New Program Report

Date Submitted:
01/27/2023

Institution
University of Central Missouri

Site Information

Implementation Date:
8/1/2023 12:00:00 AM

Added Site(s):

Selected Site(s):

University of Central Missouri-Lee's Summit, 1101 Innovation Way, Lee's Summit, MO, 64086

University of Central Missouri, Administration 202, Warrensburg, MO, 64093

CIP Information

CIP Code:
307001

CIP Description:
A program that focuses on the analysis of large scale data sources from the interdisciplinary perspectives of applied statistics, computer science, data storage, data representation, data modeling, mathematics, and statistics. Includes instruction in computer algorithms, computer programming, data management, data mining, information policy, information retrieval, mathematical modeling, quantitative analysis, statistics, trend spotting, and visual analytics.

CIP Program Title:
Data Science, General

Institution Program Title:
Data Science

Degree Level/Type

Degree Level:
Bachelor's Degree

Degree Type:
Bachelor of Science

Options Added:

Collaborative Program**:**
N

Mode of Delivery

Current Mode of Delivery

Classroom

Online

Student Preparation

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Special Admissions Procedure or Student Qualifications required:
N/A

Specific Population Characteristics to be served:
N/A

Faculty Characteristics

Special Requirements for Assignment of Teaching for this Degree/Certificate:
Ph.D. in Data Science, Computer Science, or a closely related area required for tenure track faculty.

M.S. in Data Science, Computer Science, or a closely related area required for non-tenure track faculty.

Estimate Percentage of Credit Hours that will be assigned to full time faculty:
100% Full Time Faculty

Expectations for professional activities, special student contact, teaching/learning innovation:
Faculty teaching in this program will be expected to be professionally active, as evidenced by peer-reviewed publications and/or externally funded grants. Faculty will also be expected to attend and/or present at professional meetings, participate in workshops/seminars in areas related to their specialties, and be involved in other related professional activities. Faculty are expected to continue improving their teaching by keeping up to date on material or pedagogy.

Student Enrollment Projections Year One-Five

Year 1	**Full Time:** 20	**Part Time:** 0	
Year 2	**Full Time:** 30	**Part Time:** 0	
Year 3	**Full Time:** 40	**Part Time:** 0	**Number of Graduates:** 5
Year 4	**Full Time:** 50	**Part Time:** 0	
Year 1	**Full Time:** 20	**Part Time:** 0	
Year 2	**Full Time:** 30	**Part Time:** 0	
Year 3	**Full Time:** 40	**Part Time:** 0	**Number of Graduates:** 5
Year 4	**Full Time:** 50	**Part Time:** 0	
Year 5	**Full Time:** 60	**Part Time:** 0	**Number of Graduates:** 15

Percentage Statement:
n/a

Program Accreditation

Institutional Plans for Accreditation:
This program will seek program accreditation from ABET once the program produces the first graduate.

Program Structure

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Total Credits:
120

Residency Requirements:
30 credit hours

General Education Total Credits:
42

Major Requirements Total Credits:
57

Course(s) Added

COURSE NUMBER	CREDITS	COURSE TITLE
DSA 1000	3	Intro. To Data Analytics
DSA 3200	3	Intro. to Data Visualization
CS 1100	3	Computer Programming I
DSA 4200	3	Advanced Data Visualization
CS 1100	3	Computer Programming II
DSA 4920	3	Senior Project
CS 2400	3	Discrete Structures
CS 2030	3	Python Programming II
CS 4600	3	Databases
DSA 4100	3	Programming Foundations for Data Science and AI
DSA 4600	3	NoSQL Database Systems
CS 2300	3	Data Structures
DSA 4620	3	Big Data Analytics
CS 4300	3	Algorithms
CS/CYBR/DSA/IT/SE	15	Major Electives

Free Elective Credits:
21

Internship or other Capstone Experience:
DSA 4920 Senior Project is required and provides a capstone experience. An internship is optional.

Assurances

I certify that the program is clearly within the institution's CBHE-approved mission. The proposed new program must be consistent with the institutional mission, as well as the principal planning priorities of the public institution, as set forth in the public institution's approved plan or plan update.

I certify that the program will be offered within the proposing institution's main campus or CBHE-approved off-site location.

I certify that the program will not unnecessarily duplicate an existing program of another Missouri institution in accordance with 6 CSR 10-4.010, subsection (9)(C) Submission of Academic Information, Data and New Programs.

I certify that the program will build upon existing programs and faculty expertise.

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I certify that the program can be launched with minimal expense and falls within the institution's current operating budget.

I certify that the institution has conducted research on the feasibility of the proposal and it is likely the program will be successful. Institutions' decision to implement a program shall be based upon demand and/or need for the program in terms of meeting present and future needs of the locale, state, and nation based upon societal needs, and/or student needs.

Contact Information

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BUTLER

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Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Data Science will use the knowledge and skills obtained in the program to:

- Have established themselves in successful data science-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additional, graduates with a Bachelor of Science degree in Data Science will demonstrate the following specific student outcomes:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

Major Requirements: 57 Semester Hours
Core: 42 Semester Hours
CS 1100 Computer Programming I, 3
CS 1110 Computer Programming II, 3
CS 2030 Python Programming II, 3
CS 2300 Data Structures, 3
CS 2400 Discrete Structures, 3
CS 4300 Algorithms, 3
CS 4600 Databases, 3
DSA 1000 Intro. To Data Analytics, 3
DSA 3200 Intro. to Data Visualization, 3
DSA 4100 Programming Foundations for Data Science and AI, 3
DSA 4200 Advanced Data Visualization, 3
DSA 4600 NoSQL Database Systems, 3
DSA 4620 Big Data Analytics, 3
DSA 4920 Senior Project, 3

Electives from the following: 15 Semester Hours
CS 3110 Applications Programming in C# and .NET
CS 3120 Client Side Web Programming
CS 3400 Discrete Structures II
CS 3500 C and UNIX Environment
CS 3850 Game Development I
CS 4830 Game Development II
CS 4000 Special Problems in Computer Science
CS 4020 Internship
CS 4110 Mobile Applications Programming with Android
CS 4120 Advanced Applications Programming in Java
CS 4130 Server Side Web Programming
CS 4500 Operating Systems
CS 4610 Introduction to Cloud Computing
CS 4700 Artificial Intelligence
CS 4710 Intro. To Machine Learning, 3
CYBR 3130 Secure Programming
CYBR 3300 Introduction to Cryptography
CYBR 4140 Web Applications Security
CYBR 4820 Introduction to Information Assurance
DSA 4400 Statistical Foundations for Data Science and AI
IT 3100 Human Computer Interaction
IT 4100 IT Project Management Or SE 4960 Software Project Management
SE 3900 Software Requirements Engineering
SE 3910 Software Engineering
SE 3920 Modern Software Lifecycle and Tools
SE 4930 Software Testing and Quality Assurance

General Education Requirements: 42 Semester Hours
All students must complete a minimum of 42 credit hours in general education. See The
General Education Program Requirements for full listing of requirements. The following general
education classes are required by this major:

CS 1000 - Computers and Modern Society GE (3)
CS 1030 - Intro. to Computer Programming GE (3)
COMM 1000 - Public Speaking GE (3)
OR
COMM 1050 - Communication in Practice GE (3)
OR
MKT 1401 - Professional Speaking and Presentation GE (3)
ACST 1300 - Basic Statistics GE (3)

Free Electives: 21 Semester Hours
Minimum Total: 120 Semester Hours