Program Change Request

Date Submitted: 12/22/21 2:04 pm

Viewing: DTSCBS-BMHI : Data Science: Biomedical and Healthcare Informatics Concentration

Last approved: 05/18/21 6:51 pm

Last edit: 01/06/22 11:17 am

Changes proposed by: schubert

Catalog Pages Using this Program

Data Science B.S. with Biomedical and Healthcare Informatics Concentration

Data Science (DTSC)

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

Select a reason for this modification

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

Effective Catalog Year	Fall 2022
College/School Code	College of Engineering (ENGR)
Department Code	Department of Engineering Dean (ENGD)
Program Code	DTSCBS-BMHI
Degree	Bachelor of Science

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. 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. Registrar Final
17. Catalog Editor Final

Approval Path

1. 12/23/21 2:24 pm Kevin Hall (kdhall): Approved for ENGR Dean Initial
2. 01/05/22 1:09 pm Alice Griffin (agriffin): Approved for Director of

CIP Code	Curriculum Review and Program Assessment 3. 01/06/22 1:23 pm Gina Daugherty (gdaugher): Approved for Registrar Initial 4. 01/06/22 3:50 pm Doug Miles (dmiles): Approved for Institutional Research 5. 01/20/22 1:11 pm Kevin Hall (kdhall): Approved for ENGD Chair 6. 01/20/22 1:16 pm Manuel Rossetti (rossetti): Approved for ENGR Curriculum Committee 7. 01/20/22 3:21 pm Kevin Hall (kdhall): Approved for ENGR Faculty 8. 01/20/22 3:41 pm Kevin Hall (kdhall): Approved for ENGR Dean 9. 01/20/22 4:10 pm Jeannie Hulen (jhulen): Approved for ARSC Dean 10. 01/25/22 11:12 am Karen Boston (kboston): Approved for WCOB Dean

11. 01/25/22 11:22 am Suzanne Kenner (skenner): Approved for Global Campus
12. 02/02/22 8:44 am Ketevan Mamiseishvili (kmamisei): 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)

30.3001 - Computational Science.

Program Title

Data Science: Biomedical and Healthcare Informatics 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 hours needed to complete the program?	21

Program Requirements and Description

Requirements

Required Biomedical and Healthcare Informatics Concentration Courses

Students completing the Biomedical and Healthcare Informatics Concentration must select CHEM 1103 and PHYS 2054 for the State Minimum Core Science Electives.

BMEG 2614	Introduction to Biomedical Engineering	4
CHEM 1123	University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture)	3
BIOL 2213	Human Physiology (ACTS Equivalency = BIOL 2414 Lecture)	3
BMEG 3801	Clinical Observations and Needs Finding	1
Elective Biomedical and Healthcare Informatics Concentration (Select 10 credit hours)		10
BMEG 4713	Cardiovascular Physiology and Devices	
BMEG 4973	Regenerative Medicine	
BMEG 4413	Tissue Engineering	
BMEG 4403	Biomedical Microscopy	
BMEG 4513	Biomedical Optics and Imaging	
BMEG 4523	Biomedical Data and Image Analysis	
BMEG 4983	Genome Engineering and Synthetic Biology	
BIOL 2211L	Human Physiology Laboratory (ACTS Equivalency = BIOL 2414 Lab)	
CHEM 1121L	University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)	
Total Hours		21

8-Semester Plan

Data Science B.S. with Biomedical and Healthcare Informatics Concentration Eight-Semester Program

First Year		Units	
		Fall	Spring
MATH 2554	Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1)1	4	
CHEM 1103	University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture)	4	
& CHEM 1101L	University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)		

& CHEM 1101L University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)		
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3	
Satisfies General Education Outcome 3.4:		
DASC 1001 Introduction to Data Science	1	
DASC 1104 Programming Languages for Data Science	4	
MATH 2564 Calculus II (ACTS Equivalency = MATH 2505)		4
PHYS 2054 University Physics I (ACTS Equivalency = PHYS 2034) (Satisfies General Education Outcome 3.4)		4
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
Year Total:	16	17

Second Year	Units	
	Fall	Spring
DASC 2594 Multivariable Math for Data Scientists	4	
INEG 2313 Applied Probability and Statistics for Engineers I4	3	
or STAT 3013 Introduction to Probability		
DASC 2213 Data Visualization and Communication	3	
DASC 2113 Principles and Techniques of Data Science	3	
BMEG 2614 Introduction to Biomedical Engineering	4	
SEVI 2053 Business Foundations (Data Science Majors-only section)		3
INEG 2333 Applied Probability and Statistics for Engineers II4		3
or STAT 3003 Statistical Methods		
DASC 2103 Data Structures & Algorithms		3
DASC 2203 Data Management and Data Base		3
CHEM 1123 University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture)		3
Year Total:	17	15

Third Year	Units	
	Fall	Spring
PHIL 3103 Ethics and the Professions (Satisfies General Education Outcome 5.1)	3	
DASC 3103 Cloud Computing and Big Data	3	
BIOL 2213 Human Physiology (ACTS Equivalency = BIOL 2414 Lecture)	3	
ECON 2143 Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3)	**3**	
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.2 and 3.3)2	3	
~~State Minimum Core Fine Arts Elective (Satisfies General Education Outcome 3.1)3~~	~~3~~	-
DASC 3203 Optimization Methods in Data Science		3
DASC 3213 Statistical Learning		3
BMEG 3201 Clinical Observations and Needs Finding		1

BMEG 3801 Clinical Observations and Needs Finding		1
~~ECON 2143 Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3)~~	~~-~~	~~3~~
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1) 2		3
State Minimum Core Fine Arts Elective (Satisfies General Outcome 3.1)2		**3**
Year Total:	15	13

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	
Concentration Elective Course	1	
Concentration Elective Course	3	
DASC 4993 Data Science Practicum II (Satisfies General Education Outcome 6.1)		3
Concentration Elective Course		3
Concentration Elective Course		**3**
State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2)2		**3**
General Elective Course3		3
~~Concentration Elective Course(s)5~~	~~-~~	~~4~~
Year Total:	12	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 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.

3 **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.**

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

~~5 **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.**~~

Are Similar Programs available in the area?

No

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
Corrections were made to match the original Program-wide 8-semester plan.	Ensuring the Data Science Program cohorts are cohesive and managing student advising in the original Program-wide 8-semester plan.

Upload attachments

Reviewer Comments

Alice Griffin (agriffin) (01/05/22 12:44 pm): Changed one of the concentration electives from 3 to 1 hour in the fall semester of the fourth year and changed the general elective from 1 hour to 3 hours to be consistent with the concentration requirements. Consulted with the submitter before making the change.

Gina Daugherty (gdaugher) (01/06/22 11:17 am): Adjusted inline course references.

Key: 735