CCI 4201: Database Systems

Contact Hours: 45 hours

Prerequisites: CCI 4101 Introduction to Computer Systems, CCI 4102 Operating Systems

Purpose of the Course: To conceptualize, design, implement and administer database systems.

Expected Learning Outcomes of the Course:

At the end of this unit of study, the student should be able to:

i. Describe the role of database systems in an organization.
ii. Compare and contrast models of database systems.
iii. Describe modeling concepts and notation of the entity – relationship model.
iv. Normalize data in a given database problem.
v. Explain concepts in database systems.
vi. Design and implement a relational database system.

Course Content

Week 1-4	An Overview of Database Systems: Evolution of Database Systems; Database applications and users; Advantages and Disadvantages of Databases; Database Architecture; Data & Database Administration; Lifecycle of Database System Development.
Week 5-8	Practical
Week 9-11	Conceptual Database Design: Entity-Relationship Modeling; Normalization; Application to Case Studies. Logical Database Design for Relational Database Systems:
Week 11-12	Practical
Week 12-15	Relational Data Structures; Relational Keys; Relational Integrity Constraints; Mapping of ERD into a Relational Schema. Data definition and manipulation using SQL.

Mode of Delivery

Lectures, tutorials, practicals.

Instructional Materials / Equipment

A computer laboratory, laboratory manuals, database management system -server based, overhead presentation equipment.

Assessment

Type	Weighting (%)
Examination	70%
Continuous Assessment	30%
Total	100%

Core Reading Materials for the Course

Core Textbooks

i. Coronel, C., & Morris, S. (2017). *Database systems: design, implementation, and management* (12th ed.). Boston, MA: Cengage Learning. ISBN: 1305866797.

ii. Elmasri, R., & Navathe, S. B. (2017). *Fundamentals of database systems* (7th ed.). Harlow, UK: Pearson. ISBN: 1292097612.

iii. Hoffer, J. A., Ramesh, V., & Topi, H. (2016). *Modern database management* (12th ed.). Boston, MA: Pearson Education. ISBN: 0133544613.

Core Journals

i. *IEEE Transactions on Knowledge and Data Engineering. ISSN: 10414347.*

ii. *Journal of Computer and System Sciences. ISSN: 0022-0000.*

iii. *ACM Transactions on Database Systems. ISSN: 0362-5915.*

Recommended Reference Materials for the Course

Recommended Textbooks

i. Connolly, T. M., & Begg, C. E. (2015). *Database systems: a practical approach to design, implementation, and management* (6th ed.). Boston, MA: Pearson Education. ISBN: 0132943263.

ii. Thomas Connolly, C. B. (2016). *Database Systems Design, Implementation, & Management* (6th ed.). Harlow, UK: Pearson Education. ISBN: 1305866797.
iii. Foster, E. C., & Godbole, S. (2016). *Database systems: a pragmatic approach* (6th ed.). Apress, NY: Springer. ISBN: 1484211928.

Recommended Journals

i. Database Systems Journal. ISSN: 2069 - 3230.
ii. International Journal of Database Management Systems. ISSN: 0975 - 5985.
iii. Journal of Database Management. ISSN:1063-8016.

Tools: Used

MySQL. One of the most useful database management tools is MySQL
SQL Server Management Studio. If we are talking about database management tools, the best choice is SQL Server Management Studio
Oracle RDBMS.
Salesforce
DevOps
Visual Studio Code
ESM Tools
PhpMyAdmin