Georgia CTAE

Data Science I (11.08100) (2021)

Adopted 2021

Demonstrate how Data Science can be used to impact school, work, and leisure time DS1-1	1. **Demonstrate how data science impacts their lives.** DS1-1.1 2. **Identify and differentiate between different data governance standards.** DS1-1.2 3. **Identify ethical issues in data science.** DS1-1.3 4. **Give examples of how Data Science is used in the real world** DS1-1.4 5. **Identify and compare potential bias issues in data science** DS1-1.5
Explore, research, and present findings on data science careers DS1-2	1. **Research post-secondary options for data science careers, including industry certifications, college options and organizational training.** DS1-2.1 2. **Identify and distinguish different skills sets used in data science** DS1-2.2 3. **Identify different job opportunities within the data science field and how such job types are interrelated** DS1-2.3
Formulate Questions to Clarify the problem at hand and formulate 1 or more questions that can be answered with data analysis DS1-3	1. **Identify the objectives of data and information management** DS1-3.1 2. **Determine whether a problem involves categorical or quantitative data** DS1-3.2 3. **Frame a statistical question of interest in terms of measurable data** DS1-3.3
Design and implement a plan to collect appropriate data to answer a research question DS1-4	1. **Define "spreadsheet" and "database" and describe ways they may be used.** DS1-4.1 2. **Describe the factors that must be considered in distributing data effectively and how a simple model can be used to obtain at least a first-cut distribution** DS1-4.2
Analyze data by selecting appropriate graphical and numerical methods DS1-5	1. **Implement spreadsheet functions (i.e., preset formulas), formulas, conditional formatting, cell referencing, and pivot tables.** DS1-5.1

	2. Create data tables and graphical representations of data including two-way tables, scatterplots, bar graphs, histograms, stem plots and dot plots from a spreadsheet software. DS1-5.2
	3. Describe the characteristics of data tables and how they benefit end user experiences DS1-5.3
Identify the general concepts of databases/data tools and how to utilize design thinking to produce solutions that are clean and thoughtful. DS1-6	1. Identify and distinguish between variations of techniques (Artificial Intelligence, Machine Learning, etc.) DS1-6.1
	2. Provide definitions of key terms and concepts that describe the database environment DS1-6.2
	3. Describe and build the major components of the database environment and explain how these components interact with each other DS1-6.3
	4. Assess end user data and information requirements and develop a logical model to fit those requirements DS1-6.4
Build a database based on designed model, identify implementation policies and procedures, and establish plans for testing/debugging a data science solution. DS1-7	1. Describe a Database Management System Language (DMBS) like SQL and summarize its basic operators. DS1-7.1
	2. Formulate single table DMBS (SQL) queries. DS1-7.2
	3. Formulate DMBS (SQL) queries that use functions. DS1-7.3
	4. Use of the group by and order by clauses in DMBS (SQL) queries DS1-7.4
Deploy a data science solution in a production environment, follow implementation procedures, and develop a plan for long term maintenance. DS1-8	1. Describe the differences between the process of deployment and implementation of a solution. DS1-8.1
	2. Understand the components and key steps to a successful deployment DS1-8.2
	DS1-9. Analyze results by interpreting the information provided by the data analysis and how its interpretation supports possible answers to the question or problem being investigated. DS1-9
	1. Utilize visual reporting and statistic tools to perform 1 and 2 sample t-tests and linear regression testing using technology (not by hand) DS1-9.1
	2. Summarize results. DS1-9.2
	3. Identify and express areas for further study or investigation based on the analysis of data DS1-9.3
	4. Create a simple dashboard with appropriate tables and charts to show the data that is being analyzed DS1-9.4