School of Business - Course Syllabus
MIS 320 Section 001 – Network and Security
CRN 10695 - Spring 2019 (January 22 to May 15)
Fairfax: MTA - 1007, Tuesday 7:20 PM – 10:00pm

(Syllabus is subject to change)

Instructor Information
• Name: Prabhjot Singh
• Email: psingh24@gmu.edu (Your email will be answered within 24 hours.)
• Office Hours: By Appointment only
• Course Website: http://mymason.gmu.edu

Class Times & Location
• Times: Tuesday 7:20 PM – 10:00pm
• Location: MTA - 1007

Required Prerequisites
• A minimum grade of C in MIS 301, L301, MIS 303, or L303.
• Students with a class of Freshman may not enroll.
• Non-Degree level students may not enroll.
• Students with the terminated from BU major attribute may not enroll.

Required Textbook and Course Site
• This course uses open educational resources (OERs).
  o There is no textbook to purchase.
  o Students are recommended to download course content from Blackboard for reference material to help with Quizzes and Projects.

• Blackboard:
  o All assignments are posted on Blackboard and must be submitted via Blackboard by the deadlines to receive credits. Assignments sent via email will not receive credits.
  o All class notes and course materials are posted via Blackboard.
  o You are required to check the Blackboard course site on regular basis (at least couple of times in a week is recommended). I will try to send the notifications out if I am posting something new on the Blackboard.

Course Description
Introduces students to fundamentals of networking technologies and their role in businesses. Emphasis is on understanding the business implications of different networking technologies and solutions. Students learn to identify and understand the business requirements and bring together the different technological components to design the required communication solutions. Also focuses on the types of security threats to the business network infrastructure, and approach to tackling such threats through business practices combined with appropriate technological solutions.
Course Overview
Computer network is one of the information system components needed to effectively support business operations. Benefits that computer networks may provide include:
- Cost reduction by sharing resources and downsizing the desktop computers
- Improved reliability by having multiple sources of supply
- Increased storage capacity
- Improved consistency
- Reduced errors and redundancy
- Overcoming geographic separation
- Centralized management
- Distributed processes
- Controlled security
- Shared data/information/knowledge

Hence, a computer network is an essential component of every business’s infrastructure. Professional workers, managers, and business owners are expected to understand computer networks to effectively utilize computer networks in solving business problems and support business operations. MIS professionals, including those who are not directly involved in maintaining the operation of computer networks, must be in possession of computer networking knowledge and skills, such as network architecture, topology, standards, protocols, devices, virtualization, performance monitoring, and security mechanisms.

Course Objectives
Upon completion of this course, student should be able to
- Discuss network architectures and technologies as well as their applications in businesses
- Describe the principles, functions, and standards of communication networks
- Explain the OSI 7-layer reference model as well as the related standards/protocols/applications
- Evaluate and select appropriate network devices to satisfy the business requirements
- Assess and manage the network security related risks
- Apply basic techniques in monitoring network operations and security
- Create, review, evaluate, and refine network security policies and procedures

Mason Core Learning Outcomes:
- Students will understand the principles of information storage, exchange, security, and privacy.
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- Students will become critical consumers of digital information; they will be capable of selecting and evaluating appropriate, relevant, and trustworthy sources of information.
- Students can use appropriate information technologies to organize and analyze information and use it to guide decision-making.

ISOM Learning Goals
- Students will be able to apply knowledge of information technology and business functions to understand its application in assessing, designing and improving business processes.
- Students will develop data organization, storage and processing solutions to support organizational needs for information management. They will also have the option of developing skills in supporting decision making through business intelligence solutions.
- Students will use knowledge of computer networks as part of the IT solutions for improving business processes. They will also have option of developing more advanced skills in the areas of network and security.
- Students will effectively manage information technology projects.
- Students will understand the overall systems development life cycle and be able to recommend IT system solutions accordingly. They will also have option of learning appropriate development tools to develop prototype of IT solutions for business management.

Course Format
This course consists of a combination of lectures, case studies, discussions, and hands-on practice sessions. Please see the topical outline for a tentative list of topics. There will be individual reading assignments, quizzes, and class presentations.

Computers and Software Used in the Class - Required
- The School of Business undergraduate program requires every student to have access to a portable computing device that satisfies the requirements listed below and can be brought to class as needed. Note that as technology changes rapidly, these requirements may change during a student’s time in the School of Business. Many School of Business courses require the use of a computer during class. These are used to learn techniques, practice applications, and access Internet resources. While most students have a portable computer or access to one, some courses require specific requirements due to the use of specific applications during class. To address these requirements, a list of standard minimum requirements has been determined and will be reviewed annually. View the standard minimum requirements.
Grading Policy

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Value</th>
<th>Semester Grade Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes (10/11)</td>
<td>60%</td>
<td>A  90% to 100%</td>
</tr>
<tr>
<td>Individual Project (1)</td>
<td>10%</td>
<td>B+ 87% to 89.99%</td>
</tr>
<tr>
<td>Group Project (1)</td>
<td>25%</td>
<td>B  80% to 86.99%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>5%</td>
<td>C+ 77% to 79.99%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>C  70% to 76.99%</td>
</tr>
</tbody>
</table>

1% means 1% of your total grade. You have only 100% in your semester grade.

1. All assignments must be submitted via Blackboard by the deadlines to receive credits.
2. If you missed a deadline, you will not receive credits for the missed assignment.
3. It is your responsibility to ensure that your submitted solution satisfies all requirements. If your submitted solution failed to satisfy any of the requirements, you will not receive credits. There is no such thing as “partially correct solution”. A solution is either correct or incorrect. Grading will be based on facts, not on opinions.
4. For “Project/Quiz/Exam”, you are allowed only one submission. (Blackboard allows you to upload many files in one submission.)
5. You must put your name in every submitted file; otherwise, you will not receive credits.
6. You must follow the file naming instruction; otherwise, you will not receive credits.
7. You are expected to attend all classes and be prepared. Absence from class does not constitute a reason for being unprepared at subsequent class sessions.
8. You are required to check Blackboard course site and your email on a regular basis. (at least once a week)

Student Responsibilities

Students are expected to attend all scheduled classes. Class participation includes questions and answers, as well as presentation of solved homework problems. The student is solely responsible for all assignments and material presented in class. Mastery of the subject matter in this course is measured by skill and proficiency in problem solving. Proficiency is gained by practice. The student is cautioned to avoid falling behind. The student is responsible for completing on time each required assignment, including presentations(projects) and reports.

Reading Assignments

Students are required to read the course materials before coming to class meetings. Reading assignments will be given during class.

Quizzes

Students will have a quiz every week. The quiz will be based on reading assignments and discussion topics covered in the class. Students are highly recommended to attend the class and actively participate in the discussions. All Quizzes will be done in the classroom.
Individual Project
Students will be assigned individual Project. These will be related to our study of project management tools, techniques and methods. Student will do 5 to 10 minutes PowerPoint presentation and asked to demonstrate your understanding, proficiency and presentation skills. Student will also submit one-page report (minimum of 300 and maximum of 350 words) on the presentation topic. Specific requirements will be discussed in the class.

Team Project
Students will be organized into project teams (4-5 students per team). The purpose of the team project is to help the students understand how the concepts covered in class apply to practice. Students will propose project topics to the instructor for approval. Each team will present a project report at the end of the semester and prepare a project report. Specific requirements will be discussed in class.

Class Participation
Each student is required to participate in class discussions. The biggest aspect of security management is interpersonal skills and students will be practicing these skills through class discussion in safe and collaborative environment.

File Naming Conventions
All assignments and project files will be submitted electronically and will follow the format standards listed below:

NameDeliverableVerx.docx (or .mpp, etc.) where
- Name is either your last name or your team identifier, e.g. Team01, Team12
- Deliverable is the name of the deliverable, e.g. Charter, Scope, MS-Project, Interim-status, Final-status)
- Ver1 is version #1 (then Ver2 or Ver3, etc.)

Communications
- For privacy and confidentiality, you are required to use your GMU email account to communicate to me. Your email will be answered with 24 hours. Assignments sent via email will NOT be graded and will not receive credits. If you encountered issues with uploading your files via Blackboard, you can send me an email to receive a reasonable extension.
- Broadcast announcements posted via Blackboard are usually also sent to you via email.

Policy on Electronic Devices
Please keep cell phones and other communicative devices in silent/vibration mode. Laptops or other electronic devices should be used for class related activities such as taking notes or following lectures. Engaging in activities not related to the course is prohibited, such as
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sending/reading text messages, tweets, using apps, etc. You will be asked to leave the classroom, should you violate this policy.

Inclement Weather and Other Emergencies
Class will be cancelled when the campus is closed, either due to inclement weather or other situations. Please check GMU website for up-to-date information. Please register Mason Alert so that you can receive timely emergency notifications and warnings.

Disability Accommodations
If you are a student with a disability and you require academic accommodations, please see me and contact the Office of Disability Services (ODS) at (703) 993-2474 (http://ods.gmu.edu/), at the beginning of the semester. All academic accommodations due to disability must be arranged through the ODS.

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking: As a faculty member, I am designated as a “Responsible Employee” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as the Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychology Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730 or emailing titleix@gmu.edu.

Academic Integrity
George Mason University has the following clearly described University Honor Code administered by the Office for Academic Integrity: “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: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to their academic work.”

The Honor System and Code adopted by George Mason University will be enforced: http://oai.gmu.edu/mason-honor-code/full-honor-code-document/

As a student, you are responsible for upholding these standards for this course. It is your responsibility to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. In your work on all written assignments, keep in mind that you may not present as your own the words, the work, or the opinions of someone else without proper acknowledgement. You also may not borrow the sequence of ideas, the arrangement of material, or the pattern of thought of someone else without proper acknowledgement. Faculty are obligated to submit any Honor Code violations or suspected violations to the
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Honor Committee without exception. Any suspected case of honor code violation will be reported to the Office of Academic Integrity immediately. In such a case, I will withhold from grading your assignments until the case is cleared by the Office of Academic Integrity. All students are expected to adhere to this code. All acts of academic dishonesty will be dealt with in accordance with the provisions of this code.
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The recommendations for honor code violations for non-freshman undergraduate students adopted by the School of Business faculty on May 2016 are as follows:

<table>
<thead>
<tr>
<th>School of Business Recommendations for Honor Code Violations</th>
<th>Approved May 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UG-Non Freshman Students (including transfer students)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Type of Violation</strong></td>
<td><strong>First Offense</strong></td>
</tr>
<tr>
<td>Plagiarism</td>
<td></td>
</tr>
<tr>
<td>1. Failure to cite/attribute sources</td>
<td>An F in the class; referral to Writing Center; Academic Integrity Seminar completion</td>
</tr>
<tr>
<td>2. Representing someone else’s work as the student’s own (e.g., copying and pasting)</td>
<td></td>
</tr>
<tr>
<td>Cheating</td>
<td></td>
</tr>
<tr>
<td>1. On a minor assignment (e.g., homework, quizzes)</td>
<td>An F in the class; and Academic Integrity Seminar completion</td>
</tr>
<tr>
<td>2. Cheating on a major assignment or exam, submitting course work from another course as original work</td>
<td>An F in the class; and Academic Integrity Seminar completion, and at least one semester suspension</td>
</tr>
<tr>
<td>Lying (e.g., providing fraudulent excuse documents, falsifying data)</td>
<td>An F in the class; and Academic Integrity Seminar completion, and at least one semester suspension</td>
</tr>
<tr>
<td>Egregious Violation (e.g., stealing an exam; submitting coursework from another class as original work across multiple courses; lying to an employer about academic performance, false identification or posing as)</td>
<td>An F in the class, Academic Integrity Seminar completion; termination from the School of Business; and at least one year suspension</td>
</tr>
</tbody>
</table>
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Topical Outline: (I reserve the right to make changes, as needed.)

Note: Individual Project grade is 10%

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>Activity</th>
<th>Grade</th>
<th>Topics Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/22/2019</td>
<td>1/22/2019 Class Cancelled (Bad Weather)</td>
<td></td>
<td>Computer Networks &amp; the Internet</td>
</tr>
<tr>
<td>2</td>
<td>1/29/2019</td>
<td>Quiz # 1 / Individual Project R1</td>
<td>6</td>
<td>VPN, Network Attacks, Social Engineering, Phishing, Network Protocols</td>
</tr>
<tr>
<td>3</td>
<td>2/5/2019</td>
<td>Quiz # 2 / Individual Project R2</td>
<td>6</td>
<td>Email Protocols, Encryption, Network Topology, Tech Stack, Website Development</td>
</tr>
<tr>
<td>4</td>
<td>2/12/2019</td>
<td>Quiz # 3 / Individual Project R3</td>
<td>6</td>
<td>DHCP, UDP, ARP, Wi-Fi, Password Management</td>
</tr>
<tr>
<td>5</td>
<td>2/19/2019</td>
<td>Quiz # 4 / Individual Project R4</td>
<td>6</td>
<td>Cloud, Data Storage, VoIP, Network Devices, SQL Injection</td>
</tr>
<tr>
<td>6</td>
<td>2/26/2019</td>
<td>Quiz # 5 / Individual Project R5</td>
<td>6</td>
<td>XSS, XML-Entity, Click Jacking, Password Mismanagement, Command Execution</td>
</tr>
<tr>
<td>7</td>
<td>3/5/2019</td>
<td>Spring Break September 12 to September 17</td>
<td>6</td>
<td>Malware, Threat Modeling, Router Protection, Wireless Communication Protection</td>
</tr>
<tr>
<td>8</td>
<td>3/19/2019</td>
<td>Quiz # 6 / Individual Project R6</td>
<td>6</td>
<td>Web Browser Protection, Mobile Phone Protection, dispose devices safely, Block Chain, Short Range wireless protocols</td>
</tr>
<tr>
<td>10</td>
<td>4/2/2019</td>
<td>Quiz # 8 / Individual Project R8</td>
<td>6</td>
<td>FISMA, SOX, COBIT, ITIL, CMMI, Firewalls, IDS, IPS, IOT, AI</td>
</tr>
<tr>
<td>11</td>
<td>4/9/2019</td>
<td>Quiz # 9 / Individual Project R9</td>
<td>6</td>
<td>How to present and speak Confidently, Recap (1 Slide Summary Demo part 1)</td>
</tr>
<tr>
<td>12</td>
<td>4/16/2019</td>
<td>Participation/ Individual Demo</td>
<td>5</td>
<td>Recap (1 Slide Summary Demo part 2)</td>
</tr>
<tr>
<td>13</td>
<td>4/23/2019</td>
<td>Quiz # 10</td>
<td>6</td>
<td>Privacy and Security, Group Project Review</td>
</tr>
<tr>
<td>14</td>
<td>4/30/2019</td>
<td>Quiz # 11</td>
<td>6</td>
<td>Group Project &amp; Presentation</td>
</tr>
<tr>
<td>15</td>
<td>5/7/2019</td>
<td>Group Project (tentative Date)</td>
<td>25</td>
<td>Group Project &amp; Presentation</td>
</tr>
</tbody>
</table>