Pellissippi State Community College

Master Syllabus

**DATA MANAGEMENT SYSTEMS**

**CITC 2348**

Combined Lecture/Lab Hours: 4.0 Credit Hours: 3.0

Revised: Spring 2018

## Catalog Course Description

A study of database management and analysis concepts with heavy focus on Business Intelligence. Topics include database administration, system security, concurrent transactions, multi-tiered architectures, data warehousing, data mining, business intelligence, Big Data analytics and predictive analytics.  Practical application of techniques may include advanced application of query languages, remote access, database administration and user support.

## Prerequisite(s)

CITC 1310 and CITC 1303

## Co-requisite(s)

None

## Textbooks(s) and Other Course Materials

1. Required: Database Systems: Design, Implementation and Management; (12th. Edition), by Coronel/Morris, Cengage, 2017, ISBN-13 978-1-305-62748-2 (Electronic Book also available at [www.cengagebrain.com](file:///C:\Users\yroebuck\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AFDY234F\www.cengagebrain.com)).
2. Additional reading material will be provided by the instructor.
3. Required supplies: Removable external storage device; earbuds or headphones

## WEEK/UNIT/TOPIC BASIS

**Week(s) Topic(s)**

1 Introduction, Review of Database Concepts (Normalization, ER Modeling, indexing)

2 Designing for speed of retrieval: De-normalization and Aggregation

3 Structured and Unstructured Data (Tabular, XML, NoSQL)

4 Database Optimization: Indexing, Query Optimization

5 Database Administration: Backup, Recovery, Security, Monitoring

6 Managing large databases: Partitioning, Availability, Reliability, Distributed databases

7 Database security, roles and permissions

8 Mid-term Exam

9 Introduction to Data Warehousing: Data Marts, DW schemas

10 Populating the DW: ETL tools

11 Reporting from the DW data: Queries, reports

12 Reporting from the DW data: cubes, data analysis

13 Big data

14 Data Governance

15 Final Exam

**COURSE GOALS\***

The course will

1. Enhance the student’s knowledge of the advantages and disadvantages of using a database management system and professional design tools. (II, III, IV, V)
2. Build the skills to use a formal language of data definition and data manipulation to accomplish various administrative tasks. (III, IV, V)
3. Enhance the student’s knowledge of the components of alternative database models and appreciation of how alternative system implementations may vary from the relational model. (II, III, IV, V)
4. Build the skills to transform a complex conceptual design into a logical database design and to a physical database design. (II, III, IV, V)
5. Foster the ability to perform the database administration function. (I, II, III, IV, V)
6. Enhance the student’s knowledge of classic data structuring techniques. (I, II, III, IV, V)
7. Build an intermediate level of competence in business intelligence and data mining. (III, IV, V)

\*Roman numerals after course objectives reference goals of the Computer Information Technology program.

**EXPECTED STUDENT LEARNING OUTCOMES\***

Students will

1. Demonstrate effective use of software to organize and analyze patterns and associations in data. (D)
2. Create and populate data warehouses and/or data marts. (C)
3. Use data mining and analysis techniques to make associations and predictions. (G)
4. Analyze data for characteristics of structure to determine the most suitable database organization. (C, D, F)
5. Use access control statements and DBMS utilities to create users, assign privileges, and manage a DBMS. (B, E)
6. Explain the similarities and differences of various data models. (C, D, E)
7. Explain the functions of database administration. (B, E)
8. Write programs using query languages to accomplish administrative tasks. (A, B)
9. Use the Internet to access databases. (A, B, C, E)
10. Explore XML as an alternative database organization. (B, C, D)
11. Explain the concept of indexes. (F)
12. Perform simple ETL tasks. (A, C, F)

\*Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

## EVALUATION

### Testing Procedures: 40% of grade

Two comprehensive exams will be given during the semester. Tests will cover material presented in class.

### Laboratory Expectations: 50% of grade

Several lab projects will be assigned during the semester. Individual and/or group projects may be assigned to emphasize practical solutions to data management problems. Failure to satisfactorily complete assigned projects may result in a grade of F for the course.

### Field Work

None

### Other Evaluation Methods: 10% of grade

Class participation, unannounced quizzes and/or homework will also comprise part of the final grade for the course at the discretion of the instructor.

### Grading Scale

A 93-100

B+ 88-92

B 83-87

C+ 78-82

C 73-77

D 65-72

F 0-64

## Policies

Attendance Policy

Pellissippi State Community College expects students to attend all scheduled instructional activities.  As a minimum, students in all Business and Computer Technology department courses offered in traditional face-to-face or hybrid format must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course.  Some courses may require more than 75 percent attendance because of the course content or accreditation expectations.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

* Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
* Plagiarism, including but not limited to paraphrasing, summariz­ing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
* Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
* Taking an exam for another student.
* Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
* Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that 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 Disability Services (DS) in order to receive accommodations in this course. [Disability Services](http://www.pstcc.edu/sswd/) (http://www.pstcc.edu/sswd/) may be contacted via [Disability Services email](mailto:disabilityservices@pstcc.edu) or by visiting Alexander 130.