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:	User ID:	schubert	Phone:	575-2264

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

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)
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

ECON 30303	Microeconomic Theory	3
ECON 31303	Macroeconomic Theory	3
ECON 47403	Introduction to Econometrics	3
ECON 47503	Forecasting	3
ECON 47603	Economic Analytics	3
Elective Economic Analytics Concentration Courses (Select 6 hours)		6
ECON 31403	Economics of Poverty and Inequality	
ECON 33303	Public Economics	
ECON 34303	Money and Banking	
ECON 35303	Labor Economics	
ECON 38403	Economics of the Developing World	
ECON 38503	Emerging Markets	
ECON 43303	Economics of Organizations	
ECON 44203	Behavioral Economics	
ECON 44303	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	
	Fall	Spring
MATH 24004 Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1)[1]	4	
ENGL 10103 Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3	
DASC 10003 Introduction to Data Science	3	
DASC 11004 Programming Languages for Data Science	4	
General Elective	3	
MATH 25004 Calculus II		4
ECON 21403 Basic Economics: Theory and Practice (Satisfies General Education Outcome 3.3)		3
ENGL 10303 Technical Composition II (ACTS Equivalency = ENGL 1023) (Satisfies General Education Outcome 1.2)		3
DASC 12004 Introduction to Object Oriented Programming for Data Science		4
DASC 12203 Role of Data Science in Today's World		3
Year Total:	17	17

Second Year	Units	
	Fall	Spring
DASC 25904 Multivariable Math for Data Scientists	4	
STAT 30133 Introduction to Probability[4] or INEG 23203 Probability and Stochastic Processes for Industrial Engineers	3	
DASC 22103 Data Visualization and Communication	3	
DASC 21103 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 20503 Business Foundations (DASC-only section required)		3
STAT 30043 Statistical Methods[4] or INEG 23104 Statistics for Industrial Engineers I		3-4
State Minimum Core Natural Science Elective with Lab (Satisfies General Education Outcome 3.4)[2]		4
DASC 22003 Data Management and Data Base		3
ECON 30303 Microeconomic Theory		3
Year Total:	16	16

Third Year	Units	
	Fall	Spring
DASC 21303 Data Privacy & Ethics (Satisfies General Education Outcome 5.1)	3	
DASC 31003 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	
ECON 31303 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
	Fall Spring
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   See DTSCBS PLAN
Demand for Program

Scheduled Program   2025-2026
Review Date

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
This is the addition of an Economics Analytics (ECAN) Concentration to the B.S. Data Science degree.	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.

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