

**INTEGRATED BUSINESS APPLICATIONS 2**  
**(NEW NAME: BUSINESS DATA APPLICATIONS 2021-22)**  
**COURSE CODE: 5021**

**COURSE DESCRIPTION:** The collection, manipulation, storage, and retrieval of data has become an important tool and indicator of business success. Decisions are made based on data analysis that impact all parts of society. In Data Applications, students analyze different data sets, collect, manipulate, store, secure, and retrieve data using electronic spreadsheets and database software applications. Students use problem-solving and critical thinking skills to prepare computational artifacts which will be used to make informed decisions using a real-world approach.

**OBJECTIVE:** Given the necessary equipment, supplies, and facilities, the student will complete all of the following core standards successfully.

**COURSE CREDIT:** 1 unit (120 hours)

**RECOMMENDED PREREQUISITE:** Algebra 1

**RECOMMENDED GRADE:** 10 - 12

**COMPUTER REQUIRED:** one computer per student with MS Office or alternative spreadsheet and database application software

#### **A. SAFETY**

**Effective professionals know the academic subject matter, including safety as required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in any program of study.**

1. Review school safety policies and procedures.
2. Review classroom safety rules and procedures.
3. Review safety procedures for using equipment in the classroom.
4. Identify major causes of work-related accidents in office environments.
5. Demonstrate safety skills in an office/work environment.

#### **B. STUDENT ORGANIZATIONS**

**Effective professionals know the academic subject matter, including professional development, required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in any program of study.**

1. Identify the purpose and goals of a Career and Technology Student Organization (CTSO).
2. Explain how CTSOs are integral parts of specific clusters, majors, and/or courses.
3. Explain the benefits and responsibilities of being a member of a CTSO.
4. List leadership opportunities that are available to students through participation in CTSO conferences, competitions, community service, philanthropy, and other activities.
5. Explain how participation in CTSOs can promote lifelong benefits in other professional and civic organizations.

### **C. TECHNOLOGY KNOWLEDGE**

**Effective professionals know the academic subject matter, including the ethical use of technology as needed in their role. The following accountability criteria are considered essential for students in any program of study.**

1. Demonstrate proficiency and skills associated with the use of technologies that are common to a specific occupation.
2. Identify proper netiquette when using e-mail, social media, and other technologies for communication purposes.
3. Identify potential abuse and unethical uses of laptops, tablets, computers, and/or networks.
4. Explain the consequences of social, illegal, and unethical uses of technology (e.g., piracy; illegal downloading; cyberbullying, licensing infringement; inappropriate uses of software, hardware, and mobile devices in the work environment).
5. Discuss legal issues and the terms of use related to copyright laws, fair use laws, and ethics pertaining to downloading of images, Creative Commons, photographs, documents, video, sounds, music, trademarks, and other elements for personal use.
6. Describe ethical and legal practices of safeguarding the confidentiality of business-related information.
7. Describe possible threats to a laptop, tablet, computer, and/or network and methods of avoiding attacks.

### **D. PERSONAL QUALITIES AND EMPLOYABILITY SKILLS**

**Effective professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for students in any program of study.**

1. Demonstrate punctuality.
2. Demonstrate self-representation.
3. Demonstrate work ethic.
4. Demonstrate respect.
5. Demonstrate time management.
6. Demonstrate integrity.
7. Demonstrate leadership.
8. Demonstrate teamwork and collaboration.

9. Demonstrate conflict resolution.
10. Demonstrate perseverance.
11. Demonstrate commitment.
12. Demonstrate a healthy view of competition.
13. Demonstrate a global perspective.
14. Demonstrate health and fitness.
15. Demonstrate self-direction.
16. Demonstrate lifelong learning.

## **E. PROFESSIONAL KNOWLEDGE**

**Effective professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for students in any program of study.**

1. Demonstrate effective speaking and listening skills.
2. Demonstrate effective reading and writing skills.
3. Demonstrate mathematical reasoning.
4. Demonstrate job-specific mathematics skills.
5. Demonstrate critical-thinking and problem-solving skills.
6. Demonstrate creativity and resourcefulness.
7. Demonstrate an understanding of business ethics.
8. Demonstrate confidentiality.
9. Demonstrate an understanding of workplace structures, organizations, systems, and climates.
10. Demonstrate diversity awareness.
11. Demonstrate job acquisition and advancement skills.
12. Demonstrate task management skills.
13. Demonstrate customer-service skills.

## **F. INTRODUCTION TO DATA**

**Proficient professionals understand how data is viewed and used in applications to solve real-world problems as needed in their role. The following accountability criteria are considered essential for students in the Business Administration and Supervision and Finance programs of study.**

1. Explain how data is used to inform decisions in a variety of settings, e.g., personal, healthcare, education, retail, finance, marketing, communications, and transportation.
2. Evaluate career and certification opportunities in data analytics.
3. Define and describe the various data collection methods, data analysis tools, and data representation tools.
4. Describe the various data storage tools and data organization methods.
5. Describe the properties of a data set that could be used to explore a real-world phenomenon or support a claim.
6. Identify various types of computational models and their uses for data composed of

multiple data elements that relate to one another (e.g., population data may contain information about age, gender, height).

7. Identify a data set that could be used to solve a real-world problem.
8. Explore an existing spreadsheet and identify key features of an electronic spreadsheet application program.
9. Use a database program to interpret the structure of an existing database, identifying tables, fields, key fields, queries, forms, and reports.

## **G. DATA COLLECTION AND VALIDATION**

**Proficient professionals demonstrate data collection methods and appropriate validation tools used to ensure data integrity as needed in their role. The following accountability criteria are considered essential for students in the Business Administration and Supervision and Finance programs of study.**

1. Represent data using multiple encoding schemes (e.g., colors can be represented using words, symbols, RGB values, hex codes.)
2. Justify the choice of a data collection method, data analysis tool, and data representation tool over alternate options.
3. Explain how different collection methods and tools influence the amount and quality of the data that is observed and recorded.
4. Transform data to make it more useful, reliable, and consistent (e.g., use text functions to concatenate and/or append; convert Celsius to Fahrenheit).
5. Create and use online forms to collect data to be stored in a spreadsheet or database.
6. Use validation tools (e.g., macros) to ensure data integrity.
7. Create data sets that could be used to explore a real-world phenomenon or support a claim.
8. Create an electronic spreadsheet integrating critical thinking and problem solving that applies the following skills:
  - a. Consolidate and extract data for data validation.
  - b. Work with the Formula Auditing.
  - c. Trace errors (find and fix errors).
  - d. Trace precedents (find cells referred to in a specific formula).
  - e. Trace dependents (find formulas that refer to a specific cell).
  - f. Apply conditional formatting (creating, editing, and managing rules, multiple conditions).
  - g. Locate and evaluate valid/invalid data and formulas.
  - h. Convert data types.
9. Use an electronic database to collect and validate data.

## H. DATA SECURITY, STORAGE, AND RETRIEVAL

**Proficient professionals demonstrate security, storage, and retrieval methods using application tools needed in their role. The following accountability criteria are considered essential for students in the Business Administration and Supervision and Finance programs of study.**

1. Compare and contrast the various data storage tools and data organization methods.
2. Justify choices on how data elements are organized and where data is stored considering cost, speed, reliability, accessibility, privacy, and integrity (e.g., local storage, portable storage, cloud storage).
3. Analyze the impact of data leaks or data loss and recommend preventative measures.
4. Compare and contrast storing and retrieving data in a spreadsheet versus a database.
5. Create an electronic spreadsheet integrating critical thinking and problem solving that applies the following skills:
  - a. Apply and remove cell, worksheet, and workbook protections.
  - b. Consolidate data.
  - c. Track changes (highlight, accept, and reject).
  - d. Merge workbooks.
6. Use an electronic database to apply the following skills:
  - a. Create an electronic database with appropriate tables, field names, datatype, and field properties.
  - b. Analyze a data set to determine appropriate primary and secondary keys.
  - c. Determine relationships between data and set table relationships.
  - d. Justify and enforce referential integrity.
  - e. Import and export data to and from database.
  - f. Compact and repair a database.

## I. DATA ANALYSIS

**Proficient professionals demonstrate data collection methods and appropriate validation tools used to ensure data integrity as needed in their role. The following accountability criteria are considered essential for students in the Business Administration and Supervision and Finance programs of study.**

1. Compare and contrast data sets that could be used to explore a real-world phenomenon or support a claim.
2. Evaluate the use of large data sets to explore a real-world phenomenon or support a claim.
3. Compare and contrast various types of computational models and their uses for data composed of multiple data elements that relate to one another (e.g., population data may contain information about age, gender, height).
4. Evaluate the limitations of a computational model and the accuracy of inferences.
5. Identify patterns in data and test hypothesis.
6. Create an electronic spreadsheet integrating critical thinking and problem solving that applies the following skills:

- a. Use the formula bar to enter and edit formulas using proper order of operations:
    - i. Use basic functions (i.e. AVERAGE, SUM, COUNT, MIN, MAX).
    - ii. Use date functions (i.e. NOW and DATE).
    - iii. Use financial functions (i.e. PV, FV, and PMT).
    - iv. Use logical functions (i.e. IF).
    - v. Use statistical functions (i.e. MEAN, MEDIAN, MODE, and STANDEV).
    - vi. Use mathematical and trigonometric functions (ROUND, COS, TAN, and SUBTOTAL).
  - b. Sort and filter data (e.g., AutoFilter, conditional formatting).
  - c. Import and export data to and from other applications.
  - d. Create and modify linked workbooks.
  - e. Create and modify custom data formats.
  - f. Create a named range and use in a formula.
  - g. Use Lookup Functions (Hlookup or Vlookup).
  - h. Record, run, and edit macros.
  - i. Perform multi-level sorts.
  - j. Perform what-if analysis (e.g., Goal Seek and Solver).
  - k. Create complex formulas and functions (e.g., nested functions, time/date math, etc.).
  - l. Link data across multiple workbooks.
7. Use an electronic database to apply the following skills:
    - a. Create, modify, and perform basic queries.
    - b. Specify criteria and sorts in a query (e.g., using wildcard keys).
    - c. Create and modify a multi-table select query.
    - d. Display related records in a sub data sheet.

## J. DATA VISUALIZATION

**Proficient professionals demonstrate data visualization skills and tools for exploring real-world phenomenon or supporting claims as needed in their role. The following accountability criteria are considered essential for students in the Business Administration and Supervision and Finance programs of study.**

1. Create a computational model using large data sets, make inferences, and address the limitations of the model.
2. Evaluate how the same data set can be visualized and reconstructed to support multiple sides of an issue.
3. Construct a data visualization to solve a real-world problem using software tools or programming (e.g., generated scatter, bar, and line charts).
4. Analyze patterns in a data visualization then select a collection tool to validate a claim or share information with a group of people.
5. Organize collected data to communicate the solution to a real-world phenomenon and support a claim.
6. Compare and contrast data visualizations for exploring real-world phenomenon or supporting a claim.
7. Evaluate possible computational models for data visualizations that aid in solving a variety of problems.

8. Create a computational model for data visualization.
9. Create an electronic spreadsheet integrating critical thinking and problem solving that applies the following skills:
  - a. Create various charts (i.e. column, pie, line, line with markers, scatter plots).
  - b. Modify charts (i.e. adding title, clip art, legend, data labels, and gridlines).
  - c. Preview and print charts.
  - d. Create and manipulate pivot charts, tables, and reports.
  - e. Create interactive PivotTables for the Web.
10. Create and run database reports.

[Course Materials and Resources](#)

[Course Academic Standards and Indicators](#)

[Computer Science Standards and Indicators](#)