

Pellissippi State Community College  
Master Syllabus

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**ADVANCED DATABASE MANAGEMENT SYSTEMS**  
**CSIT 2550**

Class Hours: 3.0

Laboratory Hours: 3.0

Credit Hours: 4.0

Revised: November 2010

Instructor:

Office:

Phone:

Email:

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**Catalog Course Description:**

A study of database management systems concepts. Topics include relational and object-oriented models, conceptual design, data structures, storage techniques, data administration, system security, concurrent transactions, distributed system, multi-tiered architectures, data warehousing and data mining. Practical application of techniques may include advanced application of query languages, remote access, database administration and user support.

**Entry Level Standards:**

The entering student should have a familiarity with the Windows environment. The student is expected to have moderate programming abilities in a high-level language. Problem solving skills will be essential.

**Prerequisite:** CSIT 1810

**Textbooks and Other Related Material Basic to the Course:**

Required:

Database Systems: A Practical Approach to Design, Implementation and Management, 5<sup>th</sup> Edition, Connolly, Thomas and Carolyn Begg, Addison-Wesley, 2009, ISBN-13: 978-0-321-52306-8, ISBN-10: 0-321-52306-7.

Recommended:

Oracle Database 11g: The Complete Reference, Loney, Kevin, McGraw-Hill, 2009, ISBN-13 9780071598750, ISBN-13 0-07-159875-8.

**I. Week/Chapter/Topic Basis:**

<u>Week</u>	<u>Topic(s)</u>
1	Introduction, Review of Database Concepts
2	ER Modeling and UML and Transformation
3	ER Modeling and Transformation
4	Normalization
5	Higher Normal Forms
6	B-trees, Hashing
7	Access Methods, Indexes
8	Mid-term Exam, Management and Security

- 9 Physical Design and Tuning, Distributed Database Design
- 10 Distributed Database Design and Allocation
- 11 Data Warehouses, Data Marts, Star Schema
- 12 Warehouses, OLAP, Data Mining
- 13 Data Mining, Remote Database Access with 3GLs
- 14 Remote Database Access
- 15 Final Exam

## II. Course Goals:

The course will:

- A. Enhance the student's knowledge of the advantages and disadvantages of using a database management system and professional design tools. II III IV V
- B. Build the skills to use a formal language of data definition and data manipulation to accomplish various administrative tasks. III IV V
- C. Enhance the student's knowledge of the components of alternative database models and appreciate how implementations as systems may vary from the relational model. II III IV V
- D. Build the skills to transform a complex conceptual design into a logical data base design and to a physical database design. II III IV V
- E. Foster the ability to perform the database administration function. I II III IV V
- F. Enhance the student's knowledge of classic data structuring techniques. I II III IV V

## III. Expected Student Learning Outcomes:

Students will be able to

- 1. Explain the similarities and differences of various data models. C D E
- 2. Perform advanced database normalization. D E
- 3. Develop complex Entity-Relationship Models. D E
- 4. Create data for data warehouses and/or data marts. A C D E
- 5. Explain the functions of database administration. B E
- 6. Write programs using query languages to accomplish administrative tasks. A B
- 7. Use data mining techniques to make associations and predictions. A C
- 8. Describe solutions to problems associated with distributed database systems. A C E
- 9. Use the World Wide Web to access databases. A B C E
- 10. Represent data using the object-oriented model. C E F
- 11. Describe the concept of binary trees, B-trees, linked lists, and hash tables. A C D E F
- 12. Explore XML as an alternative database organization. B C D
- 13. Explain file organizations and access methods. A C F
- 14. Explain the concept of indexes. A C F

## IV. Evaluation:

- A. Testing Procedures: 50% of grade  
Two comprehensive exams will be given during the course of the semester. Dates will be announced in class and each test will account for 250 points of your final grade -- 500 points total.

B. Laboratory Expectations: 50% of grade

Several lab projects will be assigned during the course of the semester. A late penalty may be imposed on any overdue assignment. Individual and/or group projects may be assigned to emphasize practical solutions to database problems. Failure to satisfactorily complete any assigned projects may result in a grade of F for the course. Lab projects will account for 500 points (50%) of your final grade.

C. Field Work:

This information, if applicable, will be provided by the instructor in full detail during the first week of class via syllabus supplement.

D. Other Evaluation Methods:

This information, if applicable, will be provided by the instructor in full detail during the first week of class via syllabus supplement.

E. Grading Scale:

93 – 100	A
88 – 92	B+
83 – 87	B
78 – 82	C+
73 – 77	C
65 – 72	D
Below 65	F

V. **Policies:**

A. Attendance Policy:

Pellissippi State Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. (*Pellissippi State Online Catalog*)

B. Academic Dishonesty:

Plagiarism, cheating and other forms of academic dishonesty are prohibited. A student guilty of academic misconduct, either directly or indirectly through participation or assistance, is immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions that may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F or a zero for the exercise or examination or to assign an F in the course. (*Pellissippi State Online Catalog*)

Plagiarism, cheating, software piracy, non-educational use of computer systems and other forms of academic dishonesty are strictly prohibited. A student caught cheating or infracting specific rules will be given a grade of "F" for the course.

C. Computer Usage Guidelines:

College-owned or –operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State's

computing resources in an effective, efficient, ethical and lawful manner. (*Pellissippi State Online Catalog*)

D. Accommodation for Disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at [www.pstcc.edu/departments/swd/](http://www.pstcc.edu/departments/swd/).

E. Make-up Assignments/Exams:

1. Make-up exams: All exams are required, and make-ups will be allowed only in the rarest of cases. In the event of an emergency, notification of the instructor must be made in advance.
2. It is the student's responsibility to request help from the instructor prior to an assignment's due date.