Department of Information Sciences and Technology

School of Computing

AIT 524 Database Management Systems

Syllabus	
Course Information	AIT524: Database Management Systems Location: Blackboard
Instructor	See PatriotWeb.
Course Description	This course is designed to provide an understanding and importance of the modern relational database systems. The course will help students fully understand the usage, opportunities, and challenges of relational databases, and their applications in decision-making. Emphasis for the course will be placed on a real-world orientation through the analysis of case studies and hands-on activities that highlight the importance of a comprehensive approach in databases. The course will be in demand by students working in or interested in working with relational databases as well as big data analytical systems, which is one of the fastest growing specializations within IT. As part of this specialization, students need to learn not just how relational databases can be effectively applied in modern information systems but what role they play today in the big data analytical eco-system helping to transform the IT industry.
Course Objectives	**Upon completion of the course, students will be able to:** • Understand the importance of relational databases in decision-making • Understand the research process and be able to apply basic principles and knowledge found in the literature related to the research question • Be familiar with different types of databases including relational, NoSQL, and Big Data systems • Be familiar with the techniques of data organization and access in the Oracle 12c database environment • Be able to understand and work with the relational database model and ERD • Create database objects, including tables, constraints, indexes, sequences, synonyms, and users, and manipulating data • Effectively apply data query techniques, such as row filtering, joins, single-row functions, aggregate functions, sub-queries, and views • Be proficient with advanced SQL topics • Be familiar in the art of data analysis techniques for government and industrial data systems

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Course Methodology	The class format combines readings, demonstration videos, discussions, and assignments designed to help you build critical skills. The class is interactive and requires every student to engage in discussions and assignments. In addition to studying readings, videos, and completing assignments, every student is expected to actively participate and to apply what they have learned in their assignments. Assignments place an emphasis on a real-world orientation through the analysis of case studies and hands-on activities that emphasize the importance of a comprehensive approach in big data analytics.
Required textbook(s) and/or materials	In this course students will have access to a large variety of recommended open-source on-line materials to study, including textbooks, videos, audio materials, websites, discussions, etc., provided through the Blackboard Learning Management system. In addition to the materials provided by the instructor, students will need to purchase the following two books: Ramez Elmasri, Shamkant B. Navathe (2015). Fundamentals of Database Systems, 7th Edition, Pearson ISBN-13: 978-0133970777 ISBN-10: 0133970779 Joan Casteel (2016). Oracle 12c: SQL, 3rd Edition ©2016 Cengage Learning ISBN-10: 1305251032 ISBN-13: 9781305251038

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LockDown Browser + Webcam Requirement	This course requires the use of LockDown Browser and a webcam for online exams. The webcam can be the type that's built into your computer or one that plugs in with a USB cable.
	Watch this brief video to get a basic understanding of LockDown Browser and the webcam feature.
	https://www.respondus.com/products/lockdown-browser/student-movie.shtml
	In addition to the Lockdown Browser, you will be required to use your phone (or another mobile device) to join a Zoom session while taking the exam using your laptop or a desktop computer. If there are any issues during the exam, you will be able to ask for my help. Many students find it very helpful as they are concerned that if there is a problem with the test they might not be able to finish it. Please visit https://its.gmu.edu/bulletins/zoom-now-available-at-mason/ to get information about Zoom for GMU students.
	Download Instructions
	Download and install LockDown Browser from this link:
	https://download.respondus.com/lockdown/download.php?id=133435885
	Once Installed
	• Start LockDown Browser
	• Log into Blackboard Learn
	• Navigate to the test
	Note: You won't be able to access tests with a standard web browser. If this is tried, an error message will indicate that the test requires the use of LockDown Browser. Simply start LockDown Browser and navigate back to the exam to continue.
	Guidelines
	When taking an online test, follow these guidelines:
	• Ensure you're in a location where you won't be interrupted
	• Turn off all other devices (e.g. tablets, phones, second computers) and place them outside of your reach
	• Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it
	• Clear your desk or workspace of all external materials not permitted - books, papers, other devices

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- Remain at your computer for the duration of the test

- If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam

- To produce a good webcam video, do the following:

    o Avoid wearing baseball caps or hats with brims

    o Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) are likely to move

    o If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete

    o Take the exam in a well-lit room, but avoid backlighting (such as sitting with your back to a window)

- Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

Getting Help

Several resources are available if you encounter problems with LockDown Browser:

- The Windows and Mac versions of LockDown Browser have a "Help Center" button located on the toolbar. Use the "System & Network Check" to troubleshoot issues. If an exam requires you to use a webcam, also run the "Webcam Check" from this area

- Respondus has a Knowledge Base available from support.respondus.com. Select the "Knowledge Base" link and then select "Respondus LockDown Browser" as the product. If your problem is with a webcam, select "Respondus Monitor" as your product

If you're still unable to resolve a technical issue with LockDown Browser, go to support.respondus.com and select "Submit a Ticket". Provide detailed information about your problem and what steps you took to resolve it

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Course Grading	<table><tr><th>Percentage</th><th>Grade</th></tr><tr><td>97 and above</td><td>A+</td></tr><tr><td>93-96</td><td>A</td></tr><tr><td>90-92</td><td>A-</td></tr><tr><td>87-89</td><td>B+</td></tr><tr><td>83-86</td><td>B</td></tr><tr><td>77-82</td><td>B-</td></tr><tr><td>70-76</td><td>C</td></tr><tr><td>< 69</td><td>F</td></tr></table> **Letter Grading Descriptions:** Listed below are grades and academic standards for each grade awarded. **A:** *Consistently performs above and beyond* the course/assignment requirements **B:** *Meets* and *occasionally exceeds* the course/assignment requirements **C:** *Minimally meets* the course/assignment requirements **F:** *Fails to mee*t the course/assignment requirements *Students are responsible for checking the currency of their grade books. Grade discrepancies must be brought to instructor's attention within one week of assignment submission and 48 hours of exam submission.*
Computer Requirements	Your computer must have access to high speed internet and a webcam. Your computer must have access to high speed internet and a webcam. In addition, you need a computer with minimum of 8GB of memory, 80GB or free hard disk storage to install the software used in this course.
Mason Honor Code and Course Policy	**Mason Honor Code** To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

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AIT-524 Academic Integrity	All work performed in this course will be subject to Mason's Honor Code. Students are expected to do their own work in the course. In papers, students are expected to write in their own words, rather than cutting-and-pasting from sources found on the Internet.
	The goal of assignments is to demonstrate *what you have learned, not what you can Google*. When you do use text or graphical material from books, articles, and the Web, *enclose the material in quotes and provide a complete and proper reference*. If a paragraph is used, then it should be indented in the text (both left and right margins).
	In-text citation can use the [Author, Year] format or the Numerical [1] format which must refer to the source in the References section of your assignment. Use the APA Style Guide for guidance on citation style, usage, etc. Regardless of the citation method used, proper citations always include: Author(s), Title, Publication Date, Publisher, and URL (if from the Web, along with Last Accessed Date).
	Notes: • Wikipedia is not a primary reference. Use it for *initial discovery* but use and cite *primary references* (which Wikipedia itself might use). If you need assistance with writing an assignment, you can get assistance at http://writingcenter.gmu.edu

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Individuals with Disabilities	**The university is committed to providing equal access to employment and educational opportunities for people with disabilities.** Mason recognizes that individuals with disabilities may need reasonable accommodations to have equally effective opportunities to participate in or benefit from the university educational programs, services, and activities, and have equal employment opportunities. The university will adhere to all applicable federal and state laws, regulations, and guidelines with respect to providing reasonable accommodations as necessary to afford equal employment opportunity and equal access to programs for qualified people with disabilities. Applicants for admission and students requesting reasonable accommodations for a disability should call the Office of Disability Services at 703-993-2474. Employees and applicants for employment should call the Office of Equity and Diversity Services at 703-993-8730. Questions regarding reasonable accommodations and discrimination on the basis of disability should be directed to the Americans with Disabilities Act (ADA) coordinator in the Office of Equity and Diversity Services.
Anti-Racist Approach	As a member of the George Mason University community, the Information Sciences and Technology Department plays an integral role in building an educational environment that is committed to anti-racism and inclusive excellence. An anti-racist approach to higher education acknowledges the ways that individual, interpersonal, institutional, and structural manifestations of racism against Black individuals and other people of color contribute to inequality and injustice in our classrooms, on our campuses, and in our communities, and it strives to provide our community members with resources to interrupt cycles of racism so as to cultivate a more equitable, inclusive, and just environment for all of our students, staff, faculty, alumni, and friends, regardless of racial background. To be anti-racist means: • To make constant, conscious decisions to interrupt racism and cultivate equity, inclusion, and justice for people of all racial backgrounds, and in particular those from Black communities and other communities of color, who are most likely to bear the direct and indirect costs of systems of white supremacy; • To interrogate histories of white supremacy and white-dominant culture, and to examine the ways in which these histories have impacted our individual beliefs, our interpersonal relationships, our institutional and structural policies and processes, and our entire society;

	• To make a commitment to being responsible for our own relationships to, and actions within, systems of white supremacy; and • To cultivate a practice of self-awareness and self-reflection that allows us to critically evaluate our own role in upholding white supremacy and identify the ways we can interrupt cycles of racism at the individual, interpersonal, institutional, and structural levels. We believe that the work of anti-racism starts with each individual, and that in cultivating an anti-racist approach to research, scholarship, and practice, our students will build a skillset rooted in principles of equity, inclusion, and justice that they will carry with them throughout their lives. For more information on how to continuously cultivate the practice of anti-racism, see this guide from the National Museum of African American History and Culture on how to be anti-racist: https://nmaahc.si.edu/learn/talking-about-race/topics/being-antiracist
Email Policy	**Web: masonlive.gmu.edu** Mason uses electronic mail to provide official information to students. Examples include notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason email account and are required to activate that account and check it regularly. Students are also expected to maintain an active and accurate mailing address in order to receive communications sent through the United States Postal Service.
Assignment Categories and Weights	The following table lists the six types of assignments in this course and the weight of each category in the final course grade. <table><tr><th>Grading Components</th><th>Course Grade Weight</th></tr><tr><td>Research Assignments</td><td>5%</td></tr><tr><td>Assignments</td><td>20%</td></tr><tr><td>Practice Problems</td><td>10%</td></tr><tr><td>Quizzes</td><td>10%</td></tr><tr><td>Mid Term Test</td><td>25%</td></tr><tr><td>Final Exam</td><td>30%</td></tr></table>

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Research Assignments: 5% — Assignments in this section will introduce students to the research process and help them prepare a research paper on the topic of your choice **Instructions** Please refer to the Research Modules area for specific details.
Practice Problems: 10% — During this class, students will work on several practice problems. Some practice problems require the use of LucidChart or MS Visio. Both tools are widely used by IT and business professionals to visualize, analyze, and communicate complex problems, systems, and processes. They are used to create a large range of drawings including Entity-Relationship diagrams (used in this class), building blueprints, street maps, project timelines, program flowcharts, network diagrams, etc. These practice problems will help you develop the expertise necessary to work on the weekly assignments.

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Assignments: 25%	**Instructions** There are assignments in most weeks of the course. The assignments are either brief research papers or exercises. Please refer to the Assignment areas in each module for specific details.
Mid-term Test: 25%	**Instructions** The Midterm test takes place in Module 4. The Midterm test is "closed book, closed notes". No reference materials other than those provided with the Test will be permitted. The Midterm exam will be retained by the Department of Information Sciences and Technology and will not be returned to students. For both the Midterm test and Final exam, students must have 2 devices: a computer with Respondus Lockdown browser (requires a camera and microphone), and a separate device with Zoom connection (requires a camera and microphone; might be a phone, tablet, second computer, etc.). There are instructions for using the LockDown browser above. You will also try it out in Module 3. Additional details will be provided by the instructor.
Quizzes: 10%	There will be several quizzes in this course. Each quiz will contain 10 questions and students may attempt the quizzes several times in order to improve their score and deepen their understanding of the learning content.
Final Exam: 30%	The final exam will be taken in Module 8 (see http://registrar.gmu.edu) and will be based on topics addressed throughout the entire course. The final exam will be "closed book, closed notes" – no reference materials other than those provided with the exam will be permitted. For the Final exam, students must have 2 devices: a computer with Respondus Lockdown browser (requires a camera and microphone), and a separate device with Zoom connection (requires a camera and microphone; might be a phone, tablet, second computer, etc.). There are instructions for using the LockDown browser above. Additional details will be provided by the instructor.

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	The final exam will be retained by the Department of Information Sciences and Technology and will not be returned to students.