BACHELOR OF SCIENCE, MAJOR IN DATA SCIENCE

Additional information: Reference the Program Landing Page (https://www.shsu.edu/programs/bachelor-of-science-in-data-science/) for additional information, such as cost, delivery format, contact information, or to schedule a visit.

Code	Title	Hours
Bachelor of Science, Major in Data Science		
Core Curriculum		
Component Area I (Communication)		6
Component Area II (Mathematics) [1]		3
Component Area III (Life and Physical Science) (Courses for Science Majors)		8
Component Area IV (Language, Philosophy, and Culture)		3
Component Area V (Creative Arts)		3
Component Area VI (U.S. History)		6
Component Area VII (Political Science/Government)		6
Component Area VIII (Social and Behavioral Sciences)		3
Component Area IX (Component Area Option)		4
Degree Specific Requirements		
MATH 1420	Calculus I [1]	4
Major: Foundation		
BANA 4373	Advanced Business Analytics for Economics and Business	3
COSC 1436	Programming Fundamentals I	4
COSC 1437	Programming Fundamentals II	4
COSC 3318	Data Base Management Systems	3
MATH 1430	Calculus II	4
MATH 3377	Introduction to Linear Algebra and Matrices	3
STAT 3379	Statistical Methods in Practice	3
STAT 3381	Sample Survey Methods	3
STAT 3382	Introduction to Statistical Computing	3
STAT 3385	Statistical Methods for Data Science	3
STAT 4371	Theory and Applications of Probability and Statistics I	3
STAT 4373	Nonparametric Statistics	3
STAT 4374	Regression Modeling & Analysis	3
STAT 4390	Introduction to Statistical Learning	3
Major: Concentration		
Select one concentration from below options: [2]		33-34
Statistics		
Computer Science		
Economics		
Minor: Not Required [3]		
Total Hours		**120-121**

1 MATH 1420 satisfies the Core Curriculum requirement for Component Area II (Mathematics) and one semester credit hour of the Core Curriculum requirement for Component Area IX (Component Area Option). MATH 1420 satisfies the prerequisite requirement for MATH 1430.

2 Select one Concentration (Statistics, Computer Science, or Economics) from the options below.

3 A minor is not required for this degree program; however, a student has the option to add a minor, but to do so additional semester credits hours may be needed above the degree program's stated total semester credit hours.

Notes

Students must earn a 2.0 minimum overall GPA in all coursework.

Students must meet a 2.0 minimum overall major GPA in all major coursework.

Students must earn a 2.0 minimum SHSU GPA in all coursework.

Students must meet a 2.0 minimum SHSU major GPA in all major coursework.

Code	Title	Hours
Major: Concentration (Statistics) [2]		
GEOG 2464	Introduction to Geographic Information Systems (GIS)	4
ECON 2300	Introduction To Economics [1]	3
or ECON 2301	Principles Of Macroeconomics	
or ECON 2302	Principles Of Microeconomics	
STAT 4372	Theory and Applications of Probability and Statistics II	3
Select three from the following:		9
STAT 3380	Statistical Design and Analysis of Experiments	
STAT 4370	Special Topics in Statistics	
STAT 4375	Quality Control & Reliability	
STAT 4376	Time Series and Forecasting	
STAT 4377	Introduction to Applied Bayesian Analysis	
Select three from the following:		9-10
MATH 2395	Discrete Mathematics	
MATH 2440	Calculus III	
MATH 3300	Introduction to Mathematics Thought	
MATH 3350	Theory of Interest	
MATH 3376	Differential Equations	
MATH 3394	Numerical Methods	
MATH 4361	Introductory Analysis	
MATH 4366	Elementary Analysis	
MATH 4370	Special Topics in Mathematics	
General Electives		8
Total Hours		**33-34**

[1] ECON 2300, ECON 2301, and ECON 2302 satisfy the Core Curriculum requirement for Component Area VIII (Social and Behavioral Sciences).

Code	Title	Hours
Major: Concentration (Computer Science) [2]		
COSC 3337	Information Systems Design & Management	3
COSC 4320	System Modeling and Simulation	3
ECON 2300	Introduction To Economics [1]	3
or ECON 2301	Principles Of Macroeconomics	
or ECON 2302	Principles Of Microeconomics	
Select two from the following:		6
COSC 2347	Special Topics/Programming	
COSC 3319	Data Structures and Algorithms	
COSC 4314	Data Mining	
COSC 4340	Special Topics in Computer Science	
Select three from the following:		9
STAT 3380	Statistical Design and Analysis of Experiments	
STAT 4370	Special Topics in Statistics	
STAT 4375	Quality Control & Reliability	
STAT 4376	Time Series and Forecasting	
STAT 4377	Introduction to Applied Bayesian Analysis	
Select two from the following:		6-7
MATH 2395	Discrete Mathematics	
MATH 2440	Calculus III	

MATH 3300	Introduction to Mathematics Thought	
MATH 3350	Theory of Interest	
MATH 3376	Differential Equations	
MATH 3394	Numerical Methods	
MATH 4361	Introductory Analysis	
MATH 4366	Elementary Analysis	
MATH 4370	Special Topics in Mathematics	
MATH 4372	Theory and Applications of Probability and Statistics II	
General Electives		6
Total Hours		**33-34**

[1] ECON 2300, ECON 2301, and ECON 2302 satisfy the Core Curriculum requirement for Component Area VIII (Social and Behavioral Sciences).

Code	Title	Hours
Major: Concentration (Economics) [2]		
ECON 2301	Principles Of Macroeconomics [1]	3
ECON 2302	Principles Of Microeconomics [1]	3
ECON 3357	Intermediate Microeconomics	3
ECON 3372	Intermediate Macroeconomics	3
ECON 4362	Econometrics for Business	3
Select three from the following:		9
ECON 3000-4000 or BANA 4000		
Select two from the following:		6-7
MATH 2395	Discrete Mathematics	
MATH 2440	Calculus III	
MATH 3300	Introduction to Mathematics Thought	
MATH 3350	Theory of Interest	
MATH 3376	Differential Equations	
MATH 3394	Numerical Methods	
MATH 4361	Introductory Analysis	
MATH 4366	Elementary Analysis	
MATH 4370	Special Topics in Mathematics	
MATH 4372	Theory and Applications of Probability and Statistics II	
General Electives		6
Total Hours		**33-34**

[1] ECON 2301 and ECON 2302 satisfy the Core Curriculum requirement for Component Area VIII (Social and Behavioral Sciences).

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First Year

Fall	Hours	Spring	Hours
Component Area III		4 Component Area III	4
ENGL 1301[1]		3 ENGL 1302[1]	3
HIST 1301[2]		3 HIST 1302[2]	3
MATH 1420[3]		4 MATH 1430	4
		14	**14**

Second Year

Fall	Hours	Spring	Hours
Component Area IV		3 Concentration[5]	3 - 4
Component Area IX		3 COSC 1437	4
COSC 1436		4 POLS 2306[4]	3

POLS 2305[4]	3	STAT 3382	3
STAT 3379	3	STAT 3385	3
	16		**16-17**

Third Year

Fall	Hours	Spring	Hours
Component Area V	3	Component Area VIII[6]	3
COSC 3318	3	Concentration [5]	9
MATH 3377	3	STAT 4373	3
STAT 3381	3		
STAT 4371	3		
	15		**15**

Fourth Year

Fall	Hours	Spring	Hours
Concentration [5]	9	BANA 4373	3
STAT 4374	3	Concentration [5]	12
STAT 4390	3		
	15		**15**

Total Hours: 120-121

1 ENGL 1301 and ENGL 1302 satisfy the Core Curriculum requirement for Component Area I (Communications).
2 HIST 1301 and HIST 1302 satisfy the Core Curriculum requirement for Component Area VI (U.S. History).
3 MATH 1420 satisfies the Core Curriculum requirement for Component Area II (Mathematics) and fulfills the prerequisite requirement for MATH 1430.
4 POLS 2305 and POLS 2306 satisfy the Core Curriculum requirement for Component Area VII (Political Science/Government).
5 Select one Concentration (Statistics, Computer Science, or Economics) from the options below.
6 ECON 2300, ECON 2301, and ECON 2302 satisfy the Core Curriculum Requirement for Component Area VIII (Social and Behavioral Sciences).

Notes

Students must earn a 2.0 minimum overall GPA in all coursework.

Students must meet a 2.0 minimum overall major GPA in all major coursework.

Students must earn a 2.0 minimum SHSU GPA in all coursework.

Students must meet a 2.0 minimum SHSU major GPA in all major coursework.

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Code	Title	Hours
Major: Concentration (Statistics) [5]		
GEOG 2464	Introduction to Geographic Information Systems (GIS)	4
ECON 2300	Introduction To Economics [1]	3
or ECON 2301	Principles Of Macroeconomics	
or ECON 2302	Principles Of Microeconomics	
STAT 4372	Theory and Applications of Probability and Statistics II	3
Select three from the following:		9
STAT 3380	Statistical Design and Analysis of Experiments	
STAT 4370	Special Topics in Statistics	
STAT 4375	Quality Control & Reliability	
STAT 4376	Time Series and Forecasting	
STAT 4377	Introduction to Applied Bayesian Analysis	
Select three from the following:		9-10
MATH 2395	Discrete Mathematics	
MATH 2440	Calculus III	

MATH 3300	Introduction to Mathematics Thought	
MATH 3350	Theory of Interest	
MATH 3376	Differential Equations	
MATH 3394	Numerical Methods	
MATH 4361	Introductory Analysis	
MATH 4366	Elementary Analysis	
MATH 4370	Special Topics in Mathematics	
General Electives		8
Total Hours		**33-34**

[1] ECON 2300, ECON 2301, and ECON 2302 satisfy the Core Curriculum requirement for Component Area VIII (Social and Behavioral Sciences).

Code	Title	Hours
Major: Concentration (Computer Science) [5]		
COSC 3337	Information Systems Design & Management	3
COSC 4320	System Modeling and Simulation	3
ECON 2300	Introduction To Economics [1]	3
or ECON 2301	Principles Of Macroeconomics	
or ECON 2302	Principles Of Microeconomics	
Select two from the following:		6
COSC 2347	Special Topics/Programming	
COSC 3319	Data Structures and Algorithms	
COSC 4314	Data Mining	
COSC 4340	Special Topics in Computer Science	
Select three from the following:		9
STAT 3380	Statistical Design and Analysis of Experiments	
STAT 4370	Special Topics in Statistics	
STAT 4375	Quality Control & Reliability	
STAT 4376	Time Series and Forecasting	
STAT 4377	Introduction to Applied Bayesian Analysis	
Select two from the following:		6-7
MATH 2395	Discrete Mathematics	
MATH 2440	Calculus III	
MATH 3300	Introduction to Mathematics Thought	
MATH 3350	Theory of Interest	
MATH 3376	Differential Equations	
MATH 3394	Numerical Methods	
MATH 4361	Introductory Analysis	
MATH 4366	Elementary Analysis	
MATH 4370	Special Topics in Mathematics	
MATH 4372	Theory and Applications of Probability and Statistics II	
General Electives		6
Total Hours		**33-34**

[1] ECON 2300, ECON 2301, and ECON 2302 satisfy the Core Curriculum requirement for Component Area VIII (Social and Behavioral Sciences).

Code	Title	Hours
Major: Concentration (Economics) [5]		
ECON 2301	Principles Of Macroeconomics [1]	3
ECON 2302	Principles Of Microeconomics [1]	3
ECON 3357	Intermediate Microeconomics	3
ECON 3372	Intermediate Macroeconomics	3

ECON 4362	Econometrics for Business	3
Select three from the following:		9
ECON 3000-4000 or BANA 4000		
Select two from the following:		6-7
MATH 2395	Discrete Mathematics	
MATH 2440	Calculus III	
MATH 3300	Introduction to Mathematics Thought	
MATH 3350	Theory of Interest	
MATH 3376	Differential Equations	
MATH 3394	Numerical Methods	
MATH 4361	Introductory Analysis	
MATH 4366	Elementary Analysis	
MATH 4370	Special Topics in Mathematics	
MATH 4372	Theory and Applications of Probability and Statistics II	
General Electives		6
Total Hours		**33-34**

[1] ECON 2301 and ECON 2302 satisfy the Core Curriculum requirement for Component Area VIII (Social and Behavioral Sciences).

The Texas Higher Education Coordinating Board (THECB) marketable skills initiative is part of the state's **60x30TX plan** and was designed to help students articulate their skills to employers. Marketable skills are those skills valued by employers and/or graduate programs that can be applied in a variety of work or education settings and may include interpersonal, cognitive, and applied skill areas.

The BS in Data Science is designed to provide graduates with the following marketable skills:

- Use critical thinking skills, along with inductive and deductive reasoning, to translate substantive questions into well-defined problems requiring effective, on time solutions.
- Develop the competence and capacity for data collection, data wrangling, and data visualization techniques for pursuing real world problems.
- Utilize programming and database management skills to organize and analyze data effectively, including capabilities for developing statistical/predictive modeling.
- Apply statistical/machine learning techniques for model-building and testing, while also being effective in applying other data science methodologies to provide actionable insights.
- Demonstrate efficient and effective written and oral communication skills necessary for presenting problem solutions and results to both data-oriented and non-data-oriented stakeholders.

These skills will be introduced and continually refined, at the appropriate developmental levels, as students progress through the curriculum.