

Program Change Request

Date Submitted: 12/22/21 2:05 pm

Viewing: **DTSCBS-OPNA : Data Science: Operations Analytics Concentration**

Last approved: 05/18/21 6:52 pm

Last edit: 02/01/22 1:51 pm

Changes proposed by: schubert

Catalog Pages Using

this Program

[Data Science B.S. with Operations Analytics Concentration](#)

[Data Science \(DTSC\)](#)

Submitter: User ID: schubert Phone: 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 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-OPNA

Degree Bachelor of Science

CIP Code

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

- Curriculum Review
and Program
Assessment
3. 01/06/22 1:24 pm
Gina Daugherty
(gdaugher):
Approved for
Registrar Initial
 4. 01/06/22 3:51 pm
Doug Miles
(dmiles): Approved
for Institutional
Research
 5. 01/20/22 1:12 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. 02/01/22 1:53 pm
Alan Ellstrand
(aellstra): Approved
for WCOB Dean

- 11. 02/01/22 4:26 pm
Suzanne Kenner
(skenner): Approved
for Global Campus
- 12. 02/02/22 8:44 am
Ketevan
Mamiseishvili
(kmamisei):
Approved for
Provost Review
- 13. 02/28/22 4:52 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)
- 3. May 18, 2021 by
Karl Schubert
(schubert)

30.3001 - Computational Science.

Program Title

Data Science: Operations Analytics Concentration

Program Delivery

Method

On Campus

Is this program interdisciplinary?

Yes

College(s)/School(s)

| |
|-------------------------------|
| College/School Name |
| College of Engineering (ENGR) |

College/School Name

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 Operations Analytics Concentration Courses

| | | |
|---|-------------------------------------|---|
| INEG 2413 | Engineering Economic Analysis | 3 |
| INEG 3613 | Introduction to Operations Research | 3 |
| INEG 3623 | Simulation | 3 |
| INEG 4553 | Production Planning and Control | 3 |
| Elective Operations Analytics Concentration Courses | | 9 |

Select 6 hours from the following:

| | |
|---------------------------|--|
| INEG 4453 | Productivity Improvement |
| INEG 4543 | Facility Logistics |
| INEG 4633 | Transportation Logistics |
| INEG 4683 | Decision Support in Industrial Engineering |

~~Any Supply Chain Management (SCMT) course at the 2000 level or higher from the Supply Chain Analytics Concentration~~

[SCMT 2103](#) Integrated Supply Chain Management

Select 3 hours from the following:

| | |
|---------------------------|------------------------------------|
| INEG 4123 | Global Engineering and Innovation |
| INEG 4433 | Systems Engineering and Management |
| INEG 4443 | Project Management |

Total Hours

21

8-Semester Plan

Data Science B.S. with Operations Analytics 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 |
| 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 |
| State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.2 and 3.3) | 3 | - |
| DASC 1001 Introduction to Data Science | | 1 |
| 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 |
| State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4) | - | 4 |
| Year Total: | | 16 16 |
| Second Year | Units | |
| | Fall | Spring |
| DASC 2594 Multivariable Math for Data Scientists | 4 | |
| INEG 2313 Course INEG 2313 Not Found | 4 | |
| or STAT 3013 Introduction to Probability | | |
| DASC 2213 Data Visualization and Communication | | 3 |
| DASC 2113 Principles and Techniques of Data Science | | 3 |
| INEG 2413 Engineering Economic Analysis | 3 | - |
| State Minimum Core Fine Arts Elective (Satisfies General Education Outcome 3.1) | 3 | |
| SEVI 2053 Business Foundations (Data Science Majors-only section) | | 3 |
| State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2) | - | 3 |
| INEG 2333 Applied Probability and Statistics for Engineers II | 4 | |
| or STAT 3003 Statistical Methods | | |
| DASC 2103 Data Structures & Algorithms | | 3 |
| DASC 2203 Data Management and Data Base | | 3 |
| INEG 2313 Course INEG 2313 Not Found | - | 3 |
| or STAT 3013 Introduction to Probability | | |
| INEG 2413 Engineering Economic Analysis | | 3 |
| Year Total: | | 16 15 |
| Third Year | Units | |

| | Fall | Spring | |
|--|--------------|--------------|--------|
| <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 | | |
| INEG 2333 Applied Probability and Statistics for Engineers II or STAT 3003 Statistical Methods | 3 | - | |
| INEG 3613 Introduction to Operations Research | 3 | - | |
| <u>INEG 3623</u> Simulation | 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 | |
| <u>DASC 3203</u> Optimization Methods in Data Science | | 3 | |
| <u>DASC 3213</u> Statistical Learning | | 3 | |
| INEG 4553 Production Planning and Control | - | 3 | |
| ECON 2143 Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3) | - | 3 | |
| State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4) | - | 4 | |
| <u>INEG 3613</u> Introduction to Operations Research | | 3 | |
| State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2) | | 3 | |
| State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1) | 2 | 3 | |
| Year Total: | 16 | 15 | |
| Fourth Year | | Units | |
| | | Fall | Spring |
| <u>DASC 4892</u> Data Science Practicum I | | 2 | |
| <u>DASC 4113</u> Machine Learning | | 3 | |
| <u>DASC 4123</u> Social Problems in Data Science and Analytics | | 3 | |
| Operations Analytics Elective | 3 | - | |
| State Minimum Core Fine Arts Elective (Satisfies General Education Outcome 3.1) | 3 | - | |
| <u>INEG 4553</u> Production Planning and Control | | 3 | |
| Operations Data Analytics Concentration Elective | | 3 | |
| <u>DASC 4993</u> Data Science Practicum II (Satisfies General Education Outcome 6.1) | | 3 | |
| Operations Data Analytics Concentration Elective | | 3 | |
| Operations Data Analytics Concentration Elective | | 3 | |
| General Education Elective | | 3 | |
| State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.3 and 4.1) | - | 3 | |
| Operations Analytics Elective | - | 6 | |
| Year Total: | 14 | 12 | |
| 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 <u>MATH 2554</u> . | | | |
| 2 Students must complete the State Minimum Core requirements as outlined in the Catalog of Studies. The | | | |

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 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 |
|---|--|
| 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

Gina Daugherty (gdaugher) (01/06/22 1:20 pm): Adjusted inline course references.