

CIT 178

Relational

Databases



FIGURE 1 CIT178 COURSE BANNER

Syllabus - Spring 2018

INSTRUCTOR: Lisa Balbach

OFFICE: JB119 (Beckett Building)

OFFICE HRS:

Monday 4:00-6:00 pm

Monday 8:00-8:30 pm

Tuesday 5:15-7:15 pm

Wednesday 8:00-8:30 pm

or by appointment

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Course Description

This course introduces students to core database concepts including data, data types, and relationships. Students will interpret and create relational data structures and use SQL language to perform basic create, read, update, and delete operations. Students will recognize the value of optimized data and produce normalized designs.

Recommended prerequisites: None

Additional Required Skills

This course assumes that the student possesses the essential skills required to use a computer with the Windows operating system. The student will interact with the Windows desktop to access software and data and perform file and folder maintenance. The student must be proficient in the use of the web, e-mail, and searching. The student must have the skills required to use Moodle. To brush up on these skills, please visit the [Moodle Orientation](https://elearn.nmc.edu/course/view.php?id=50481) module (<https://elearn.nmc.edu/course/view.php?id=50481>).

Materials Needed

1. Required Textbook: There is 1 book required for this course:

Murach's SQL Server 2016 for Developers by Bryan Syverson and Joel Murach (2016)
ISBN: 9781890774967

2. Accessories: USB 3.0 drive – 128GB or greater capacity

3. Hardware and Software for those planning to study at home

This course uses various software applications that are available free or through the NMC CIT Department's Microsoft Imagine subscription. At the minimum, you will want to obtain and setup the following:

- Microsoft SQL Server 2016 Express, Developer or Enterprise¹
- Microsoft SQL Server 2016 Management Studio¹
- Microsoft Office¹ – Word, Excel, Access, and PowerPoint
- Visual Studio Community, Professional or Enterprise¹
- Lucidchart²

4. Internet Access: Students who wish to complete assignments at home will need reliable internet access, as some material will be delivered via Moodle, YouTube, and other online streaming multimedia sources. The JB 214 computer lab and the business pod at the Osterlin Library are available for those who do not have reliable internet access.

General Education Outcomes

The following NMC general education outcomes will be met by this course.

Critical Thinking: Students will skillfully conceptualize, apply, analyze, synthesize, and evaluate information gathered from observation, experience, reflection, reasoning, or communication.

¹ Available free to NMC CIT students through the Microsoft Imagine program.

² Free educational account *using special link that will be provided in class*. Do not sign up without this link, or we may experience issues adding you to the team.

Significant Learning Outcomes

The following learning outcomes will be met by this course.

TABLE 1 LEARNING OUTCOMES

Outcome	Assessment Method
Knowledge	
#1 Describe relational database concepts.	Lecture participation, quizzes, exams, presentations
#2 Identify database objects and their purpose.	
#3 Identify SQL statement components and syntax	
#4 Distinguish DML, DDL, and DCL operations.	
Application	
#5 Manipulate data using SQL statements.	Lab participation, term projects, presentations, exams
#6 Create database objects.	
#7 Apply normalization concepts.	
#8 Design and implement stored procedures.	
#9 Create scripts.	
#10 Maintain a productive and efficient development environment.	
Integration	
#11 Design relational databases: construct tables, relationships, fields, and keys.	Lab participation, papers, term projects, presentations, exams
#12 Optimize multi-user database designs	
#13 Research alternative database solutions and understand the high-level differences between them [Critical Thinking].	
Human Dimension	
#14 Give and receive feedback in an appropriate manner.	Lab participation, term projects
#15 Work effectively with partners and teams.	

Outcome	Assessment Method
Caring – Civic Learning	
#16 Analyze the legal and ethical implications of data sharing and how database design must optimize data availability while protecting the privacy of the subjects of that data.	Lecture participation
Learning How to Learn	
#17 Engage in self-directed learning.	Papers, term projects
#18 Experience continuous improvement through iteration.	

Grading and Assignment Information

Grades are assigned based on the total points you have accumulated throughout the semester. Points are accumulated by completing assignments, papers, projects, presentations, quizzes and exams. Grade proportions and points are as follows:

Graded Activity	Learning Outcomes	Total Points
Lecture Participation (25%) (top 10) @ 25 points each	#1, #2, #3, #4, #10, #16	250
Lab Activity Participation(25%) (top 10) @ 25 points each	#5, #6, #7, #8, #9, #10, #11, #12, #14, #15	250
Quizzes (10%) (top 10) @ 10 points each	#1, #2, #3, #4	100
Midterm Paper (2.5%) 1 st draft or WRC visit	#11, #17	25
Midterm Paper (2.5%) 2 nd draft or WRC visit	#13, #17, #18	25
Midterm Paper (5%) final draft	#13, #17, #18	50
Term Project (5%) milestone 1	#5, #6, #7, #8, #9, #10, #11, #12, #14, #17	50
Term Project (5%) milestone 2	#5, #6, #7, #8, #9, #10, #11, #12, #14, #17, #18	50
Term Project presentation (10%)	#1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #17, #18	100
Final Exam (10%) MTA Certification Exam	#1, #2, #3, #4, #5, #6, #7, #9	100
TOTAL		1000³

³ Projected total. If the course total changes at the instructor's discretion, the updated total will be used to calculate your final percentage in the class.

Grading Scale: At the end of the semester, the following scale will be used to determine your final grade:

Grade	Percentage	Points Required
4.0	95-100%	950-1000
3.5	90-94%	900-949
3.0	85-89%	850-899
2.5	80-84%	800-849
2.0	75-79%	750-799
1.5	70-74%	700-749
1.0	65-69%	650-699
0.0	0-64%	0-649

I = incomplete, W = withdrawn (with or without grade (see posted date), FA = failed to attend, AU = audit or drop without record (see posted date)

General Assignment/Project/Exam Overview

Lecture & Lab Participation Points:

This course is hands-on, with time spent in classroom and lab settings working as individuals, pairs and teams to learn and master this material. You will receive points for lecture and lab participation. Lecture and lab participation are worth 25 points each. Your top 10 lecture and your top 10 lab points will be used to determine this portion of your grade. **Fifty percent of your grade comes from lecture and lab participation!**

Excessive absences, arriving late, arriving to class unprepared, leaving early, failing to participate in discussions or teamwork, falling asleep in class, not completing required tasks in class, using electronic means to communicate with friends and family during class time, disruptive behavior, and other reasonably obvious failures to participate fully will result in loss of these points.

Students who feel they have legitimate extraordinary personal issues that must be addressed and which may be interpreted as failure to participate are responsible for bringing these concerns to the instructor so that alternatives may be arranged that meet the needs of the student, the class, and the learning objectives. At the instructor's sole discretion, such arrangements will be observed in calculating this grade.

With reasonable effort and open, proactive communication with the instructor, it is fully possible for every student to receive full classroom and lab participation points.

Midterm Paper:

You will research a topic and create a draft of a paper. You will revise the paper into a second draft. You will complete the paper in a final draft. (You will have 3 versions of the paper; the first two versions are worth 25 points, the final version is worth 50 points.) Paper topics, requirements and rubrics are posted to Moodle.

Project:

You will work individually to complete a term project. Project requirements and rubrics are posted to Moodle. The project is worth 100 points (10% of your final grade)

Presentation:

You will create a formal presentation on your project and present it to the class. Presentation requirements and rubrics are posted to Moodle. The presentation is worth 100 points (10% of your final grade)

Quizzes:

Quizzes cover textbook, lecture and assignment material. Quizzes consist of multiple choice, true false and short answer questions. Quizzes are in Moodle and must be completed by the due date which is in the course schedule. Each quiz is worth 10 points. The top 10 scores will be used to determine the total quiz points. The maximum number of points is 100 (10% of your final grade)

Certification Exam:

This class prepares you for the MTA 98-364 Database Administration Fundamentals exam, which is your final exam in this course. Passing the certification exam is worth 100 points. Students who do not pass, will be allowed to retake the exam. Students who retake and pass the exam will be awarded 100 points. Students who do not pass the certification exam, will still receive points for the final, but their score will be prorated.

Late work will not be accepted unless prior arrangements have been made with the instructor!

Course Communication

Announcements will be posted throughout the semester as necessary; plan to be online an average of three times per week to check for these. The instructor will also send e-mail messages, so you need to check your NMC e-mail account frequently. It is important that you monitor your email between classes. Failure to check email will not be accepted as a reason for late or missed work.

Please use the following email address: Lbalbach@nmc.edu to communicate with me outside of class.

I will try my best to answer your emails to me within a 24-hour period during Monday through Friday. I will also check email over the weekend. I will try to read the emails at least once or twice a day and respond at that time. If I am gone or ill, I will post that fact in the announcements so that you will know why I have not responded to your email.

The Student Questions/Answers discussion forum at the top of the course is for you to ask each other questions. You may be able to resolve the problem without waiting for a response from me 😊.

Additional Instructional Support

1) Supplemental Materials: Additional free video lessons, programs, and documents are available on the web and will be linked into Moodle as needed.

2) Feedback on assignments/scores: The instructor will correct assignments within a week of receiving them. Scores will be posted to the assignment dropbox (comments will also be placed in the dropbox).

3) Posting Scores: Scores will be updated when projects, labs, papers etc are corrected. Quiz scores should display immediately; however, short answer questions will need to be corrected manually by the instructor and won't display until after the instructor enters a score. If you have any questions about your assignment scores, please email your instructor and ask.

4) Time Requirements: This course is NOT a self-paced course. College courses are designed to require 2 to 3 hours of study per hour of class time. This means that a 4-unit course, in addition to 4 hours of class time, requires at least 8 hours of study outside of class. If you cannot find 8 hours of time per week to study for this course, then you should postpone until a future semester when you have adequate time to study. If you are taking more than one course, multiply your total units by 2 hours and consider whether you will have time to do that much work at a minimum in addition to class time. There is no point in setting yourself up for failure.

Strategies for Success

- Do all reading and activities that were assigned before the first class session each week.
- Practice, on the computer, the skills taught in the text or other assigned materials.
- In addition to class time, work at the college or your home on a regular and consistent schedule. Use time management skills to establish your weekly commitment to this course.

- Ask for help when you need it. Your instructor is available to help you learn. Your instructor's goal is to assist you in having a pleasant and successful learning experience.
- Take advantage of tutoring available through the college and the CIT department.
- Attend office hours. There is a strong correlation between students who attend office hours and high grades. Your instructor is also available via phone and remote meeting software.

Classroom and Department Policies

Student Preparation, Attendance, and Participation Policy:

Most assignments will be completed in class, so if you miss sessions, your grade will suffer. You are responsible for following the schedule and meeting the deadlines. Failure to attend classes and/or engage in learning activities, assignments, and quizzes for a period of three consecutive weeks may result in an administrative drop from this class at the sole discretion of the instructor. The following behaviors may result in loss of participation points: late arrival, leaving before the class is dismissed, working on other subjects during class time, disruption, non-participation, failure to complete homework, and any general lack of preparation.

Software/Network Policy: Students using NMC's network or downloading office software cannot share login information with others. Please realize, NMC resources are for your use only. Any misuse of the network or college resources may result in a denial of services. If you have any questions about the use of the network, please ask!

Computer Lab: NMC provides a fully-equipped computer lab in JB 214 (James Beckett Building, upstairs). Please consult the [Computer Lab site](https://www.nmc.edu/departments/help-desk/computer-labs.html) (<https://www.nmc.edu/departments/help-desk/computer-labs.html>) for hours. There are also five computers in the Osterlin Library "business pod" that are loaded with the same software as our Beckett Building computer labs – consult the [Osterlin Library page](https://www.nmc.edu/library/index.html) (<https://www.nmc.edu/library/index.html>) for hours.

Department Policy for Academic Code of Conduct: The policy for academic dishonesty is as follows: The penalty for the first offense of cheating will be zero (0.0) on the assignment. Future offenses will result in failure of the course. The same will be true for the quizzes. Please think before you cheat—it is really hurting you the most.

Note: NMC requires instructors report any cheating incidents to the Vice President of Student Services. Each offense will be recorded and multiple offenses could result in expulsion.

Writing and Reading Center: NMC's [Writing and Reading Center](https://www.nmc.edu/student-services/writing-center/) (<https://www.nmc.edu/student-services/writing-center/>) offers peer assistance with all types of writing at all stages of the writing process and with all forms of reading.

Laptop Checkout at the Osterlin Library: NMC students, faculty, and staff may be able to check out laptops for home use from the Mark & Helen Osterlin Library, subject to availability. Please [contact the Osterlin Library](https://www.nmc.edu/library/contact-us.html) (https://www.nmc.edu/library/contact-us.html) for availability and checkout information.

CIT Majors: CIT majors must have a 3.0 GPA in CIT courses as a prerequisite to taking the work experience internship. This internship class is necessary for a CIT degree. Please see the internship instructor if you are near the end of your program.

Syllabus Changes: The instructor reserves the right to make changes to the syllabus and will inform the class of any changes.

Course Itinerary

Week 1: Course Information, Intro to Databases and SQL, using Management Studio (Assignments/Quizzes are due by Sunday, 1/21 11:59pm)

Monday 1/15:

- Syllabus, Schedule, and Course Information
- Moodle Shell
- Chapter 1: An introduction to relational databases and SQL

Wednesday, 1/17:

- Chapter 2: How to use the Management Studio
- Hands-on activities
- Quiz

Week 2: Retrieving Data from One Table (Assignments/Quizzes are due by Sunday, 1/28 11:59pm)

Monday (1/22):

- Chapter 3: How to retrieve data from a single table
- Hands-on activities

Wednesday (1/24):

- Lab assignments
- Quiz

Week 3: Retrieving Data from Multiple Tables
(Assignments/Quizzes are due by Sunday, 2/4 11:59pm)

Monday (1/29):

- Chapter 4: How to retrieve data from two or more tables
- Hands-on activities

Wednesday (1/31):

- Lab assignments
- Quiz

Week 4: Query Summaries
(Assignments/Quizzes and 1st draft of the midterm paper are due by Sunday, 2/11 11:59pm)

Monday (2/5):

- Chapter 5: How to code summary queries
- Hands-on activities

Wednesday (2/7):

- Lab assignments
- Quiz
- Midterm Paper 1st Draft or WRC visit

Week 5: Subqueries
(Assignments/Quizzes are due by Sunday, 2/18 11:59pm)

Monday (2/12):

- Chapter 6: How to code subqueries
- Hands-on activities

Wednesday (2/14):

- Lab assignments
- Quiz

Week 6: Working with data and data types

(Assignments/Quizzes and second draft of the Midterm paper are due by Sunday, 2/25 11:59pm)

Monday (2/19):

- Chapter 7: How to insert, update, and delete data
- Chapter 8: How to work with data types
- Hands-on activities

Wednesday (2/21):

- Lab assignments
- Quiz
- Midterm Paper 2nd Draft or WRC visit

Week 7: Working with functions

(Assignments/Quizzes are due by Sunday, 3/4 11:59pm)

Monday (2/26):

- Chapter 9: How to work with functions
- Hands-on activities

Wednesday (2/28):

- Lab assignments
- Quiz

Week 8: Database Design

(Assignments/Quizzes and final draft of the Midterm Paper are due by Sunday, 3/11 11:59pm)

Monday (3/5):

- Chapter 10: How to design a database
- Hands-on activities

Wednesday (3/7):

- Lab assignments
- Quiz
- Midterm Paper Final Draft

Week 9: Creating DB tables and working with views
(Assignments/Quizzes are due by Sunday, 3/18 11:59pm)

Monday (3/12):

- Chapter 11: How to create a database and its tables with SQL Statements
- Chapter 12: How to create a database and its tables with Management Studio
- Chapter 13: How to work with views
- Hands-on activities

Wednesday (3/14):

- Lab assignments
- Quiz

Week 10: Scripting
(Assignments/Quizzes and Term Project, milestone 1, are due by Sunday, 3/25 11:59pm)

Monday (3/19):

- Chapter 14: How to code scripts
- Chapter 15: How to code stored procedures, functions, and triggers
- Hands-on activities

Wednesday (3/21):

- Lab assignments
- Quiz
- Term Project Lab (Term Project Milestone 1)

SPRING BREAK – No Classes, Monday 3/26 through Sunday 4/1

Week 11: Transaction Processing
(Assignments/Quizzes are due by Sunday, 4/8 11:59pm)

Monday (4/2):

- Chapter 16: How to manage transactions and locking
- Hands-on activities

Wednesday(4/4):

- Lab assignments
- Quiz

Week 12: Database Security and Term Project

(Assignments/quizzes and Term project milestone 2 are due by Sunday, 4/15 11:59 pm)

Monday (4/9):

- Chapter 17: How to manage database security
- Hands-on activities
- Quiz

Wednesday(4/11):

- Term Project Lab (Term Project Milestone 2)

Week 13: Term Projects

(Final Term Project and Presentation are due on Moodle by Sunday, 4/22 11:59pm)

Monday (4/16):

- Review for Final Exam
- Term Project Lab

Wednesday(4/18):

- Final preparation of Term Projects for Presentation

Week 14: Term Project Presentations to Class

Students must attend all presentation days to receive full credit

Monday (4/23):

- Term Project Presentations Day 1

Wednesday (4/25):

- Term Project Presentations Day 2

Finals Week: MTA 98-364 Database Fundamentals Certification Exam