

Idaho State University
Business Informatics
Course Learning Outcomes

INFO 1181/CS 1181, Introduction to Computer Science/Informatics Program I

- Use and follow sequentially ordered code.
- Use programming logic statements to solve problems.
- Find problems and mistakes in complex code.
- Solve problems using multi-dimensional elements.
- Create and use grouping principles in code using objects.
- Trace functional and object-oriented code.
- Step through recursive functions and determine their outcome.
- Analyze programming requirements.
- Write code based on a given set of needs.
- Write code which behaves consistently (polymorphism).
- Read and write data to and from text files.

INFO 2220, Client-Side Web Development

- Design and develop interactive web pages.
- Explain HTML and CSS concepts.
- Implement modular web design.
- Use a wide range of the features available in the JavaScript programming language.
- Analyze programming requirements
- Implement requirements in programs.
- Systematically organize program code in web pages.
- Implement JSON web sources using AJAX technologies and libraries.
- Explain the principles of a prototyped language and the prototyping chain.

INFO 3301, Introduction to Informatics and Analytics

INFO 4407/5507 Database Design & Implementation

- Explain the need for and relevance of databases.
- List and explain the fundamental concepts of a relational database system.
- Explain the database design process and the database development lifecycle.
- Recognize business rules and their impact on the design of a database.
- List and explain the terminology, concepts, and basis of relational databases.
- Develop the logical design of the database using data modeling concepts such as entity-relationship diagrams.
- Analyze database requirements and determine the entities involved in the system and their relationship to one another.
- Assess the quality and ease of use of data modeling and diagramming tools.
- Create a relational database using a relational database package.
- Recognize database anomalies and explain the significant disadvantages associated with the presence of such anomalies.
- Apply the normalization approach to remove database anomalies to improve database functionality.
- Apply relational algebra operators and explain how they provide the theoretical foundation for relational databases and SQL.

- Create database and table structures using the SQL data definition commands.
- Enter, correct, delete, and update data within database tables using the SQL data management commands.
- Explore database contents and convert data to information using the SQL data query commands.
- Apply various types of SQL JOIN operations to combine related rows from two tables into single virtual tables and will be able to explain why the JOIN is the power behind a relational database.
- Apply advanced SQL statements to make data entries in only part of a row and to delete tables from a database.
- Sort the results of a SQL SELECT statement, and to generate a listing with duplicates eliminated.
- Apply SQL aggregate functions, as well as knowing how to group rows from a data table when aggregating information, while filtering out rows that do not belong.
- Embed a SQL query in another SQL query in order to return data to be used to narrow the scope of the main query.
- Create indexes on database tables in order to speed up data retrieval.
- Apply advanced SQL statements to respond to normalization requirements to change the structure of a database table, to copy selected table columns from a table, and to designate primary and foreign keys.
- Apply specialized SQL JOIN operations to combine related rows and non-matching rows from two tables into single virtual tables, as well as to link a table to itself.
- The student will learn how to implement the relational algebra operators using SQL.
- Utilize a wide range of features available in MySQL.
- Explain the importance of transactions and will be able to define transactions in SQL.
- List and explain the fundamental concepts of stored procedures and triggers in SQL, will gain experience developing them, and will learn how to determine when it is appropriate to use them.
- Explain when and how a VIEW may be needed to reflect the results of a query, and will be able to create and use VIEWS.
- Explain the theory behind SQL injection attacks as well as the consequences of such attacks, and will be able to mitigate attacks.
- List and explain basic data warehouse concepts.
- The student will know how to model and implement a data warehouse.
- The student will learn alternatives for relational databases for storing Big Data, the type of data that includes unstructured and semi-structured data that is not well suited for traditional databases.
- The student will learn that NoSQL databases are available to store and process Big Data, optimized for data analytics for developing data-driven intelligent applications from Big Data.
- List and explain the purpose of data analytics, along with more advanced approaches to data analytics including predictive analytics and data mining.
- Write software programs that connect to a database and issue SQL statements to manipulate that database.
- The student will develop interpersonal and leadership skills working as part of a systems development team in a group database design project.