Date Submitted: 02/20/23 2:10 pm

Viewing: DTSCBS-CMPA : Data Science: Computational Analytics Concentration

Last approved: 05/23/22 11:23 am

Last edit: 03/14/23 2:34 pm

Changes proposed by: schubert

Catalog Pages Using this Program	Data Science B.S. with Computational Analytics Concentration Data Science (DTSC)

Submitter:	User ID: schubert		Phone:	575-2264 ~~5 2264~~
Program Status	Active			
Academic Level	Undergraduate			
Type of proposal	Concentration			

Select a reason for this modification

Making Minor Changes to an Existing Certificate, Degree or Program (including 15 or fewer hours, admission/graduation requirements, Focused Studies or Tracks)

Effective Catalog Year	Fall 2023
College/School Code	College of Engineering (ENGR)
Department Code	Department of Engineering Dean (ENGD)
Program Code	DTSCBS-CMPA
Degree	Bachelor of Science
CIP Code	30.3001 - Computational Science.
Program Title	Data Science: Computational Analytics Concentration
Program Delivery Method	On Campus

Yes — Is this program interdisciplinary?

College(s)/School(s)

College/School Name
College of Engineering (ENGR)
Fulbright College of Arts and Sciences (ARSC)
Walton College of Business (WCOB)

Yes ~~No~~ — Does this proposal impact any courses from another College/School?

College(s)/School(s)

College/School Name
Fulbright College of Arts and Sciences (ARSC)

What are the total hours needed to complete the program? 120 ~~21~~

Program Requirements and Description

Requirements

In Workflow

1. ENGR Dean Initial
2. Director of Curriculum Review and Program Assessment
3. Registrar Initial
4. Institutional Research
5. ENGD Chair
6. ENGR Curriculum Committee
7. ENGR Faculty
8. ARSC Dean
9. ENGR Dean
10. WCOB Dean
11. Global Campus
12. Provost Review
13. Undergraduate Council
14. Faculty Senate
15. Provost Final
16. Registrar Final
17. Catalog Editor Final

Approval Path

1. 02/16/23 3:42 pm Kevin Hall (kdhall): Approved for ENGR Dean Initial
2. 02/20/23 1:14 pm Alice Griffin (agriffin): Rollback to Initiator
3. 02/20/23 4:14 pm Kevin Hall (kdhall): Approved for ENGR Dean Initial
4. 02/21/23 9:25 am Alice Griffin (agriffin): Approved for Director of Curriculum Review and Program Assessment
5. 02/22/23 2:16 pm Gina Daugherty (gdaugher): Approved for Registrar Initial
6. 02/23/23 11:31 am Doug Miles (dmiles): Approved for Institutional Research
7. 02/24/23 10:27 am Kevin Hall (kdhall): Approved for ENGD Chair
8. 02/28/23 4:05 pm Manuel Rossetti (rossetti): Approved for ENGR Curriculum Committee
9. 03/01/23 10:17 am Kevin Hall (kdhall): Approved for ENGR Faculty
10. 03/01/23 10:26 am Jeannie Hulen (jhulen): Approved for ARSC Dean

Required Computational Analytics Concentration Courses

DASC 2103	Data Structures & Algorithms	3
CSCE 4143	Data Mining	3
CSCE 4613	Artificial Intelligence	3
Elective Computational Analytics Concentration Courses (Select 12 hours) [1]		12
CSCE 4013	Special Topics	
MATH 2603	Discrete Mathematics (Pre-req for CSCE 4133)	
or MATH 2803	Transition to Advanced Mathematics	
CSCE 4133	Algorithms [1]	
CSCE 4253	Concurrent Computing	
CSCE 4853	Information Security	
DASC 4533	Information Retrieval	
CSCE 3513	Software Engineering	
Note: Other courses from CSCE and/or other concentrations of DASC can also be added to the concentration electives.		
Total Hours		21

11. 03/13/23 4:02 pm Kevin Hall (kdhall): Approved for ENGR Dean
12. 03/13/23 4:20 pm Alan Ellstrand (aellstra): Approved for WCOB Dean
13. 03/13/23 4:29 pm Suzanne Kenner (skenner): Approved for Global Campus
14. 03/13/23 4:58 pm Jim Gigantino (jgiganti): Approved for Provost Review

History

1. May 7, 2020 by Lisa Kulczak (lkulcza)
2. May 8, 2020 by Charlie Alison (calison)
3. May 18, 2021 by Karl Schubert (schubert)
4. Apr 11, 2022 by Karl Schubert (schubert)
5. May 23, 2022 by Gina Daugherty (gdaugher)

8-Semester Plan

Data Science B.S. with Computational Analytics Concentration

Eight-Semester Program

First Year	Units	
	Fall	Spring
MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1)[2]	4	
~~State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4)~~	~~4~~	-
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3	
~~DASC 1001 Introduction to Data Science~~	~~1~~	-
DASC 1003 INTRODUCTION TO DATA SCIENCE, Course DASC 1003 INTRODUCTION TO DATA SCIENCE Not Found	3	
DASC 1104 Programming Languages for Data Science	4	
MATH 2564 Calculus II (ACTS Equivalency = MATH 2505)		4
ECON 2143 Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3)		3
ENGL 1033 Technical Composition II (ACTS Equivalency = ENGL 1023) (Satisfies General Education Outcome 1.2)		3
DASC 1204 Introduction to Object Oriented Programming for Data Science		4
~~DASC 1222 Role of Data Science in Today's World~~	-	~~2~~
DASC 1223 ROLE OF DATA SCIENCE IN TODAY'S WORLD, Course DASC 1223 ROLE OF DATA SCIENCE IN TODAY'S WORLD Not Found		3
Year Total:	14	17

Second Year	Units	
	Fall	Spring
DASC 2594 Multivariable Math for Data Scientists	4	
STAT 3013 Introduction to Probability[4]	3	
or INEG 2323 Probability and Stochastic Processes for Industrial Engineers		
DASC 2213 Data Visualization and Communication	3	
DASC 2113 Principles and Techniques of Data Science	3	
State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2)[2]	3	
SEVI 2053 Business Foundations (Data Science Majors-only section)		3
STAT 3003 Statistical Methods[5]		3-4
or INEG 2314 Statistics for Industrial Engineers I		
DASC 2203 Data Management and Data Base		3
~~CSCE 3513 Software Engineering~~	-	~~3~~
DASC 2103 Data Structures & Algorithms		3
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4)		4
Year Total:	16	16

Third Year	Units	
	Fall	Spring
~~PHIL 3103 Ethics and the Professions (Satisfies General Education Outcome 5.1)~~	~~3~~	-
DASC 2133 DATA PRIVACY, ETHICS, Course DASC 2133 DATA PRIVACY & ETHICS Not Found, (Satisfies General Education Outcome 5.1)	3	
DASC 3103 Cloud Computing and Big Data	3	
CSCE 4143 Data Mining	3	
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4)	4	
~~State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.2 and 3.3~~[2]	~~3~~	-
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.2 and 3.3)[3]	3	
DASC 3203 Optimization Methods in Data Science		3
DASC 3213 Statistical Learning		3
CSCE 4613 Artificial Intelligence		3
~~State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2)~~[2]	-	~~3~~
State Minimum Core Fine Arts Elective (Satisfies General Education Outcome 3.1)[3]		3
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1)[3]		3
Year Total:	16	15

Fourth Year	Units	
	Fall	Spring
DASC 4892 Data Science Practicum I	2	
DASC 4113 Machine Learning	3	
DASC 4123 Social Problems in Data Science and Analytics	3	
Computational Analytics Elective	3	
Computational Analytics Elective	3	
DASC 4993 Data Science Practicum II (Satisfies General Education Outcome 6.1)		3
Computational Analytics Elective		3
Computational Analytics Elective		3
General Education Elective[4]		2-3
Year Total:	14	12

Total Units in Sequence:	120

[1] MATH 2603 or MATH 2803 is a pre-req for CSCE 4133.

[2] Students have demonstrated successful completion of the learning indicators identified for learning outcome 2.1, by meeting the prerequisites for MATH 2554.

[3] Students must complete the State Minimum Core requirements as outlined in the Catalog of Studies. The courses that meet the state minimum core also fulfill many of the university's General Education requirements, although there are additional considerations to satisfy the general education learning outcomes. Students are encouraged to consult with their academic adviser when making course selections.

[4] Students are required to complete 40 hours of upper-division courses (3000-4000 level). It is recommended that students consult with their adviser when making course selections.

[5] Data Science Statistics and Computational Analytics Concentration students are advised to select STAT 3013/STAT 3003 to meet the prerequisites required in the concentration.

	No	Are Similar Programs available in the area?	
Estimated Student Demand for Program	See DTSCBS PLAN		
Scheduled Program Review Date	See DTSCBS PLAN		

Program Goals and Objectives

Program Goals and Objectives
See DTSCBS PLAN

Learning Outcomes

Learning Outcomes
See DTSCBS PLAN

Description and justification of the request

Description of specific change	Justification for this change
DASC 1001 & DASC 1222 are updated to DASC 1003 and DASC 1223 as initially designed. DASC 2103 is moved to CMPA Concentration Required matching the original program design. Adding MATH 2603 or MATH 2803 as electives as a pre-req for CSCE 4133. INEG 2314 then INEG 2323 sequence is changed to better match sequencing of STAT 3013 and 3003 per discussions with INEG.	These provide the courses the appropriate number of hours and an improved course sequencing.

Upload attachments: UoA BS DASC Suggested Plan of Study (8-semester) v23-8a.pdf

Reviewer Comments

Alice Griffin (agriffin) (02/20/23 1:12 pm): Reformatted course listing for DASC 1003 and DASC 1223, removed notation regarding First-Year Science Program. Removed comment field and entered course title in the add course field. Also, reformatted DASC 2133, placing course title in the add course field for consistency with campus formatting.

Alice Griffin (agriffin) (02/20/23 1:14 pm): Rollback: Please change the response to the question does this proposal impact any courses from another college, as math courses were inserted into the concentration as electives. As such, this request will require campus approval.

Alice Griffin (agriffin) (02/21/23 9:25 am): Changed reason for the modification from minor changes that qualify for the shortened approval workflow, to making minor changes. This action was taken because of the math courses from ARSC that were added to the concentration electives.

Alice Griffin (agriffin) (03/14/23 2:34 pm): Changed total hours field from 21 to 120 as requested by the Registrar's Office.

Key: 747