Information

This program can be completed in a traditional classroom format or entirely online *(*http://louisville.edu/online/programs/certificate-programs/graduate-certificate-in-data-science/*).*

To address the need for trained professionals in the interdisciplinary field of data mining, the Department of Computer Science and Engineering and the Department of Mathematics faculty have developed a joint certificate program in data mining. The certificate will consist of eighteen (18) credit hours, with three required courses from Computer Science and Engineering and three elective courses selected from a list of relevant elective courses in Computer Science and Engineering and Mathematics.

Certificate Summary

Code	Title	Hours
Core Coursework		9
CSE/Approved Mathematics Electives		9
Minimum Total Hours		**18**

Admission Requirements

The admission standards for the Graduate Certificate program in Data Science are as follows:

1. All admission applications for the Graduate Certificate program shall include:
   a. A completed graduate application (http://louisville.edu/graduate/futurestudents/apply-materials/application/) for the Graduate School
   b. Application fee
   c. Official transcript(s) for all previous post-secondary coursework. All transcripts not in English must be certified as authentic and translated verbatim into English.
2. The minimum requirement for admission is the baccalaureate degree or its equivalent from an accredited institution or current enrollment in a graduate Speed School program.
3. The successful applicant will typically have an undergraduate grade point average of 2.75 or above (on a 4.00 scale).
4. International students whose primary language is not English must show English language proficiency. Applicants must either submit an official TOEFL or IELTS score, or demonstrate a degree award from an acceptable English language institution. The successful applicant will typically have a total TOEFL score of 80 or higher or an overall IELTS score of 6.5 or higher.

Students can enroll in a Graduate Certificate program either as a non-degree seeking student or as a student simultaneously enrolled in a graduate degree program and this graduate certificate program. Students who wish to earn a graduate degree must meet all admission criteria for the degree program.

All students enrolled in a graduate certificate program are expected to make steady and satisfactory progress toward the completion of the certificate. Students who are not enrolled for a period of more than 12 months will be considered to have withdrawn from the certificate program. Students who seek to return after such a period of time must contact the graduate program director.

Certificate Requirements

The following certificate requirements are mandatory of all Graduate Certificate candidates:

1. The Certificate Program of Study must be completed with a 3.00 GPA or better for all graduate courses used to satisfy certificate requirements.
2. Graduate certificate students must take all certificate course work at the University of Louisville. No transfer credits will be accepted toward a graduate certificate.

Program Requirements

Code	Title	Hours
CSE 535	Database Systems	3
or CSE 536	Data Management and Analysis	
CSE 632	Data Mining	3
CSE 635	Data Mining with Linear Models	3
Select three of the following:		9
CSE 522	Performance Evaluation of Computer Systems	
CSE 545	Artificial Intelligence	
CSE 590	Special Topics in Computer Science and Engineering (Python and Data Analytics)	
CSE 590	Special Topics in Computer Science and Engineering (Introduction to Machine Learning)	
CSE 590	Special Topics in Computer Science and Engineering (Deep Learning Algorithms and Methods)	
CSE/IE 563	Experimental Design in Engineering	
CSE 619	Design and Analysis of Computer Algorithms	
CSE 621	Web Mining for E-Commerce and Information Retrieval	
CSE 622	Simulation and Modeling of Discrete Systems	
CSE 627	Digital Image Processing	
CSE 630	Advanced Databases	
CSE 660	Introduction to Bioinformatics	
CSE 694	Special Topics in Computer Science and Engineering (Legal Issues in Data Mining)	
CSE 694	Special Topics in Computer Science and Engineering (BIG DATA: Document-oriented DB)	
CSE 694	Special Topics in Computer Science and Engineering (Related Data Mining)	
MATH 560	Statistical Data Analysis - WR	
MATH 561	Probability	
MATH 562	Mathematical Statistics	
MATH 667	Statistical Inference	
Minimum Total Hours		**18**

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