

**Certificate: Database****Certificate Description:**

This certificate provides students with basic skills in database design and programming to prepare them for an entry-level job, or internship, in the database field. This certificate is developed and granted by BYU-Idaho.

Course Code	Course Name	15 Credits
CIT 111	Introduction to Databases	3 Credits
CIT 160	Introduction to Programming	3 Credits
CIT 225	Database Design & Development	3 Credits
CIT 325	Database Programming	3 Credits
CIT 425	Data Warehousing	3 Credits

**Course Descriptions:*****CIT 111 (3 credits) – Introduction to Databases***

This course covers the basic elements of database management systems. It introduces students to the concepts of logical and physical relationships in a data model and the concepts of inner and outer joins. Students will use a computer aided software engineering (CASE) tool to design, create, and query a database.

***CIT 160 (3 credits) – Introduction to Programming***

This course is an introduction to the basic concepts of computers and information technology. Students will learn the basics of computer hardware and the binary and hexadecimal number systems, design algorithms to solve simple computing problems, and will write computer programs using Boolean logic, control structures, and functions.

***CIT 225 (3 credits) – Database Design & Development***

The course deals with concepts and principles of database theory, application and management technologies. It focuses on the logical and physical database design and implementation. The course covers the use of UML semantic to describe Entity Relationship Designs (ERDs) and SQL to implement relationships between entities. SQL will be used to query and transact against a sample database.

***CIT 325 (3 credits) – Database Programming***

This course teaches the concepts of database programming. It teaches how to write stored functions and procedures inside the database, how to use collections, how to use embedded objects, how to use transaction control mechanics, how to import large comma separated files, and large text files into a database. It explores the uses of the database as a data repository for web-based applications.

***CIT 425 (3 credits) – Data Warehousing***

This course defines the theory and practice of data analysis. The course will compare and contrast the operational and analytical database models. Students will learn how to define, implement, and query a database warehouse by leveraging sample data warehouses built from Enterprise Resource Planning (ERP) and Customer Resource Management (CRM) solutions.

### Outcomes:

- Utilize SQL and Query to communicate with Databases
- Design a transaction entity relationship model
- Work with Stored Programs in a Database
- Demonstrate ability to work with a database warehouse and star schema

### Potential Employment:

- General or database programmer
- Database designer or developer
- Data warehouse