



Business Studies Division
1400 Tanyard Road, Sewell, NJ 08080
856-468-5000

CIS 300: Applied Database Technologies

Syllabus

Lecture Hours/Credits: 3/3

Catalog Description

Prerequisite: Advanced Studies Degree requiring AS in Business Administration or Computer Information Systems or Computer Science

This course covers the practical aspects of relational database systems, including database modeling using ER and EER diagrams, physical database design, the relational database query language SQL, normal forms, database integrity and transaction management. Includes a project involving an RDBMS.

Textbook and Course Materials

It is the responsibility of the student to confirm with the bookstore and/or their instructor the textbook, handbook, and any other materials required for their specific course and section.

Click here to see current textbook prices at RCSJ.bncollege.com.

Evaluation Assessment

Online Proctoring

All courses offered at RCSJ, whether they are web-enhanced, hybrid, or fully online, may include assessments that make use of Online Proctoring. To find out more about Online Proctoring and to learn about the minimum technical requirements, visit

www.rcsj.edu/elearning/online-proctoring .

Grading Distribution

Grading to be determined by individual instructors. Students will be provided with hands-on projects to design, integrate, and demonstrate their learning experience that complements the textbook material. Individual instructors may include the following assessment(s):

- Assignments/Projects
- Exams
- Quizzes
- Papers

Grading

The grading scale for each course and section will be determined by the instructor and distributed the first day of class.

Rowan College of South Jersey Core Competencies

(Based on the NJCCC General Education Foundation - August 15, 2007; Revised 2011; Adopted 2014)

This comprehensive list reflects the core competencies that are essential for all RCSJ graduates; however, each program varies regarding competencies required for a specific degree. Critical thinking is embedded in all courses, while teamwork and personal skills are embedded in many courses.

1. **Written and Oral Communication:** Students will communicate effectively in both speech and writing.
2. **Quantitative Knowledge and Skills:** Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems
3. **Scientific Knowledge and Reasoning:** Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
4. **Technological Competency:** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals
5. **Society and Human Behavior:** Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.
6. **Humanistic Perspective:** Students will analyze works in the fields of art, history, music, or theater; literature; philosophy and/or religious studies; and/or will gain competence in the use of a foreign language
7. **Historical Perspective:** Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.
8. **Global and Cultural Awareness:** Students will understand the importance of a global perspective and culturally diverse peoples.
9. **Ethical Reasoning and Action:** Students will understand ethical issues and situations.
10. **Information Literacy:** Students will address an information need by locating, evaluating, and effectively using information.

CIS-300 Core Competencies

This course focuses on three RCSJ's Core Competencies:

- Technological Competency
- Information Literacy
- Written and Oral Communication

Student Learning Outcomes: Advanced Database Technologies

<p style="text-align: center;">Successful completion of this course will help students:</p>	<p style="text-align: center;">RCSJ Core Competencies</p>	<p style="text-align: center;">Evaluation / Assessment (Additional means of evaluation may be included by individual instructors)</p>
<p>Identify and describe the three main hardware components of a client/server system.</p> <p>Describe the way a client accesses the database on a server using these terms: application software, data access API, database management system, SQL query, and query results.</p> <p>Describe the way a relational database is organized using these terms: tables, columns, rows, cells, primary keys, unique keys, and foreign keys.</p>	<ul style="list-style-type: none"> • Technological Competency • Information Literacy • Written and Oral Communication 	<p>Projects Exams Quizzes Presentations Discussions</p>
<p>Explain the function of each of these client tools: the MySQL Command Line Client, MySQL Workbench, and the MySQL Reference Manual.</p> <p>Explain Code SELECT statements that require any of the MySQL language elements.</p> <p>Identify, and analyze the Code summary queries that use aggregate functions, including queries that use the WITH ROLLUP operator and the GROUPING and IF functions.</p>	<ul style="list-style-type: none"> • Technological Competency • Information Literacy • Written and Oral Communication 	<p>Projects Exams Quizzes Presentations Discussions</p>
<p>Identify and explain script that creates and calls a stored procedure that can be used to test MySQL's language features. Differentiate the use of MySQL to write procedural code that uses IF statements, CASE statements, loops, cursors, and condition handlers.</p>	<ul style="list-style-type: none"> • Technological Competency • Information Literacy • Written and Oral Communication 	<p>Projects Exams Quizzes Presentations Discussions</p>
<p>Describe the responsibilities of a database administrator. Distinguish between administrative privileges and object privileges. Describe what a user can do when given any of these privileges for a MySQL object: SELECT, UPDATE, INSERT, DELETE, and EXECUTE. Distinguish between the four privilege levels. Distinguish between a full backup and an incremental backup.</p>	<ul style="list-style-type: none"> • Technological Competency • Information Literacy • Written and Oral Communication 	<p>Projects Exams Quizzes Presentations Discussions</p>

Topical Outline

Specific Goals for Course

1. Students can distinguish poorly designed database (that may appear to work) from well- designed databases
2. Students have implemented a project in a relational database for a specified operating system.
3. Students will be able to assess the accuracy of relational queries expressed in SQL.
4. Students will have developed database triggers or other applications.
5. Students have considered the data requirements of a particular domain and have produced and justified a particular database model to support the information needs.
6. Students will have produced correct ER / EER diagrams that are routinely manifested in database design specifications.
7. Understand security issues associated with database development
8. Define the terminology, features, classifications, and characteristics embodied in database systems.

Required list of topics to be covered:

1. Overview of database types with advantages and disadvantages
2. Characteristics of the Database approach
3. Advantages of using the DBMS approach
4. Database concepts (indexing, inference, aggregation, polyinstantiation)
5. Data Models, Schemas, and Instances
6. Conceptual data modeling and database design (ER / EER)
7. Relational model concepts
8. Relational model constraints and relational database schemas
9. Update operations, transactions, and dealing with constraint violations
10. SQL data definition and data types
11. Specifying constraints in SQL
12. Basic retrieval queries in SQL
13. INSERT, DELETE, and UPDATE Statements in SQL
14. More complex SQL retrieval queries (joins, aggregations, subqueries)
15. Views
16. Schema change statements in SQL
17. Database normalization
18. Database administration (user creation/deletion, permissions and database access controls such as DAC, MAC, RBAC, Clark-Wilson)
19. Database security
 - a. How to protect data (confidentiality, integrity and availability in a DBMS context)
 - b. Vulnerabilities (e.g., SQL injection)
 - c. Inference
 - d. Aggregation
 - e. Hashing and encryption
 - f. Data corruption
 - g. Unauthorized acces

Optional list of topics to be covered:

1. Database Programming (functions, triggers, procedures)
2. Query Optimization
3. Transaction Processing
4. Concurrency Control
5. NoSQL Databases

Affirmative Action Statement

The Board of Trustees is committed to providing a work and academic environment that maintains and promotes affirmative action and equal opportunity for all employees and students without discrimination on the basis of certain enumerated and protected categories. These categories are race, creed (religion), color, national origin, nationality, ancestry, age, sex (including pregnancy and sexual harassment), marital status, domestic partnership or civil union status, affectional or sexual orientation, gender identity or expression, atypical hereditary cellular or blood trait, genetic information, liability for military service, or mental or physical disability, including AIDS and HIV related illnesses.

For questions concerning discrimination, contact Almarie J. Jones, Special Assistant to the President, Diversity and Equity/Title IX and Compliance, 856-415-2154 or ajones@rcsj.edu or (Cumberland) Nathaniel Alridge, Jr., JD, Director, Diversity and Equity/Title IX and Judicial Affairs, 856-691-8600, ext. 1414 or nalridge@rcsj.edu. For disability issues or any barriers in the learning or physical environment related to a document condition/disability please contact: Gloucester campus – Carol Weinhardt, Director, Department of Special Services, ADA/504 Officer at 856-415-2247 or cweinhar@rcsj.edu; or Cumberland Campus – Meredith Vicente, Senior Director, Department of Special Services/Project Assist at 856-200-4688 or mvicent1@rcsj.edu

Department of Special Services

The Department of Special Services is committed to providing support services and ensuring equal access to eligible students with documented conditions/disabilities as outlined by the Americans with Disabilities Act (ADA) and the Americans with Disabilities Act with Amendments Act (ADAAA).

(Gloucester Campus Location and Contact)

Location: Instructional Center, room 425A.

Primary Contact: Director, Carol Weinhardt, (email) cweinhar@rcsj.edu; or (phone) 856-415-2247.

(Cumberland Campus Location and Contact)

Location: Center for Academic & Student Success (CASS)

Primary Contact: Senior Director, Meredith Vicente, (email) mvicent1@rcsj.edu; or (phone) 856-200-4688.

Reporting Allegations of Sexual Assault and Resource Referrals (08/2021)

Gloucester Campus

There are multiple safe places for students to report allegations of sexual assault, both on and off campus. Reports of sexual assault can be made to any of the following offices listed in the chart below.

All students are encouraged to report alleged crimes on campus. Crimes that pose a threat to the campus community must be reported to 9-1-1, Security, the Sheriff's Office or the Deptford Township Police Department. All employees, including Security staff, must report incidents of discrimination, harassment or sexual misconduct to the Title IX Officer.

Service	Resource	Phone Number/Location/Website
Non-Confidential Reporting Local Law Enforcement	Gloucester County Sheriff's Office Deptford Township Police Dept. Gloucester Co. Prosecutor's Office Sexual Assault Response Team	856-681-2200 856-845-2220 856-384-5500 856-384-5555
Non-Confidential Reporting 9-1-1 and Campus Security	9-1-1 Gloucester County Emergency Management Dispatch Campus Security Blue Light Emergency Phones or ext. 4444 from any campus desk phone	9-1-1 or push RED button on Campus Blue Light Emergency Phones 856-681-6287
Non-Confidential On-Campus Reporting Support Services	Almarie J. Jones Special Assistant to the President Diversity and Equity/Title IX and Compliance John F. Ryder Director, Student and Veteran Affairs	856-415-2154 College Center, Room 116 ajones@rcsj.edu 856-468-5000, ext. 6456 College Center, room 202 jryder@rcsj.edu
Confidential On-Campus Counseling and Support Services	Lois Y. Lawson-Briddell, Ph.D. MSW, LSW, Director Counseling & Wellness Services Center William Leonard, Ph.D. Intervention Teams Consultant Crystal Noboa, LSW, MSW Director, The Center for People in Transition (PIT) Diane Mussoline, EdS, LMFT Executive Director of Behavioral Services	856-464-5236 l Lawsonb@rcsj.edu College Center, Room 206 856-415-2119 wleonard@rcsj.edu College Center, STEM Office C-168 856-415-2264 cnoboa@rcsj.edu Career & Technical Education Center, Room 809, 1492 Tanyard Road 856-494-5665 dmussoli@rcsj.edu Rowan University Center, Room 200A
Confidential Off-Campus Full-Service Support	Center for Family Services/ Services Empowering Rights of Victims (SERV)	1-866-295-7378 Camden and Gloucester counties www.centerffs.org/serv
Hospitals with Sexual Assault Nurse Examiners	Inspira Medical Center Jefferson Washington Township Hospital	700 Mullica Hill Road, Mullica Hill, NJ 08062 856-508-1000 435 Hurffville-Crosskeys Rd., Turnersville, NJ 856-582-2500