



# BAKER COLLEGE

## STUDENT LEARNING OUTCOMES

CS4650 Advanced Database Topics  
3 Semester Hours

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### Student Learning Outcomes and Enabling Objectives

1. Explore relational database principles, concepts and design
    - a. Distinguish between the various levels of normalization
    - b. implement referential integrity
    - c. Explain the purpose and process of denormalization
    - d. Describe Oracle database indexes
  2. Construct statements using Oracle SQL
    - a. Differentiate between DDL and DML
    - b. Demonstrate advanced techniques for SELECT, INSERT, UPDATE AND DELETE statements
    - c. Demonstrate COMMIT and ROLLBACK for transaction control
    - d. Use Sequence, ROWID, and ROWNUM
  3. Construct scripts using PL/SQL
    - a. Use constraints, triggers, stored procedures and functions
    - b. Use functions in queries
    - c. Use V\$SQLAREA and V\$SQL
  4. Use efficiency tools
    - a. Make efficient queries by using EXPLAIN PLAN
    - b. Make efficient joins by using tuning techniques
    - c. Make efficient subqueries by using tuning techniques
    - d. Apply parsing and optimization to SQL execution
    - e. Use the ANALYZE command and the DBMS\_STATS package
    - f. Use of SQL trace and TKPROF
    - g. Tune tablespaces
  5. Demonstrate the ability to work individually and/or with a team to perform research and apply the advanced database topics learned in the course such as data model tuning, SQL code tuning, and configuration tuning
    - a. Work individually and/or with a team to perform research.
    - b. Apply the advanced database topics learned to various types of tuning.
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These SLOs are not approved for experiential credit.

Effective: Fall 2017