SSCI 008: INTRODUCTION TO DATA SCIENCE

Proposer:

Name:	Email:
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Effective Term:
Fall 2021

Credit Status:
Credit - Degree Applicable

Subject:
SSCI - Social Science

Course Number:
008

Catalog Title
Introduction to Data Science

Catalog Description
Introduction to Data Science is a survey course introducing the essential elements of data science. Topics include: data collection and management, summarizing and visualizing data, basic statistical inference, and machine learning. Students will also gain experience using a computer programming language (e.g. R, Python, etc.) to carry out basic statistical modeling and analysis.

Advisory on Recommended Preparation:
MATH 230 or equivalent college course with a minimum grade of C

Method of Instruction:
Distance Education
Lecture and/or Discussion

Course Units/Hours:

Course Units Minimum:
4

Lecture Hours Minimum (week)
4

Total Contact Hours Minimum (semester)
70

Total Outside Hours Minimum (semester)
140

Total Student Learning Minimum Hours (semester)
210

Repeatability:
No

Open Entry/Exit:
No

Field Trips:
Not Required

Grade Mode:
Standard Letter

TOP Code:
170100 - Mathematics, General

SAM Code:
E - Non-Occupational

Course Content

Methods of Assessment:
Essay quizzes or exams
Mulitple choice tests
Oral presentations
Portfolio Evaluation
Problem solving assignments or activities
Problem solving quizzes or exams
Project
Short answer quizzes or exams
Skill demonstrations
Written essays or extended papers

Course Topics:

	Course Topics
1	What is Data Science?
2	Samples and populations, statistics and parameters
3	Data types, scales of measurement
4	Data collection and structures
5	Visualizing data: tables, histograms, plots, and charts
6	Central tenancy and variability
7	Probability
8	Sampling and sampling distributions
9	Decisions and uncertainty
10	A/B testing
11	Confidence Intervals
12	Correlation
13	Linear regression
14	Algebraic operations, functions, and algorithms using a computer programming language
15	Graphical representations of data using a computer programming language

Course Objectives:

	Course Objectives
1	Interpret categorical and quantitative data
2	Make Inferences and justify conclusions
3	Conditional probability and the rules of probability
4	Use probability to make decisions
5	Use a computer programming language to carry out basic statistical modeling and analysis.

Course Outcomes:

	Course Outcomes
1	After completing this course students will be able to understand how data are used by professionals to address real-world problems.

2	After completing this course students will be able to analyze statistical graphics to identify patterns in data and to connect these patterns back to the real world.
3	After completing this course students will be able to learn to analyze data. Examples of such analysis may include, but are not limited to: posing questions that can be answered by considering relations among variables in a data set, use collected data to generate hypotheses for future data collection, critically evaluate shortcomings and strengths in the data and the data collection process, and evaluate hypotheses.

Assignments:

Assignment Type:	Details
Reading	30 - 50 textbook pages per week.
Homework	Make a dotplot of the data you and your classmates created. Make sure you label your axes and give your plot a title.
Writing	Summarize how to read and interpret basic multiple variable plots.

Textbooks or other support materials

Resource Type:	Details
Books	Saltz, J. and Stanton, J. (2017). An introduction to data science. 1st ed. Sage Publications.

Transferable to CSU
Yes - Approved

CSU General Education
Transferable to CSU

This course will also be proposed for UC transfer.
Yes

Transferable to UC
Yes - Approved

UC/IGETC General Education
Transferable to UC

COS General Education
COS GE A2: Oral Communication/Analytic Thinking

Other Degree Attributes
Degree Applicable
Not a Basic Skills Course

Distance Learning Addendum
DLA-SSCI108-1.pdf

Banner Title:
Introduction to Data Science

Curriculum Committee Approval Date:
10/01/2020

Academic Senate Approval Date:
10/14/2020

District Governing Board Approval Date:
11/09/2020

Course Control Number:
CCC000608221