CIS 081: INTRODUCTION TO DATA ANALYTICS

Originator
maflores

Co-Contributor(s)

Name(s)
Marhuenda-Donate, Felix
Flores, Martin

Justification / Rationale
This course is being created to conform with the CSUSB transfer degree curriculum

Effective Term
Fall 2023

Credit Status
Credit - Degree Applicable

Subject
CIS - Computer Information Systems

Course Number
081

Full Course Title
Introduction to Data Analytics

Short Title
DATA ANALYTICS

Discipline

Disciplines List
Computer Information Systems (Computer network installation, microcomputer technology, computer applications)

Modality
Face-to-Face
100% Online
Hybrid

Catalog Description
This course presents a gentle introduction to the concepts of data analysis, the role of a Data Analyst, and the tools that are used to perform daily functions. The student will gain an understanding of the data ecosystem and the fundamentals of data analysis, such as data gathering or data mining. The student will then learn the soft skills that are required to effectively communicate your data to stakeholders, and how mastering these skills can give you the option to become a data-driven decision-maker.

This course will help the student differentiate between the roles of a Data Analyst, Data Scientist, and Data Engineer. They will learn the responsibilities of a Data Analyst and exactly what data analysis entails. They will be able to summarize the data ecosystem, such as databases and data warehouses. You will then uncover the major vendors within the data ecosystem and explore the various tools on-premise and in the cloud. Continue this exciting journey and discover Big Data platforms such as Hadoop, Hive, and Spark. By the end of this course, you will be able to visualize the daily life of a Data Analyst, understand the different career paths that are available for data analytics, and identify the many resources available for mastering this profession.

Schedule Description
Throughout this course, the student will learn the key aspects of data analysis. They will begin to explore the fundamentals of gathering data, and learning how to identify your data sources. They will then learn how to clean, analyze, and share your data with the use of visualizations and dashboard tools. This all comes together in the final project where it will test their knowledge of the course material, explore what it means to be a Data Analyst, and provide a real-world scenario of data analysis.
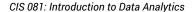
This course does not require any prior data analysis, spreadsheet, or computer science experience. All you need to get started is basic computer literacy, high school level math, and access to a modern web browser such as Chrome or Firefox.

Lecture Units
2
Lecture Semester Hours
36

Lab Units
1
Lab Semester Hours
54

In-class Hours
90

Out-of-class Hours
72

Total Course Units
3
Total Semester Hours
162

Prerequisite Course(s)
CIS 080
CIS 087

Required Text and Other Instructional Materials
Resource Type
Book (Recommended)

Author
Kris Jamsa

Title
Introduction to Data Mining and Analytics

Edition
1st

Publisher
Jones Bartlett Learning

Year
2020

Resource Type
Web/Other

Year
2020

Description
CompTIA Data+

Resource Type
Instructional Materials

Title
CompTIA Data+

Edition
1st

Publisher
uCertify

Year
202

Description
uCertify's CompTIA Data+ course and lab are designed to come in handy as a CompTIA Data+ study guide. uCertify's CompTIA Data+ is a complete learning path for you by including all the subject areas on which the DA0-001 exam is based and it contains performance labs to give you a complete understanding of data analysis and business intelligence reporting roles. The course enhances the latest knowledge and skills of data professionals

---

Class Size Maximum
35

Entrance Skills
CIS-080 Database Management

Entrance Skills
CIS-087 Python

Course Content
Chapter 1: Introduction
Chapter 2: Today's Data Analyst
Chapter 3: Understanding Data
Chapter 4: Databases and Data Acquisition
Chapter 5: Data Quality
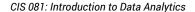Chapter 6: Data Analysis and Statistics
Chapter 7: Data Analytics Tools
Chapter 8: Data Visualization with Reports and Dashboards
Chapter 9: Data Governance

Lab Content
- Understanding Data Analytics Techniques
- Understanding Data Types
- Identifying Categories of Data
- Understanding Common Data Structures
- Creating a Data Model through ERD
- Normalizing Data from 2NF to 3NF
- Normalizing Data from 1NF to 2NF
- Normalizing Unnormalized Data to 1NF
- Sorting Data
- Removing Unnecessary Data
- Updating Existing Data
- Retrieving Specific Data
- Eliminating Redundant Data
- Concatenating Data
- Understanding Data Quality

- Performing Data Analysis
- Understanding Descriptive Statistics
- Saving Data in Excel
- Representing Data
- Analyzing Data using Python
- Identifying SQL Commands in Data Analytics
- Visualizing Data Using a Line Chart
- Visualizing Data Using a Histogram
- Visualizing Data Using a Bar Chart
- Understanding Laws in Data Governance
-

Course Objectives

	Objectives
Objective 1	Recognize key characteristics of big data
Objective 2	Learn data analytics lifecycle
Objective 3	Comprehend technology foundations and essential characteristics of cloud computing
Objective 4	Compare and contrast data storage systems and data centers

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	The students will be Programming Data Mining & Analytics
Outcome 2	The student will perform Data Preprocessing, Cleansing
Outcome 3	The student will demonstrate Clustering, Classification& Predictive Analytics

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Discussion	Weekly discussion topics on hacking case analysis.
Technology-based instruction	Utilize simulations and other IT equipment.
Collaborative/Team	Students will work in groups to determine possible analysis procedures.
Participation	Students will be engaged with daily classroom or online forum participation.
Lecture	Attend Instructor Lectures
Observation	Watch the Instructor demonstrate Data Analysis techniques
Activity	Attempt to perform an analysis of big data provided to you

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Written online assignments with topics relevant to the curriculum.	In and Out of Class
Group activity participation/observation	Class and individual projects such as gathering data analysis from a company	In and Out of Class
Presentations/student demonstration observations	Hands-on-projects and a combination of examinations, presentations, discussions, or problem-solving assignments. Presentations of projects within specific modules.	In and Out of Class
Computational/problem-solving evaluations	Solve the labs dealing with big data analytics	In and Out of Class
Laboratory projects	Laboratory projects/performance using data analysis tools	In and Out of Class
Tests/Quizzes/Examinations	Testing of each learning module.	In and Out of Class

| Mid-term and final evaluations | Final examination/skills assessment in industry-recognized security certification | In and Out of Class |

Assignments

Other In-class Assignments
- Create a Team to complete a Case Study Project

Other Out-of-class Assignments
- Case Study 1: Data Mining Techniques for Optimizing Inventories for Electronic Commerce
- Case Study 2: Medicorp - Pharmaceutical Distribution Company
- Case Study 3: Steelcorp - Iron and Steel Company

Grade Methods
Letter Grade Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %
100
On-campus %
100

What will you be doing in the face-to-face sections of your course that necessitates a hybrid delivery vs a fully online delivery?
We will be using materials provided by the publisher and others that professionals use in the industry. We will maintain proper vigilance to ensure our materials are relevant, cost-effective, and appropriate for online instruction

Instructional Materials and Resources

If you use any other technologies in addition to the college LMS, what other technologies will you use and how are you ensuring student data security?
We will be using several different programs to conduct lab simulations of data analysis

If used, explain how specific materials and resources outside the LMS will be used to enhance student learning.
The course contains simulations of data to be analyzed. These simulations will give students the "hands-on" experience they need to be successful in the class and in finding a career as a Data Analyst.

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:
Discussion forums with substantive instructor participation
Online quizzes and examinations
Private messages
Regular virtual office hours
Timely feedback and return of student work as specified in the syllabus
Video or audio feedback
Weekly announcements

External to Course Management System:
Direct e-mail
Posted audio/video (including YouTube, 3cmediasolutions, etc.)
Synchronous audio/video
Telephone contact/voicemail

For hybrid courses:
Scheduled Face-to-Face group or individual meetings

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.

There will be weekly discussions regarding topics related to the course with appropriate instructor participation.
Students will create logs describing the process to diagnose an issue. These logs are uploaded to the LMS and receive appropriate instructor feedback.

If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.

As described above, provides a substitute for the hands-on hardware that f2f courses have when dealing with data analysis.

We have researched various approaches to teaching this course and have compiled them into this course. We have strongly considered the fact that this course may have to be taught online primarily considering the current situation.

Other Information

Comparable Transfer Course Information

University System
CSU

Campus
CSU San Bernardino

Course Number
2510

Course Title
Big Data Analytics

Catalog Year
2021

MIS Course Data

CIP Code
11.1003 - Computer and Information Systems Security/Auditing/Information Assurance.

TOP Code
079900 - Other Information Technology

SAM Code
C - Clearly Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Credit Course
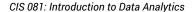
Approved Special Class
Not special class

Noncredit Category
Not Applicable, Credit Course

Funding Agency Category
Not Applicable

Program Status

Program Applicable

Transfer Status

Transferable to CSU only

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

No

Approvals

Curriculum Committee Approval Date

10/20/2022

Academic Senate Approval Date

10/27/2022

Board of Trustees Approval Date

12/16/2022

Chancellor's Office Approval Date

12/18/2022

Course Control Number

CCC000635052

Programs referencing this course

Computer Information Systems Associate of Science and Transfer Preparation (http://catalog.collegeofthedesert.eduundefined/?key=221)

Computer Information Systems AS Degree for Employment Preparation (http://catalog.collegeofthedesert.eduundefined/?key=61)