1. Catalog Description of the Course.
   IT 420 DATABASE THEORY AND DESIGN FOR IT (3)
   Three hours of lecture in the lab per week
   Prerequisites: MATH 300
   Database structure including: structure definition, data models, semantics of relations, and operation on data models. Database schemas: element definition, use and manipulation of the schema. Elements of implementation. Algebra of relations on a database. Hierarchical data bases. Discussion of information retrieval, reliability, protection and integrity of databases.

2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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<tr>
<td>Lecture</td>
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<td>1</td>
</tr>
<tr>
<td>Seminar</td>
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<td>0</td>
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<tr>
<td>Laboratory</td>
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<td>0</td>
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<tr>
<td>Activity</td>
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   Justification: BSIT required course.
   Learning Objectives:
   Student who successfully complete this course will:
   1. Be able to identify the main components of a Database System.
   2. Be able to create a Entity-Relation diagram for a database system.
   3. Be able to normalize a given database design.
   4. Be able to create SQL queries that retrieve the appropriate data.
   5. Be able to create SQL queries that update the database.
   6. Be able to create SQL queries using inner and outer joins.
   7. Be able to design and implement a simple database system.

4. Is this a General Education Course?
   No.

5. Course Content in Outline Form.
   Topics:
   1. Integrity Constraints.
   2. File Systems and Databases.
   3. Database Models.
   4. Logical Views of Data.
   5. Data Redundancy Issues.
   8. ER-Diagrams
   10. SQL.
   11. Database Access Control and Authentication.

6. Cross-listed Courses.
   None.

7. References.
<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Publisher</th>
<th>Year</th>
<th>ISBN</th>
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<tbody>
<tr>
<td>2. Database Systems</td>
<td>Peter Rob, Carlos Coronel</td>
<td>Course Technology</td>
<td>2002</td>
<td>061906269X</td>
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8. Faculty Qualified to Teach This Course.
   Qualified Faculty: Smith, Wolfe

   Projected semesters to be offered: Fall, Spring

10. New Resources Required.
    a. New Equipment needs: Use of existing computer lab.
    b. New Library needs: none
    c. New Space/Facilities needs: none

11. Program Modifications.
    None.

12. Proposer of Course.
    Proposer: Smith, Wolfe  Date: 7/13/2004