

Date Submitted: 03/03/21 4:49 pm

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

Last approved: 05/08/20 12:48 pm

Last edit: 03/10/21 3:07 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 kboston** Phone:
5-2264 5-4622

Program Status Active

Academic Level Undergraduate

Type of proposal Concentration

Select a reason for this modification

Making Minor Changes to an Existing Degree (e.g. changing 15 or fewer hours, changing admission/graduation requirements, adding/changing Focused Study or Track)

Effective Catalog Year Fall 2021

College/School Code
College of Engineering (ENGR)

Department Code
Department of Engineering Dean (ENGD)

Program Code DTSCBS-CMPA

Degree Bachelor of Science

CIP Code

In Workflow

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

Approval Path

1. 03/04/21 12:29 pm
Norman Dennis (ndennis): Approved for ENGR Dean Initial
2. 03/08/21 9:50 am
Alice Griffin (agriffin): Approved

- for Director of
Program
Assessment and
Review
3. 03/10/21 3:07 pm
Lisa Kulczak
(lkulcza): Approved
for Registrar Initial
 4. 03/10/21 3:39 pm
Gary Gunderman
(ggunderm):
Approved for
Institutional
Research
 5. 03/10/21 3:58 pm
Norman Dennis
(ndennis): Approved
for ENGD Chair
 6. 03/10/21 5:06 pm
Manuel Rossetti
(rossetti): Approved
for ENGR
Curriculum
Committee
 7. 03/10/21 5:54 pm
Norman Dennis
(ndennis): Approved
for ENGR Faculty
 8. 03/10/21 5:56 pm
Norman Dennis
(ndennis): Approved
for ENGR Dean
 9. 03/10/21 9:15 pm
Jeannie Hulen
(jhulen): Approved
for ARSC Dean
 10. 03/16/21 2:42 pm
Karen Boston
(kboston):

Approved for WCOB
Dean

11. 03/16/21 2:42 pm
Suzanne Kenner
(skenner): Approved
for Global Campus
12. 03/29/21 11:14 am
Terry Martin
(tmartin): Approved
for Provost Review
13. 04/16/21 4:41 pm
Alice Griffin
(agriffin): Approved
for University
Course and Program
Committee

History

1. May 7, 2020 by Lisa
Kulczak (lkulcza)
2. May 8, 2020 by
Charlie Alison
(calison)

30.3001 - Computational Science.

Program Title

Data Science: Computational Analytics **Concentration**

Program Delivery

Method

On Campus

Is this program interdisciplinary?

Yes

College(s)/School(s)

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

Does this proposal impact any courses from another College/School?

No

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

Program Requirements and Description

Requirements

Required Computational Analytics Concentration Courses

<u>CSCE 3513</u>	Software Engineering	3
<u>CSCE 4143</u>	Data Mining	3
<u>CSCE 4613</u>	Artificial Intelligence	3
Elective Computational Analytics Concentration Courses (Select 12 hours)		12
<u>CSCE 3213</u>	Cluster Computing	
<u>CSCE 4013</u>	Special Topics	
<u>CSCE 4133</u>	Algorithms	
<u>CSCE 4253</u>	Concurrent Computing	
<u>CSCE 4853</u>	Information Security	
<u>DASC 4533</u>	Information Retrieval	

Note: Other courses from CSCE and/or other concentrations of DASC can also be added to the concentration electives.

Total Hours 21

8-Semester Plan

Data Science B.S. with Computational Analytics Concentration Eight-Semester Program

First Year	Units
	FallSpring
<u>MATH 2554</u> Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1)1	4
<u>ENGL 1013</u> Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3
University Core Social Science Elective	3 -
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.2 and 3.3) 2	3
<u>DASC 1001</u> Introduction to Data Science	1

DASC 1001 Introduction to Data Science	4
<u>DASC 1104</u> Programming Languages for Data Science	4
<u>MATH 2564</u> Calculus II (ACTS Equivalency = MATH 2505)	4
<u>DASC 1204</u> Introduction to Object Oriented Programming for Data Science	4
<u>DASC 1222</u> Role of Data Science in Today's World	2
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4)	4
Choose one of the following (recommend ENGL 1033)	- 3
<u>ENGL 1033</u> Technical Composition II (ACTS Equivalency = ENGL 1023) (Satisfies General Education Outcome 1.2)	3
ENGL 1023 Composition II (ACTS Equivalency = ENGL 1023)	
Year Total:	15 17
 Second Year	 Units FallSpring
<u>DASC 2594</u> Multivariable Math for Data Scientists	4
DASC 2103 Data Structures & Algorithms	3 -
<u>DASC 2113</u> Principles and Techniques of Data Science	3
State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2)	3
<u>DASC 2213 Data Visualization and Communication</u>	3
<u>DASC 2203</u> Data Management and Data Base	3
DASC 2213 Data Visualization and Communication	- 3
<u>CSC 3513</u> Software Engineering	3
<u>DASC 2103 Data Structures & Algorithms</u>	3
<u>INEG 2313</u> Applied Probability and Statistics for Engineers II In order to meet upper division prerequisites, students completing the Computational Analytics Concentration should select INEG 2313 and INEG 2333	3
or <u>STAT 3013</u> Introduction to Probability	
<u>MGMT 2053</u> Business Foundations	3
Year Total:	13 15
 Third Year	 Units FallSpring
<u>PHIL 3103</u> Ethics and the Professions (Satisfies General Education Outcome 5.1)	3
<u>DASC 3103</u> Cloud Computing and Big Data	3
<u>INEG 2333</u> Applied Probability and Statistics for Engineers III In order to meet upper division prerequisites, students completing the Computational Analytics Concentration should select INEG 2313 and INEG 2333	3
or <u>STAT 3003</u> Statistical Methods	
<u>CSC 4613</u> Artificial Intelligence	3
Computational Analytics Elective	3
<u>DASC 3203</u> Optimization Methods in Data Science	3
DASC 3313 Statistical Learning	3

DASC 3213 Statistical Learning	5
CSCE 4143 Data Mining	3
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4)	4
ECON 2143 Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3)	3
Year Total:	15 16

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	
University Core Fine Arts Elective	3	-
State Minimum Core Fine Arts Elective (Satisfies General Education Outcome 3.1)3	3	
DASC 4993 Data Science Practicum II (Satisfies General Education Outcome 6.1)	3	
General Education Elective	3	
Computational Analytics Electives	6	
University Core Social Science Elective	-	3
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.14	3	
Year Total:	14	15

Total Units in Sequence: 120

- 1**Students have demonstrated successful completion of the learning indicators identified for learning outcome 2.1, by meeting the prerequisites for [MATH 2554](#).
- 2**The Social Science Elective courses which satisfy General Education Outcomes 3.2 and 3.3 include: [HIST 1113](#), [HIST 1113H](#), [HIST 1123](#), [HIST 1123H](#), [HIST 2003](#), or [HIST 2013](#). Note, courses cannot be counted twice in degree requirements.
- 3**The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: [ARCH 1003](#), [ARHS 1003](#), [COMM 1003](#), [DANC 1003](#), [LARC 1003](#), [MLIT 1003](#), [MLIT 1003H](#), [MLIT 1013](#), [MLIT 1013H](#), [MLIT 1333](#), [THTR 1003](#), [THTR 1013](#), or [THTR 1013H](#).
- 4**The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: [ANTH 1023](#), [COMM 1023](#), [HDFS 1403](#), [HDFS 2413](#), [HIST 1113](#), [HIST 1113H](#), [HIST 1123](#), [HIST 1123H](#), [HIST 2093](#), [HUMN 1114H](#), [HUMN 2114H](#), [INST 2013](#), [INST 2813](#), [INST 2813H](#), [PLSC 2013](#), [PLSC 2813](#), [PLSC 2813H](#), [RESM 2853](#), [SOCI 2013](#), [SOCI 2013H](#), or [SOCI 2033](#).

Are Similar Programs available in the area?

No

Estimated Student Demand for Program See DTSCBS PLAN

Demand for Program

Scheduled Program See DTSCBS PLAN

Review Date

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
Revised formatting of the eight semester degree plan. Inserted the General Education language. Also added footnotes and hyper-linked courses for access to course details.	To provide consistency with the General Education curriculum language. Footnotes provides list of courses that specifically meets each General Education Outcome on behalf of the college. Changes to the English requirement needs campus approval.AG
Exchanged Fall <--> Spring for DASC 2103 and DASC 2213.	Moved to provide training on visualization and communication earlier in the sequence.

Upload attachments

Reviewer Comments

Alice Griffin (agriffin) (03/08/21 9:50 am): ATTENTION: Due to changes to the English requirement, this minor program change will require campus approval.