SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: PROG 317 Department: Information Technologies

Course Title: Database Systems Semester: Spring Year: 1999

Objectives/Competencies

Course Objective	Competencies
1. Be able to design a relational database using Codd normalization techniques.	1. Provide a general introduction to the field of database management. 2. Describe the advantages and disadvantages of database processing. 3. Describe the relational model. 4. Describe QBE (Query-By-Example). 5. Discuss the use of conditions in QBE. 6. Explain the creation of calculated fields in QBE. 7. Describe the use of the QBE built-in functions. 8. Indicate the manner in which tables can be joined in QBE. 9. Discuss the relational algebra. 10. Describe the SQL language. 11. Discuss the use of simple and compound conditions in SQL. 12. Apply the use of calculated fields in SQL. 13. Explain the use of SQL built-in functions. 14. Illustrate the use of nested SQL queries. 15. Practice grouping in SQL.

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	16. Practice the way tables can be joined in SQL. 17. Analyze the union operator in SQL. 18. Discuss views: what they are, how they are described, and how they are used. 19. Discuss the use of indexes for improving performance. 20. Examine the security features of a DBMS. 21. Compare entity and referential integrity. 22. Discuss the manner in which the structure of a relational database can be changed. 23. Define the catalog and explain its use. 24. Describe the characteristics a system must possess in order to be relational. Present the idea of functional dependence. 25. Define the term primary key. 26. Define first normal form (1NF), second normal form (2NF), and third normal form (3NF). 27. Describe the problems associated with relations (tables) that are not in 1NF, 2NF, or 3NF, along with the mechanism for converting to all three. 28. Discuss the problems associated with incorrect conversions to 3NF. 29. Discuss the general process and goals of database design. 30. Define user views and explain their function. 31. Prepare a methodology for database design at the information level as well as examples illustrating the use of this methodology. 32. Explain how to produce a pictorial representation of a database design.

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	33. Explain the process of mapping an information-level design to a design that is appropriate for a relational model system. 34. Discuss the following nine functions, or services, that should be provided by a DBMS: 35. Define data storage, retrieval, and update 36. Identify a user-accessible catalog 37. Differentiate support for shared update 38. Describe backup and recovery services 39. Integrity services 40. Identify services to promote data independence 41. Identify support for replication 42. Construct a scheme for utility services. 43. Discuss the manner in which utility services typically are provided 44. Discuss the need for database administration (DBA). 45. Explain the role of DBA in formulating and implementing database policies. database design. 46. Discuss the role of DBA with regards to the data dictionary, user training, and the selection and support of a DBMS. 47. Discuss the role of DBA in the database design process. 48. Discuss the need for database administration (DBA). 49. Explain the role of DBA in formulating and implementing database policies. 50. Discuss the role of DBA with regards to the data dictionary, user training, and the selection and support of a DBMS.

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2. Implement the design concepts in the creation of databases of moderate complexity.	51. Discuss the role of DBA in the database design process. 52. Describe distributed database management systems. 53. Discuss client/server systems. 54. Define data warehouses and explain their uses. 55. Discuss the general concepts of object-oriented database management systems. 56. Summarize the impact of the Internet and Intranets on database management systems. 57. Identify a graphical user interface (GUI) 58. Use the Windows desktop 59. Use the mouse, menus, and dialog boxes in Microsoft Windows 60. Organize and manage files and folders 61. Use Windows programs 1. Use the online Help system 2. Describe the basic use of Access 3. Create a table 4. Add, edit, and delete records in a table 5. Produce a report of data in a table 6. Create a query to retrieve data from an Access database 7. Use criteria in a query 8. Sort data in a query 9. Use a query to calculate data 10. Create a query using data from multiple tables 11. Update data in a table using an update query 12. Examine the structure of a database 13. Use indexes

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	14. Use search and replace to change data in records 15. Change the structure of a table 16. Save and use queries 17. Define relationships and referential integrity between and for tables 18. Order records in a table 19. Create and modify forms 20. Use a form for data entry 21. Add special objects, such as combo boxes and rectangles, to a form 22. Use validation rules to control data entry 23. Create and use multi-table forms 24. Create and modify reports using the Report Wizard 25. Add calculated controls to a report 26. Embed a sub-report in a main report 27. Include multiple grouping levels in a report 28. Create a report based on a multi-table query 29. Create and use Memo and OLE fields in a form 30. Create a form and sub-form with a one-to-many relationship 31. Use color and special effects to enhance the appearance of data in a form 32. Create and use list boxes, check boxes, and option buttons in a form 33. Add macros to a form to automate processing 34. Add command buttons to a form 35. Use VBA code 36. Use the Switchboard Manager to automate tasks

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	37.Learn about hyperlinks 38.Link documents on the World Wide Web