IT – Data & Analytics Specialist Competencies

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10-152-118 Intro to Computers & Programming

Course Competencies

Explore information technology, software development, and data analytics.
- Identify the physical components of a computer.
- Detail the function of the physical components of a computer.
- Describe how hardware and software interact.
- Classify programming languages.
- Describe different types of software development.
- Describe connections between software and data analytics and your life.

Demonstrate basic operating system usage.
- Execute commands using a CLI.
- Utilize common operating system shortcuts.
- Distinguish between text and binary files.

Manipulate computer file systems effectively.
- Manage files and folders using a GUI.
- Navigate a file system using a CLI.
- Manage files and folders using a CLI.
- Distinguish between absolute and relative paths.

Develop Information Technology problem solving skills.
- Compare problem solving models.
- Identify key elements in problem solving.
- Examine analytical techniques to solve a problem.
- Explore creative ideas for solving problems.
- Utilize development tools (flowcharts, pseudocode) to design solutions.
- Solve basic logic problems.

Apply fundamental cybersecurity skills.
- Describe industry standards for securing account access.
- Utilize best practices for password/passkey creation.
- Identify phishing indicators.
- Describe types of social engineering.

Solve programming logic problems using operators & comparison.
- Practice solving equations using arithmetic, relational, and logical operators.
- Determine the Boolean state based on conditional logic.

Simulate common computer programming constructs.

Explain the concept and use of an array.
Identify sequential program flow.
Identify decision (selection) program flow.
Identify iterative (repetitive) program flow.

Discuss introductory JavaScript concepts and source control practices.

Explore developer tools in a browser.
Translate arithmetical equations into JavaScript operators.
Understand the concept of source control and its importance in software development.
Introduce GitHub to host programming documents.

10-152-132 Database 1

Course Competencies

Investigate the impact of database systems on today's world.

Describe the function and purpose of a database.
Conceptualize the uses and users of databases in today's world.
Identify with the history of data and databases.
Explain the components of a database system.

Compare primary database models.

Identify primary database models.
Explain the purpose of various standard diagram elements.
Read a Relational Model diagram

Investigate Relational database theory.

Identify Relational Terminology
Adhere to Rules for Relational Tables
Identify valid Table/Field names

Develop Database Diagrams.

Determine Field names and data types
Determine required Primary/Foreign Keys to link tables
Utilized accurate Data Types for various values of data
Define the Relationship Cardinality between tables

Utilize a database management system.

Utilize a database management interface (App based or online based).
Restore/Open database files.
Analyze console messages to determine causes of any issues reported

Generate basic SQL retrieval queries.

Retrieve information from a database
Identify the basic components of a Select Statement
Apply filters using the Where clause
Sort the output results
Utilize basic SQL functions

Generate aggregate SQL retrieval queries.

Utilize a Group By Clause in a select query
Utilize a group filter using the Having Clause
Apply aggregate SQL functions to calculate new data

Generate multi-table SQL retrieval queries.

Identify the components of a Join statement
Develop a query using an Inner Join
Develop a query using an Outer Join
Use SQL scalar functions to calculate new data

Generate multi-table aggregate SQL retrieval queries.

Use a GROUP BY with multiple tables
Use functions to calculate new information based on data from multiple tables

Use JOINs to gather data from multiples tables

Utilize Sub-Queries within SQL retrieval queries

Identify when to use a Sub-Query
Develop a Sub-Query to pre-calculate a set of data that can be used by the Primary Query
Develop a Sub-Query to be used to filter a set of data via the WHERE clause of the Primary Query
Utilize the UNION command to merge data sets

10-156-101 Systems Analysis and Design

Course Competencies

Define Systems Analysis and System Development Life Cycle (SDLC) role in the Information Technology organization.

Describe the impact of information technology on society.
Describe the five main components of an information system.
Explain Internet business strategies and relationships, including B2C and B2B.
Understand the seven types of information systems used in business.
Describe the types of information the four classes of users need.
Distinguish among structured analysis, object-oriented analysis, and agile systems development methods.
List the tools that enable the systems analyst to develop, manage, and maintain large-scale information systems.
Explain the seven main functions of the information technology department.
Describe the roles and responsibilities of a systems analyst within the enterprise.

Explain the elements and processes in the System Planning phase of the SDLC.

Describe the strategic planning process.
Conduct a SWOT analysis.
Explain how tools can support strategic planning.
Explain the concept of a business case.
Summarize the six main reasons for systems requests.
Describe the two factors affecting systems projects.
Explain how systems requests are processed, assessed, and prioritied.
Conduct a preliminary investigation.
Explain project planning, scheduling, monitoring, and reporting.
Identify all the critical components in a project plan (Gantt chart).
Describe project management software and how it can be of assistance.
Create a risk management plan.
Describe why projects sometimes fail.

Describe the actions and steps taken in the Systems Analysis phase of the SDLC.

Explain system requirements and the challenges associated with the requirements engineering process.
Apply team-based requirements engineering techniques, including joint application development (JAD), rapid application development (RAD), and agile methods.
Develop a fact-finding plan for gathering requirements.
Explain requirements gathering techniques, including interviews, document review, observation, questionnaires and surveys, brainstorming, sampling, and research.
Utilize different requirements representation techniques, including tools, natural language, diagrams, and models.
Explain data flow diagrams.
Create a data dictionary.
Demonstrate how object-oriented analysis can be used to describe an information system.
Explain what an object represents in an information system, including the concepts of attributes, methods, messages, and classes.
Draw an object relationship diagram.
Demonstrate use of the UML to describe object-oriented system.
Explain in-house software development verses vendor packages.

Explain the concerns and advantages of offshoring and outsourcing.
Execute the five steps in the software acquisition process and the request for proposal (RFP).

Illustrate the elements involved in the Systems Design phase of the SDLC.

Summarize the concept of user interface design and list the 10 guidelines for user interface design.
Discuss output and input technology issues including source documents and printed outputs.
Explain emerging user interface trends, including modular design, responsive web design, and prototypes.
Explain basic data design concepts, including data structures, DBMSs, and the evolution of the relational database model.
Draw entity-relationship diagrams.
Provide a checklist of issues to consider when selecting a system architecture.
Describe the impact of the Internet on system architecture verses the traditional client/server model.
Explain online and batch processing.
Describe network models, networking devices, and wireless networking.

Identify the steps of the System Implementation phase of the SDLC.

Explain quality assurance and three techniques to help improve the finished product.
Outline application development.
Apply structured development.
Apply object-oriented development.
Apply agile development.
Explain coding.
Explain unit, integration, and system testing.
Differentiate between program, system, operations, and user documentation.
Explain the role of online documentation.
Describe the five tasks involved in system installation.

Recognize the factors involved in the Systems Support & Security phase of the SDLC.

Describe user support activities.
Explain seven strategies and techniques for maintenance management.
Describe techniques for system performance management.
Explain system security concepts and common attacks against the system.
Explain three tasks related to risk management concepts.
Assess system security at six levels: physical security, network security, application, security, file security, user security, and procedural security.
Describe backup and disaster recovery.
List six factors indicating that a system has reached the end of its useful life.
List future challenges and opportunities for IT professionals.

10-103-170 Microsoft Excel

Course Competencies

Prepare Excel documentations for email communication.

Prepare a signature
Prepare a contact
Schedule a meeting using an attached Excel document
Complete steps to share calendar
Use email functions to organize email communications and Excel attachments

Prepare data using Microsoft Excel.

Produce new spreadsheets
Edit existing spreadsheets
Manipulate spreadsheet data
Explore formulas and functions
Use print features

Format worksheets.

- Apply format to values
- Change data size, styles, and alignment
- Manipulate columns and rows
- Apply colors and conditional formatting
- Modify worksheets

Use formulas and functions.

- Construct an advanced formula
- Round data using a function
- Compute a value with a function
- Use date function
- Practice worksheet calculations

Illustrate data using charts and graphics.

- Explore a chart
- Produce a chart
- Modify a chart
- Interpret data
- Examine data trends

10-152-101 Programming Fundamentals

Course Competencies

Explain the process of application development.

- Review basic computer concepts
- Examine the stages of software development past and present.
- Explore the difference between compilers and interpreters
- Identify types of programs and programming languages
- Compare the terms "logic" and "syntax"
- Explain the importance of integrating testing into the design process

Apply logic and problem-solving tools.

- Compare the terms "logic" and "syntax"
- Discuss the concepts of input, output, and assignment
- Use pseudocode to design a solution algorithm
- Draw a flowchart to solve a business problem
- Explore the use of arithmetic operators and relational operators
- Use IF-Else constructs to make decisions
- Use loops with counters and accumulators in pseudo-code and flow charts

Use development tools for program design, development, and debugging.

- Configure a text editor for JavaScript development
- Describe the types of errors that may be encountered during program testing
- Debug JavaScript code
- Use the JavaScript Console
- Investigate resources for JavaScript
- Use the console to explore JavaScript code

Demonstrate the correct use of variables and operators.

- Demonstrate the correct use of relational operators
- Work with a variety of variable types, including "string" and "integer"
- Use compound conditions to make decisions
- Use test plans to design correct logic
- Use pseudocode to design correct logic

Develop decision programming code guided by tests.

- Use the IF decision structure
- Use the IF/Else decision structure
- Use nested IF and IF/Else statements to solve complex decisions
- Explore the switch statement

Identify alternatives to decision structures using data structures
Develop test plans to design decision logic
Use pseudocode to design decision logic

Develop repeat programming code guided by tests.

Develop code that uses counted loops
Develop code that uses uncounted loops
Explain when to use a for loop or a while loop
Develop test plans to design looping logic.
Use pseudocode to design looping logic.
Describe the function of counters and accumulators
Debug errors in looping code

Incorporate data structures and functions to improve program maintainability and readability.

Use arrays in a program
Use Hashes (dictionaries) in a program
Break programs into smaller functions
Create functions that return values

10-152-136 Database 2

Course Competencies

Explain the evolution of databases and Database Management Systems (DBMS).

Identify database terminology
Explore the history of databases
Identify the components of a database system
Compare the software, database structure, and terminology associated with the three major database technologies
Investigate current and future trends in database usage

Manage a database development environment.

Investigate the features of Database Management Systems (DBMS)
Install a DBMS
Configure a DBMS
Use DBMS features
Manage database users

Construct a database using relational technology standards and best practices.

Define key relational technology terms
Review relational technology standards
Convert a data model into a working relational database
Create and populate a multi-table relational database
Generate complex Structured Query Language (SQL) queries.

Generate complex Structured Query Language (SQL) queries.

Write SQL retrieval queries
Write retrieval queries that access data from multiple tables using a variety of methods to join tables
Compose a nested query
Create a table using SQL code
Manipulate the data in a table using SQL code
Write and run SQL scripts
Explore SQL functions and computed columns for math operations

Model the data used in a business process.

Review strategies for analysis and user requirements collection
Practice requirements analysis techniques
Identify basic data relationships
Examine the components of an Entity Relationship Diagram
Draw an Entity Relationship Diagram (ERD)
Use a computerized diagramming tool (Dia or Visio)

Design a database.

- Examine database design tools and methodologies
- Incorporate elements of a “good” database design
- Transform an ERD into a relational model
- Practice normalization to the third normal form
- Discuss the importance of post-normalization data modeling

Test a database design.

- Discuss the ramifications of database testing
- Identify the components in a test plan
- Conduct database testing
- Document test results
- Compile test result conclusions

Specify methods of improving database function/performance.

- Explore common performance setbacks in databases
- Investigate methods of query optimization
- Compare stored procedures and scripts

10-156-103 BI Data 1 - Paginated

Course Competencies

Explain the historical practices, present practices, and future predictions of data presentation and reporting

- Identify the evolution of data presentation
- Explain data presentation terms
- Research a reporting software package
- Utilize a new reporting software package
- Describe the business value and features of Microsoft Power BI Report Builder

Utilize the Microsoft SQL Server database and SQL Server Management Studio software to access data for data presentation

- Install SQL Server Developer database
- Install SQL Server Management Studio
- Restore a backup of a database into SQL Server Developer
- Create a SQL Server database
- Create a SQL Server table
- Enter data into a SQL Server table
- Run a SQL script in SQL Server Management Studio
- Query a table in SQL Server Management Studio

Interact with open database connectivity, ODBC, and ODBC compliant software to connect data management software to a database

- Configure ODBC 64-bit Data Source
- Connect to an ODBC Data Source via an ODBC compliant application
- Create a query from an ODBC SQL Server table inside Microsoft Access
- Create a report in Microsoft Access
- Identify the different elements of the Microsoft Access Report Designer
- Use Microsoft Access object properties and the ribbon features to format a report

Connect to databases via a data source in a data reporting software

- Install Microsoft Power BI Report Builder
- Examine the Report Builder Interface
- Connect to SQL Server Developer via a data source
- Create datasets

Create database queries utilizing SQL to produce datasets used by reporting software

- Retrieve data via a SQL Select Statement
- Create an exact match and IN clause in a parameter by modifying the WHERE clause in a query
- Add records to existing database using SQL Insert statement

Modify data in existing database using SQL Update statement
Joining multiple tables together using SQL Join statement
Filter data returned using SQL Where clause
Create pseudo/calculated data using formula and ALIAS in Select statement

Create detailed, exception, and summary paginated reports using a reporting software

Display a basic Report Builder detail report
Create a report template
Add a table or matrix to a report
Insert and modify columns to a table
Create a decorative panel
Create a drill through report
Modify text attribution rotation, fonts, and size
Add Tooltips to a report
Redirect users to external web sites
Use the visibility interactive options

Design reports with headers, footers, groups to sort and summarize data

Add titles and logos to the report
Group and summarize data in a table
Add page headers and footer sections to a report
Sort the data that is displayed on a report
Add page breaks to a report
Use grouping options in a report
Create filters in a report

Use parameters, functions, calculated fields, charts, and images in a report

Use the list controls
Use Tablix
Use aggregated functions
Display the data using a pie graph
Display the data using a bar graph
Use expressions
Use the IIF statement
Create calculated fields
Use parameters in a report
Create and modify bar and column charts
Create and modify charts
Use a gauge and data bar control
Use a map control
Explain a sparkline and indicator control

10-102-109 Business Analytics

Course Competencies

Explore the role of business analytics in today's data-driven business environment.

Compare and contrast Business Analytics, Business Intelligence and Data Science
Describe the role of business analytics in today's data driven business environment
Identify key business analytics terminology
Explore industries that leverage and employ business analytics professionals
Explain necessary knowledge, skills and abilities required of business analytics professionals
Examine business practices that lead to effective use of business analytics within organizations
Determine questions concerning business issues that lead to analysis strategies
Explore the role of data in driving business decisions
Identify key performance indicators in various industries
Apply spreadsheet skills for data analytics

Determine appropriate resources to aid in decision-making

- Examine analytical methods
- Explore descriptive, predictive, and prescriptive analytics
- Determine types of data (Inputs/Outputs)
- Explore different types of software resources to aid in analytics decision-making
- Examine basic predictive analysis methods
- Apply predictive data strategies
- Apply prescriptive data strategies
- Explore how prescriptive analytics compliments descriptive and predictive analytics
- Apply basic measures and distribution methods to summarize data
- Modify data to expose trends

Apply specialized spreadsheet functions to improve analysis and decision-making

- Examine the use of logical functions
- Determine types of referencing (absolute, mixed, relative)
- Practice linking assumptions and formulas from multiple worksheets
- Use data validation
- Examine the use of financial functions
- Use Index and Match functions
- Use What-if Analysis in forecasting
- Modify data to expose trends
- Apply basic measures and distribution methods to summarize data

Evaluate course of action based on data

- Manipulate worksheet functions and properties
- Customize spreadsheet appearances
- Construct functional formulas within spreadsheets
- Test arithmetic functions to evaluate course of action

Determine data relevant to management decisions

- Recognize the importance of data and their managerial impacts
- Describe the value of data mining across various industries
- Explore the foundational concepts underlying data mining techniques
- Apply data mining techniques to business problems
- Validate accuracy of data
- Recommend solution based on data

Illustrate the results of data analysis

- Discuss table design principles
- Manipulate data using tables
- Produce a PivotTable
- Produce Pivot Chart
- Discuss multiple chart designs
- Compare and contrast various visualizations
- Prepare visualizations
- Examine data dashboards
- Construct a data dashboard using visualizations for key business measures

Incorporate information into an interactive visualization tool for decision-making

- Discuss table features
- Create tables
- Incorporate table elements
- Explain relational databases
- Design related tables
- Enhance table structures

Facilitate business decisions using comprehensive analysis.

- Determine key industry issues
- Identify key supporting data
- Explore open-source data resources
- Apply descriptive, predictive, and prescriptive analytic data methods
- Discuss effective comprehensive analysis reporting outputs
- Summarize data into a meaningful business recommendation

10-156-109 Introductory ETL

Course Competencies

Perform data integration
- Define ETL
- Explain the importance of data integration
- Integrate data from multiple sources into a single target destination
- Distribute target data for BI analysis
- Summarize the benefits & challenges of data integration
- Investigate ETL solutions using industry-standard tools and techniques

Develop an ETL data pipeline
- Identify data sources, targets, and transformations
- Apply techniques to secure, clean, transform, inspect and identify patterns in data
- Apply data quality practices to ensure the accuracy and consistency of data
- Perform testing of ETL

Extract data from structured and unstructured data sources
- Analyze structured data for dataset labels and content
- Analyze unstructured data for dataset labels and content
- Integrate data from multiple sources
- Apply critical thinking skills

Interpret data for usability
- Assess the data for usability
- Extract meaning from data
- Determine if data meets business requirements
- Implement validation techniques
- Ensure data security and privacy

Transform data to meet requirements
- Describe the purpose of data transformation
- Compare ELT vs ETL processes
- Execute basic transformation methods based on data requirements
- Execute advanced transformation methods based on data requirements
- Utilize functions to transform data

Load data into the target destination
- Identify ways data can be loaded
- Determine when particular load methods are appropriate
- Explore data warehousing
- Introduce cloud database solutions

10-156-106 BI Data 2 - Interactive

Course Competencies

Identify components and features in the Power BI Desktop environment
- Install SQL Server Developer database.
- Install SQL Server Management Studio.
- Install Power BI Desktop.
- Summarize the main components of Power BI.
- Examine the different elements of the Power BI Report Editor
- Examine the different elements of the Power BI Data View.
- Explain the features of the Power BI report canvas.

Import multiple data sources in Power BI Desktop
- Connect to a web data source.
- Explain web sites as a data source.
- Connect Power BI Desktop to various data sources (e.g., databases, excel files, web services).
- Describe the steps to connect to a Microsoft SQL Server Database.

Apply filtering and sorting to SQL queries.
Explain the AdventureWorks2019 database and its structure.
Model data in Power BI Desktop

Transform data to ensure data reporting accuracy

Extract, transform and load report data.
Describe the importance of having clean data
Use Power Query to transform and clean data.
Evaluate and transform column data types.
Apply data shape transformations to the table structure.

Create interactive reports in Power BI Desktop

Add a title and logo to a report.
Create data relationships and create KPI measures.
Design and create interactive reports.
Practice generating visual answers from Q&A queries.
Build various types of visuals (e.g., charts, tables, maps) in Power BI.
Add slicers, filters, and drill-through capabilities to enhance interactivity.
Utilize advanced Power BI features such as bookmarks, drill-through, and custom measures.

Utilize Power BI services

Explain the components of the Power BI Service.
Deploy a report to Power BI Service
Prepare data for deployment to Power BI Service.
Collaborate and share reports.
Monitor and maintain reports.

Identify data security and ACLs in Power BI Desktop

Define data governance and its role in maintaining data integrity and security.
Explore the concept of row-level security in Power BI.
Compare the differences between roles and rules in Power BI row-level security.
Demonstrate step-by-step procedures for configuring row-level security in Power BI Desktop.
Create roles and define DAX filters to restrict data access.
Validate row-level security rules within Power BI.
Explore tools and techniques for tracking user access and data usage.

Identify business users, stakeholders and their business requirements

Identify what a business user is.
Explain the roles of a business user.
Define business user requirements.
Enumerate basic concepts and terminology that business users should understand.

Explain the current methodologies and data analytics tools used in industry

Examine the concept of Power BI Q&A and its role in data exploration.
Explore the benefits of using natural language queries for data analysis.
Recognize the value of effective communication in conveying data insights.
Modify questions to obtain desired insights.
Recognize the key features and capabilities of the top visual analytics tools such as Tableau, Sisense and Looker.
Explore the role of data platforms like Databricks, Oracle, and Snowflake in data processing and storage.
Refine ideas using ChatGPT in data analysis projects.
Analyze data to propose Power BI reports using ChatGPT's natural language.
Apply Agile practices to enhance collaboration, flexibility, and project success.

10-102-188 Project Management

Course Competencies

Examine the project management profession.

- Discuss the benefit of Project Management
- Explore Project Management as a profession
- Examine the internal and external role of a Project Manager
- Discuss The Project Management Office (PMO)
- Differentiate project structures
- Explore the Project Management Institute organization (PMI)

Model the principles of team leadership.

- Examine the importance of teams in project management
- Identify areas of control versus influence
- Discuss team progression
- Explore attributes of high performing teams
- Determine team ground rules
- Assess team performance
- Practice negotiation techniques
- Practice conflict management techniques

Handle stakeholder communications.

- Identify internal and external stakeholders
- Discuss the importance of stakeholder roles
- Investigate stakeholder identification methods
- Determine key stakeholders on a project
- Discuss stakeholder management and engagement
- Explore stakeholder communication tools
- Produce communication artifacts for stakeholders

Evaluate the elements of the Project Management life cycle.

- Describe project life cycle phases
- Explain project management knowledge areas and process groups
- Differentiate project and product life cycles
- Explore portfolio management
- Determine project alignment with business strategy
- Investigate projects as they relate to phases of the life cycle

Develop a project proposal.

- Explore project selection process
- Explain triple constraints impacts to projects
- Explain financial and scoring models
- Describe Request for Proposals process
- Explain Request for Proposal elements
- Analyze current Request for Proposals
- Compose response to a Request for Proposal
- Defend Request for Proposal response
- Investigate statement of work (SOW)

Write a project charter.

- Discuss the importance of the charter
- Identify charter components
- Compare and contrast effective charter components
- Compose project charter

Facilitate the Project Management process.

- Explore the triple constraints impact to the Project Management process.
- Discuss the importance of scope management.
- Explore key components that contribute to defining the scope of a project.
- Describe how to collect requirements.
- Discuss Formal Change Control Process
- Produce Project Scope
- Explore resourcing projects
- Determine resource availability
- Examine project cost

Produce a Work Breakdown Structure using Project Management tools and software.

Explain the purpose of a Work Breakdown Structure (WBS) to both internal and external stakeholders.
Identify key elements of a Work Breakdown Structure (WBS)
Describe techniques used to plan a project.
Identify the critical path of a project
Identify Project Management tools and software used to organize and manage projects.
Explore functions of an automated Project Management software system.
Develop a Work Breakdown Structure (WBS) within a Project Management software system

Create risk management strategies.

Discuss the importance of risk management planning for a project
Identify key areas of risks related to projects
Explain the importance of risk mitigation
Prepare contingency plans
Construct risk response strategies
Compare and contrast project assumptions versus project constraints
Discuss quality standards of a project
Discuss the importance of cost and schedule controls
Examine earned value management techniques
Analyze the performance of the costs and schedule of a project

Facilitate a project post-mortem.

Discuss project post-mortem processes.
Explain project opportunities and successes.
Produce key project closing documents.
Facilitate a successful close meeting.
Write a comprehensive post-mortem report.
Prepare a post-mortem presentation for stakeholders.

10-156-102 Python Data Programming

Course Competencies

Utilize the development tools and documentation needed to create a Python application

Install the Python programming language
Install IDLE IDE
Install Internet Information Server & Flask
Utilize IDLE to run a Python program
Utilize the Command Prompt to run a Python program
Identify Python tutorial Websites

Develop a Python program using data types and variables

Create a Python program using built in function and commands
Assign variables
Write arithmetic expressions
Manipulate strings

Develop a Python program using decision & recursion structures and operators

Utilize relational & logical operators
Write IF statements
Write FOR statements
Write WHILE statements

Develop a Python program using functions and lists

Define a function
Use a function
Utilize arguments in a function
Create a list

Get and set items in a list
Add and remove Items in a list
Manipulate a list
Use functions on a list

Develop a Python program using file IO

Open a CSV file
Close a CSV file
Write to a CSV file
Read from a CSV file

Develop a Python program using classes and objects

Define a class
Instantiate a class
Assign values to class properties
Call class methods

Develop a Python program utilizing a SQLite database

Utilize a SQLite database
Open a SQLite database in Python
Execute SQLite database queries in Python

Develop data analytics reports utilizing a Python data library to analyze data

Utilize the JupyterLab IDE
Write Pandas code
Produce data analysis reports

10-156-123 Data Security and Privacy

Course Competencies

Explain the significance of protecting sensitive data.

Define sensitive data
Identify key concepts of data privacy and security.
Define key terminology related to data privacy and security.

Describe how government regulations such as GDPR, CCPA, and HIPPA have a direct impact of data security.

Identify GDPR compliance requirements.
Summarize the principles and regulations of GDPR.
Analyze GDPR compliance in various scenarios.
Identify HIPPA compliance requirements.
Summarize the principles and regulations of HIPPA.
Analyze HIPPA compliance in various healthcare scenarios.
Identify CCPA compliance requirements.
Summarize the principles and regulations of CCPA.
Analyze CCPA compliance in various healthcare scenarios.

Explain the techniques of securing personal identifiable information.

Classify personal identifiable information (PII) data.
Describe techniques of securing personal identifiable information.
Identify procedures to secure infrastructure.

Practice the fundamentals of Microsoft SQL Server database security.

Utilize SQL Server login and users accounts to restrict access to the database engine and objects.
Set database table permissions to restrict SQL transactions to only what is needed to accomplish a task.
Encapsulate SQL in stored procedures to protect SQL statements from exposure.
Encrypt sensitive database table fields to ensure data privacy.

Identify social hacking attempts and suspicious online behavior.

Recognize common phishing and social engineering techniques.

Develop strategies to protect against phishing attacks.
Recognize common social hacking and engineering techniques.
Develop strategies to protect against social attacks.

Summarize key features in network security that affect data security.

Identify the 10 most common network vulnerabilities.
Articulate password management best practices.
Explain your view on password management systems.
Explain the purpose of an TCP/IP computer port.
Identify ports in use and the applications tied to them.
Open a port through the Windows Defender Firewall.

Explain what steps to take in a security incident and data breach.

Identify the various types of security breaches.
Prepare an incident notification letter.
Elaborate on the importance of having a response plan.
Describe the steps in a response plan.

Identify emerging trends in data security and privacy.

Discover the role of employee security training.
Describe privacy by design.
Identify usage of artificial intelligence (AI) and machine learning (ML) in security.

10-156-119 Machine Learning

Course Competencies

Identify emerging trends in Machine Learning (ML) and AI.

Explain key steps involved in ML process.

Demonstrate usage of cutting-edge AI/ML tools.

Practice machine learning algorithms using Python and relevant libraries.

Identify the various types of ML such as: Supervised, Unsupervised and Reinforcement Learning.

Describe the importance of data is it relates to ML.

Investigate Artificial Intelligence (AI).

Interpret the prediction results of Machine Learning Models.

10-156-115 BI Data 3 – Visualization

In-Process

10-156-130 Data Analytics Capstone

Course Competencies

Analyze data.

Query data.

Perform data extraction, transformation, and loading.

Create reports & visuals.

Communicate with stakeholders.

Build data analytic academic portfolio.

Prepare for data analytic employment.

Engage in the Data Analyst employment search.

Demonstrate business professionalism in an Information Technology environment.