Course Syllabus	**EECS 4560 - Database Systems I**
Credits & Contact Hours	3 credit hours & 150 minutes lecture contact hours per week
Coordinator	Dr. Jackson Marques de Carvalho
Textbook	Fundamentals of Database Systems, 6th Edition, by R. Elmasri, and S. Navathe, Addison-Wesley 2010, ISBN-0136086209
Course Information	Relational database modeling, query languages, design issues and implementation issues of databases. An appropriate database language is introduced and used to demonstrate principles. Prerequisite: EECS 1550 or EECS 1580 Elective course
Specific Goals-Student Learning Objectives	Upon completion of this course, students will be able to 1. Design relational databases. 2. Understand normal forms and perform normalization. 3. Design and develop a relational database system with appropriate functionality to process the data and with constraints to maintain data integrity and avoid data redundancy.
Topics	1. Introduction to data, databases and database management systems 2. Data models, the relational data model. 3. Entity-Relationship Modeling, mapping ER models to relational model. 4. The Relational Data Model and relational database constraints 5. Relational Algebra operations 6. Introduction to SQL 7. Data modeling, anomalies, redundancy, normal forms based on functional dependencies. 8. Boyce-Codd Normal Form, problems with normalization 9. Relational database design algorithms, multivalued dependencies and fourth normal form 10. Algorithms for query processing and optimization