Department of Information Sciences and Technology

Course Syllabus

IT 207 – IT Programming
V1 - 07.27.2023

Catalog Description

Building on fundamentals of problem solving, logic and algorithm development, and procedural programming, this course further develops these skills while covering server-side scripting languages and relational database connectivity. Students will use open-source software tools to develop database-enabled web applications.

Prerequisites

The prerequisites for this course are:
- IT 102: Discrete Structures or MATH 112 or MATH 125
- IT 106: Introduction to IT Problem Solving Using Computer Programming or IT 109: Introduction to Computer Programming or IT 196 or CS 112
- IT 214: Database Fundamentals or IT 194

A grade of "C" or better must be achieved in the prerequisite courses before a student is qualified to take this course. The prerequisite course must be completed prior to, not concurrently with, this course.

This requirement will be **strictly enforced**. Any student who does not meet the prerequisite requirement will be dropped from the course by the department at the start of the semester and the student will be responsible for any consequences of being dropped.

Rationale

This course enables students to further advance their skills and knowledge gained in programming and database to manage persistent data on the server-side using recent server-side technologies and web development tools.

Course Learning Outcomes

On successful completion of this course, students will be able to
1. Describe issues related to the design and implementation of network-enabled information systems.
2. Describe the functionality of some common server-side web application technologies.
3. Demonstrate proficiency in implementing those technologies.

Program Level Student Outcomes

At the end of the course, students will be able to demonstrate an ability to:
1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

Textbook

This course does not have an assigned textbook but will use several online references.

Faculty & Instructors

Hossein Kord
Email: **hkord@gmu.edu**

Communications

Registered students will be given access to a section of the Blackboard Learning System for this course. Blackboard will be used as the primary mechanism to disseminate course information, including announcements, lecture slides, assessments, and grades. Communication with the instructor on issues relating to the individual student should be conducted using Blackboard mail, GMU email, via telephone, or in person - **not** in the public discussion board on Blackboard. Federal privacy law and GMU policy require that any communication with a student related in any way to a student's status be conducted using secure GMU systems – if you use email to communicate with the instructor you **MUST** send messages from your GMU email account.

**Administrative
Support**

Fairfax Campus
Nguyen Engineering Building, Room 5400
Phone: 703-993-3565

Science and Technology Campus
    Bull Run Hall, Suite 102
    Phone: 703-993-8461
For a map and directions, visit: http://maps-directions.gmu.edu/

**Course Structure &
Requirements**

Course Modules:
The course is composed of 12 modules. Each module will be delivered in one week. The course outline is presented in the table below. This course is NOT a self-paced course. Every module will have multiple assessment activities that will be due by a given date and time. No late assessments are permitted for any reason. Please check the Blackboard for course schedule and dates.

Modules/ Weeks	Module Topic	Module Assessment	
		Exercises/Labs	Assignment/Quiz
Module 0	*Course Introductory Module*		
Module 1	*The Big Picture*	Programming Exercise 1	
Module 2	*NodeJS Synchronous File Systems APIs*	Lab 1	
Module 3	*NodeJS Asynchronous File Systems APIs*	Programming Exercise 2	Quiz 1 Assignment 1
Module 4	*Server-Side Fundamentals*	Lab 2	
Module 5	*Server-Side data Formats*	Programming Exercise 3	Quiz 2 Assignment 2
Module 6	*Simple REST API Server-Side Implementation Example*	Lab 3	
Midterm	*Midterm Practicum*		
Module 7	*SQL Review*	Programming Exercise 4	
Module 8	*Connecting MySQL to Nodejs Server*	Lab 4	Assignment 3

Module 9	*SQL injection with Examples*	Programming Exercise 5	Quiz 3
Module 10	*Stored Procedures in DB*	Lab 5	Assignment 4
Module 11	*Calling Stored Procedures from Nodejs*	Programming Exercise 6	Quiz 4
Module 12	*Final review*		
Final	***Final Practicum***		

Course Lectures:

In-person or recorded course lectures provide clarification, amplification, and review of material using slides, examples, and exercises. Lecture slides are complements to the lecture session, not substitutes for it. Each course session is an excellent time for you to reflect on the concepts presented, work out the given examples, and deepen your understanding of reading material.

To keep an environment conducive to learning, disruptions should be kept at a minimum while attending a course session. Social discussions and electronic devices are potential distractions while attending a course session. Mobile phones and other devices should be turned off or set to 'silent' mode and not used during the session. Personal computers are allowed to be used to complete programming activities. For some activities the instructor may ask that computers/devices not to be used to maximize student engagement. Except through prior arrangement with the Instructor and Disability Services [ODS], recording of the course lecture is not allowed, except by the instructor.

Course Readings:

Readings for each module will be listed in the Reading section under the module material on the Blackboard course management system. You will be expected to complete reading assignments before attending the course session. Additional reading materials may be assigned as the semester progresses or if the instructor finds something particularly relevant to an upcoming topic.

Programming Exercises:

Programming exercises are ungraded programming activities that will be conducted every other week. The aim of the programming exercises is to introduce you to some technical topics that supplement the

primary content of the course. Although these exercises are not graded, it is highly recommended that you complete them.

Course Assessments:
Your performance in this course is evaluated using different assessments. The below table shows the weight of each assessment component, and a description of each assessment component will follow.

Assessment Component	Percentage
Labs	20%
Assignments	20%
Quizzes	20%
Midterm Practicum	20%
Final Practicum	20%

- Labs: Labs are programming activities that enforce concepts discussed in lectures. For in-person sections Labs are conducted during lecture-time. Labs are individual activities that are assigned every other week for a total of 5 labs throughout the semester. To score the full mark of the lab you will be required to complete the lab activities within a specified duration (make sure to review lab instructions and submission requirements for *each* lab). At the end of each lab, you will be asked to reflect on your lab work by answering two to three questions that reinforces your understanding of the concepts discussed in the lecture and practiced in the lab.
- Quizzes: Quizzes are closed notes/book MCQ online tests conducted on BB using the Respndous Lockdown Browser. Quizzes are based upon the material discussed in each module including the practical activities. Quizzes are used to evaluate your mastery of terms, concepts, and application. You should prepare for quizzes by understanding the readings and materials presented in the respective course sessions. Quizzes will be given according to the anticipated Course Schedule. As quiz answers may be reviewed, requests to take quizzes at a different time will not be honored except in extenuating circumstances. Extenuating circumstances include a documented medical excuse, a serious family emergency, or scheduled university-approved off-campus event. These must be arranged with the instructor in advance.
- Assignments: Assignments are individual programming tasks that synthesis the material covered in modules. These assignments are also designed to assist in developing your problem-solving skills by

building on topics as you learn about them. For each assignment, you will be given a problem that builds on topics previously covered in the lecture modules and/or readings. To complete these assignments, you will be restricted to your notes, text, lecture materials, technical documentations, and the web sources noted on each assignment. The assignments must clearly display your name in the interface (if any) and be commented with your name in all files. Keep a backup of your work in case you need it for later assignments or the practica. Assignments will be given according to the anticipated Course Schedule.
Late submissions will not be accepted for any assignments for any reason. All assignments must be posted to Blackboard by the due date/time. Assignments may not be submitted through any other medium (e.g. email). Any missed assignment is simply missed, regardless of the reason why (e.g. illness, work, traffic, car trouble, computer problems, death, etc.), and earns a grade of zero. It is highly recommended that you start working on your assignment early and submit whatever you have completed if you are not able to complete the assignment on time.

- Practica: The midterm and final assessment in this course are offered as Lab practica. The Lab practica will be given during multi-hour time blocks during the semester. Each practicum will evaluate your mastery in programming applications and applying concepts presented to that point in the course. You should prepare for a practicum by reviewing past assignments and course exercises. During a lab practicum you will be allowed to use your notes, text, and previously submitted assignments from the current semester. For reasons like accreditation, submissions by any other means besides Blackboard, including server uploads or email, cannot be accepted. The practica materials are retained by the Department of Information Sciences and Technology and are not returned to students. Practica grades are posted on Blackboard. As with the quizzes, requests to take a practicum at a different time will not be honored except in extenuating circumstances. Extenuating circumstances include a documented medical excuse, a serious family emergency, or scheduled university-approved off-campus event. This must be arranged with the instructor in advance.

Grading

If you are encountering difficulty in meeting course requirements, or should some dire circumstance arise, it is important you are proactive in contacting the instructor prior to the due date.

Students have one week to request the re-grading of any graded activity. All requests for the re-grading of a graded activity must be requested from the instructor, in writing (email), within one week of the date grader feedback was posted. In the email request, the student must write a clear explanation of why they believe they should earn more points than were previously earned. The entire graded activity will be re-graded (i.e., there are no partial re-grades). It is possible that the resulting grade will be higher due to errors in grading, or lower if it is discovered that a sufficient number of points were not subtracted the first time. No requests for re-grading will be considered one week after the date grader feedback was posted and the grade will be considered final.

To assess your progress in the course, mid-term evaluations will be calculated using the assignments and assessments graded at the point of determination. Mid-term evaluations will be posted to Patriot Web (http://patriotweb.gmu.edu) between the 5th and 8th week of the course. These evaluations do not become part of the student's official or unofficial record or transcript and are not directly used as part of a calculation of GPA. Mid-term evaluations are not provided during the summer sessions.

The deadline for a selective withdraw from the course with a 'W' grade is in the 10th week of the semester. It is proportioned to be shorter during summer session offerings. Forms do not need the dean's approval and may be obtained from your department's office. Completed forms should be returned no later than the deadline. After that date, a grade will be assigned based on the work that you have submitted. Three selective withdrawals are allowed during your undergraduate studies at the university.

Final averages are assigned a letter grade according to the following ranges:

Percentage %	Grade	Status
98 - 100%	A+	
93 - 97%	A	
90 – 92%	A-	
87 – 89%	B+	Passing
83 – 86%	B	
80 – 82%	B-	
77 – 79%	C+	

73 – 76%	C	
70 – 72%	C-	
60 – 69%	D	Conditional
0 – 59%	F	Failing

Grades of "C-" and "D" are considered passing grades for undergraduate courses. However, a minimum grade of "C" is required in the undergraduate Information Technology program for any course that is a foundation, core, capstone, gateway, concentration, or prerequisite course for other courses. This course is a core course and/or a prerequisite/corequisite for other courses.

Final grades will be posted to Patriot Web and will not be emailed. A student with a 'hold' on their academic account will be unable to access final grades until the Registrar has removed the hold. University policy states that you have one standard semester to question a grade. After that time has passed, a grade cannot be changed.

Important Dates

Dates for adding, dropping the course, etc. are available via: http://registrar.gmu.edu.

Religious Holidays

A list of religious holidays is available on the University Life Calendar page. Any student whose religious observance conflicts with a scheduled course activity must contact the instructor **at least 2 weeks in advance** of the conflict date in order to make alternate arrangements.

Attendance Policy

Students are expected to attend each class, complete any required preparatory work (including assigned reading) and participate actively in lectures and labs. As members of the academic community, all students are expected to contribute regardless of proficiency with the subject matter.

Any student who expects to miss more than one class or lab session is strongly advised to drop the course and take it in a later semester when he/she can attend every class and lab.

Classroom Conduct

Whether the course is face-to-face or online, students are expected to conduct themselves in a manner that is conducive to learning, as directed by the instructor. Any student who negatively impacts the opportunity for other students to learn will be warned – if disruptive behavior continues, the student will be removed from the course.

Privacy

Instructors respect and protect the privacy of information related to individual students. As described above, issues relating to an individual student will be discussed via email, telephone or in person. Instructors will not discuss issues relating to an individual student with other students (or anyone without a need to know) without prior permission of the student.

Graded work other than exams will be returned to individual students directly by the instructor (or by a faculty or staff member or a teaching assistant designated by the instructor or via another secure method). Under no circumstances will a student's graded work be returned to another student.

Faculty and staff will take care to protect the privacy of each student's scores and grades.

Disability Accommodations

The Office of Disability Services (ODS) works with disabled students to arrange for appropriate accommodations, ensuring equal access to university services. Students with any kind of disability are strongly encouraged to register with ODS as soon as possible to take advantage of available services. Accommodations for disabled students **must** be made in advance – ODS cannot assist students retroactively, and at least two weeks' notice is required for special accommodations related to exams. Any student who needs accommodation should contact the instructor during the first week of the semester, so sufficient time is allowed to make arrangements.

Honor Code

All members of the Mason community are expected to uphold the principles of scholarly ethics. On admission to Mason, students agree to comply with the requirements of the GMU Honor Code and System. Similarly, graduating students are bound by the ethical requirements of the professional communities they join. Ethics requirements for some communities relevant to IST graduates are:

ACM Code of Ethics and Professional Conduct
IEEE Code of Ethics
EC-Council Code of Ethics

To uphold the rigor of the course and the value of your degree, the Honor Code will be **rigorously** enforced. The instructor will use several manual and automated means to detect cheating in all work submitted by students. Keep in mind it is extremely easy to detect cheating with logic and code.

The penalty for cheating will always be far worse than a zero grade, to ensure it is not worth taking the chance. **Any instance of misconduct that is detected will be referred to the Office of Academic Integrity (OAI) and will most certainly translate into at least course failure (a final grade of F).**
If you have questions about what does/does not constitute an Honor Code violation, contact your instructor for clarification. For this course, the following additional requirements are specified:

Students are encouraged to discuss course content, labs, and similar activities with other current IT 207 students; however, **all programming assignment submissions must contain only original, individually completed work**. **This class will use automated tools to detect plagiarism (including written materials and source code).**

- More specifically, if any student submission is deemed to be greater than or equal to 50% identical to another student's submission, the course content discussion that occurred constitutes misconduct and all students involved will be referred to OAI for violating the Honor Code. In particularly obvious situations where a submission does not contain original, individually completed work, a match less than 50% may still result in a referral to OAI for misconduct for all students involved.

- Students are expressly prohibited from

  - Discussing program design, algorithm logic, or code with individuals other than the course's instructor or current IT 207 graduate teaching assistants.
  - Receiving, giving, or showing another student a partial, completed, or graded solution.
  - Knowingly sharing computers or storage devices (e.g., USB drive).
    - If work is stolen because of a shared or borrowed computer or storage device, <u>all students involved</u> will be held equally responsible.

  - Stealing another student's work by taking photographs, using a lost storage device, or gaining access to another student's work in any other way without their knowledge.
    - This action represents a particularly egregious offense placing an innocent student in jeopardy of receiving an Honor Code violation. **Any student who has stolen will be referred for two violations: cheating and stealing and** will receive a sanction recommendation of at least course failure and a one-semester suspension.

  - Posting questions or a partial, complete, or graded solution on the Internet, even after the course has concluded.

  - Incorporating program design, algorithm logic, or code found on the Internet.

- All work must be newly created by the student during this term. Work developed for another course, or for this course in a prior term, may not be used without prior instructor approval.

- Posting or sharing course content (e.g. instructor lecture notes, assignment directions, or anything not created by the student), using any non-electronic or electronic medium (e.g. web site) where it is accessible to someone other than the individual student constitutes stealing/copyright infringement and is strictly prohibited without prior instructor approval.

If you have any questions on these requirements, please discuss them with your instructor. Any deviation from these requirements is considered a violation. All suspected violations of the Honor Code are required to be taken seriously and reported!