1. Catalog Description

(a) Course number: TEC 5323
(b) Title: Advanced Database Technology
(c) Meeting times and credit: 2-2-3
(d) Term to be offered: S or F
(e) Short title: Database Tech
(f) Course description: Study of advanced database technology (Oracle) for applications in contemporary industry including architecture, operations, system maintenance and management.
(g) Prerequisite: Experience with and access to current computer technology.

2. Objectives of the Course

Students will:
  a. Demonstrate principles of design, development, and administration relevant to Oracle database technology.
  b. Formulate a working definition of database development and administration.
  c. Identify the contemporary architecture of database systems.
  d. Survey the characteristics of widely used hardware, operating systems, and software for the database technology applications.
  e. Apply advanced database technology to manage operations in industry.
  f. Participate in team efforts to develop projects.
  g. Gain a working knowledge of developing and maintaining a small-scale database project through teamwork.
  h. Develop skills of leadership, problem solving, and communication.
  i. Participate in local (e.g., EIU listserv) and external (e.g., Oracle Technology Network) electronic discussion groups on Oracle database technology.
  j. Discuss issues related to Internet-centered revolution in computer technology.
3. Outline of the Course

1. Principles and applications of database technology 1
2. Installing Oracle 1
   Project I
3. Configuration and architecture of Oracle 1
   Project II
4. Database access with SQL 3
   Projects III, IV
5. Programming with PL/SQL 2
   Project V
6. Building a database 2
   Project VI, Start of team project
7. Security and resource management 2
   Project VII
8. Database space management 1
   Project VIII
9. System backup and recovery 1
   Project IX
10. System performance tuning 1
    Project X

Evaluation:

Hands on experience will be emphasized throughout the entire course. Grades will be based upon the following:

- Class exercise 10%
- Database-related project and report 25%
- Mid-term exam 25%
- Final exam 25%
- Team project report and presentation 15%

4. Implementation

a. Faculty: Graduate faculty in School of Technology.

b. Additional costs to students: None.


d. Term to be first offered: Spring semester 2002.
5. Rationale

a. **Purpose and need:** The purpose of the course is to introduce graduate students to the information and skills of advanced database technology. Because of the advances in computer applications, especially due to usage of Internet for commerce, more and more database technology is being spread to various sectors of industry.

The needs for advanced knowledge in database technology have been identified by industry and government. Nationwide, 300,000 high-tech industry jobs remain unfilled due to a lack of skilled applicants according to the October 2000 Financial Times. A recent study on more than 70 high technology business and industrial organizations in Champaign county placed advanced knowledge in database technology as the highest need for future employees.

b. **Justification of the course level:** A graduate-level course is suitable for students who prepare to become managers in industry. The proposed course will provide graduate students with knowledge and skills to effectively manage databases in industry. With this foundation, students will be able to develop more skills and gain additional experience in the field as well as to become effective managers in industry.

c. **Similarity to existing courses:** None on the graduate level.

d. **Requirement or elective:** Elective for graduate students in Technology.

6. **Community College Transfer:** Not applicable.

7. **Date approved by the School of Technology Graduate Committee:** Nov. 16, 2000

8. **Date approved by the School of Technology Curriculum Committee:** Dec. 5, 2000

9. **Date approved by Council of Graduate Studies:** Feb. 6, 2001