

New Program Proposal

Date Submitted: 12/21/23 8:35 am

Viewing: **DTSCBS-ECAN : Data Science: Economic Analytics Concentration**

Last edit: 01/30/24 9:07 am

Changes proposed by: schubert

Submitter: 575-2264 User ID: schubert Phone:

Program Status Active

Academic Level Undergraduate

Type of proposal Concentration

Select a reason for this new program Adding New Concentration

Effective Catalog Year Fall 2024

College/School Code
College of Engineering (ENGR)

Department Code
Data Science (DASC)

Program Code DTSCBS-ECAN

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. DASC Chair
6. ENGR Curriculum Committee
7. ENGR Faculty
8. WCOB Dean
9. ENGR Dean
10. ARSC 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. 01/08/24 10:50 am
Kevin Hall (kdhall):
Approved for ENGR
Dean Initial
2. 01/09/24 1:04 pm
Lisa Kulczak
(lkulcza): Approved
for Director of
Curriculum Review
and Program
Assessment

3. 01/09/24 6:48 pm
Gina Daugherty
(gdaugher):
Approved for
Registrar Initial
4. 01/10/24 9:49 am
Doug Miles
(dmiles): Approved
for Institutional
Research
5. 01/10/24 9:50 am
Karl Schubert
(schubert):
Approved for DASC
Chair
6. 01/22/24 12:33 pm
Manuel Rossetti
(rossetti): Approved
for ENGR
Curriculum
Committee
7. 01/24/24 9:16 am
Kevin Hall (kdhall):
Approved for ENGR
Faculty
8. 01/24/24 10:01 am
Alan Ellstrand
(aellstra): Approved
for WCOB Dean
9. 01/26/24 10:29 am
Kevin Hall (kdhall):
Approved for ENGR
Dean
10. 01/26/24 10:39 am
Christopher Liner
(liner): Approved for
ARSC Dean
11. 01/26/24 11:14 am
Suzanne Kenner
(skenner): Approved
for Global Campus

- 12. 01/29/24 5:28 pm
Matthew Ganio
(msganio): Rollback
to ENGR Dean for
Provost Review
- 13. 01/30/24 9:07 am
Kevin Hall (kdhall):
Approved for ENGR
Dean
- 14. 01/30/24 9:14 am
Christopher Liner
(liner): Approved for
ARSC Dean
- 15. 01/30/24 10:45 am
Suzanne Kenner
(skenner): Approved
for Global Campus
- 16. 01/30/24 12:00 pm
Matthew Ganio
(msganio):
Approved for
Provost Review
- 17. 02/28/24 1:46 pm
Lisa Kulczak
(lkulcza): Approved
for Undergraduate
Council

30.3001 - Computational Science.

Program Title

Data Science: Economic 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)

College/School Name

Walton College of Business (WCOB)

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

Yes

College(s)/School(s)

College/School Name

Walton College of Business (WCOB)

What are the total
hours needed to
complete the
program?

120

Program Requirements and Description

Requirements

Required Economic Analytics Concentration Courses

<u>ECON 30303</u>	Microeconomic Theory	3
<u>ECON 31303</u>	Macroeconomic Theory	3
<u>ECON 47403</u>	Introduction to Econometrics	3
<u>ECON 47503</u>	Forecasting	3
<u>ECON 47603</u>	Economic Analytics	3
Elective Economic Analytics Concentration Courses (Select 6 hours)		6
<u>ECON 31403</u>	Economics of Poverty and Inequality	
<u>ECON 33303</u>	Public Economics	
<u>ECON 34303</u>	Money and Banking	
<u>ECON 35303</u>	Labor Economics	
<u>ECON 38403</u>	Economics of the Developing World	
<u>ECON 38503</u>	Emerging Markets	
<u>ECON 43303</u>	Economics of Organizations	
<u>ECON 44203</u>	Behavioral Economics	
<u>ECON 44303</u>	Experimental Economics	

ECON 46303

International Trade

ECON 46403

International Macroeconomics and Finance

Total Hours

21

8-Semester Plan

Data Science B.S. with Economic Analytics Concentration

Eight-Semester Program

First Year	Units
	FallSpring
<u>MATH 24004</u> Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1) ¹	4
<u>ENGL 10103</u> Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3
<u>DASC 10003</u> Introduction to Data Science	3
<u>DASC 11004</u> Programming Languages for Data Science	4
General Elective	3
<u>MATH 25004</u> Calculus II	4
<u>ECON 21403</u> Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3)	3
<u>ENGL 10303</u> Technical Composition II (ACTS Equivalency = ENGL 1023) (Satisfies General Education Outcome 1.2)	3
<u>DASC 12004</u> Introduction to Object Oriented Programming for Data Science	4
<u>DASC 12203</u> Role of Data Science in Today's World	3
Year Total:	17 17
Second Year	Units
	FallSpring
<u>DASC 25904</u> Multivariable Math for Data Scientists	4
<u>STAT 30133</u> Introduction to Probability ⁴	3
or <u>INEG 23203</u> Probability and Stochastic Processes for Industrial Engineers	
<u>DASC 22103</u> Data Visualization and Communication	3
<u>DASC 21103</u> Principles and Techniques of Data Science	3
State Minimum Core U.S. History or Government Elective (Satisfies General Education Outcome 4.2) ²	3
<u>SEVI 20503</u> Business Foundations (DASC-only section required)	3
<u>STAT 30043</u> Statistical Methods ⁴	3-4
or <u>INEG 23104</u> Statistics for Industrial Engineers I	
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4) ²	4
<u>DASC 22003</u> Data Management and Data Base	3
<u>ECON 30303</u> Microeconomic Theory	3
Year Total:	16 16
Third Year	Units
	FallSpring
<u>DASC 21303</u> Data Privacy & Ethics (Satisfies General Education Outcome 5.1)	3
<u>DASC 31003</u> Cloud Computing and Big Data	3
State Minimum Core Social Sciences Elective (Satisfies General Education Outcomes 3.2 and 3.3) ²	3
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4) ²	4
<u>ECON 31303</u> Macroeconomic Theory	3

DASC 32003 Optimization Methods in Data Science	3
DASC 32103 Statistical Learning	3
ECON 47403 Introduction to Econometrics	3
State Minimum Core Fine Arts Elective (Satisfies General Education Outcome 3.1) 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
	FallSpring
DASC 48902 Data Science Practicum I	2
DASC 41103 Machine Learning	3
DASC 41203 Social Problems in Data Science and Analytics	3
ECON 47503 Forecasting	3
ECON 47603 Economic Analytics	3
DASC 49903 Data Science Practicum II (Satisfies General Education Outcome 6.1)	3
Economic Analytics Concentration Elective	3
Economic Analytics Concentration Elective	3
Year Total:	14 9
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 24004](#).

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 30133/STAT 30043](#) to meet the prerequisites required in the concentration.

Program Costs

No additional resources needed

Library Resources

No additional resources needed

Instructional

Facilities

No additional resources needed

Faculty Resources

No additional resources needed

List Existing Certificate or Degree Programs that Support the Proposed Program

Program(s)
DTSCBS - Data Science, Bachelor of Science

Are Similar Programs available in the area?

No

Estimated Student Demand for Program See DTSCBS PLAN

Scheduled Program Review Date 2025-2026

Program Goals and Objectives

Program Goals and Objectives

See DTSCBS PLAN

Learning Outcomes

Learning Outcomes

See DTSCBS PLAN

Description and Justification for this request

Description of request	Justification for request
<p>This is the addition of an Economics Analytics (ECAN) Concentration to the B.S. Data Science degree.</p>	<p>A data science degree with a concentration in economic analytics will provide students with a strong background in economic theory and the latest applied tools in big-data econometrics, forecasting, optimization, and machine learning methods in economics. These “big-data” skills, combined with knowledge of economic modeling, will enable them to identify, assess, and seize the opportunity for data-driven value creation in the private and public sector.</p>

Upload attachments

[00 Data Science ECAN Concentration.pdf](#)

[02 UoA BS DASC Suggested Plan of Study \(8-semester\) v24-8a ECAN.pdf](#)

[01 DASC Economic Analytics Concentration \(ECAN\).pdf](#)

Reviewer Comments

Lisa Kulczak (lkulcza) (01/09/24 12:56 pm): Updated next scheduled program review, changed proposed CIP code to match DTSCBS, as concentration CIP codes cannot be different from the overall major.

Matthew Ganio (msganio) (01/29/24 5:28 pm): Rollback: These fields reference the core major (DTSCBS) but the fields are not on the original major. Please fill them in specific to this concentration. Program Costs See DTSCBS PLAN Library Resources See DTSCBS PLAN Instructional Facilities See DTSCBS PLAN Faculty Resources See DTSCBS PLAN

Key: 983