**Robert Morris University**

**Morris Graduate School of Management**

**SYLLABUS**

MIS 540 Data Communication & Networking

# Instructor Contact Information:

Name: **Dr. Rafeeq Al Hashemi**

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Office hours: By appointment

# Class Time and Location

Wednesday 6:00 - 9:00PM  
Downtown Chicago Robert Morris Campus

## Course Description

In this course, students will learn the most significant aspects of data communications and computer networking using the TCP/IP reference model. It is essential that MIS professionals use a variety of media, hardware, devices, protocols, and technologies to design a computer network. This course will lay the foundation for advanced networking topics including wireless technologies, multimedia applications and security techniques.

# Textbook:

Computer Networking: A Top-Down Approach, 6/E. James F. Kurose, *University of Massachusetts, Amherst,* Keith W. Ross, *Polytechnic University, Brooklyn,* ISBN-10: 0132856204 • ISBN-13: 9780132856201. ©2013 • Pearson • Published 02/24/2012 •

# Course Objectives:

Students will be able to:

1. Demonstrate a variety of media, hardware, devices, protocols, and technologies used to share information in the computer networking field.
2. Justify the use of wireless technologies, multimedia applications and security techniques in computer networks.
3. Troubleshoot application layer protocols using computer networking simulation tools.

Design a computer network for small and mid-size businesses including network planning, setup, installation, managed services and maintenance.

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| **MIS Core Objectives/Outcomes** |  |
| **Topics:** | 1. Computer Networks and the Internet- Chapter one  * What is the internet * The network edge * Delay, Loss and Throughput in packet-switched networks * Protocol layers and their service models * Networks under attacks * History of computer networking and the internet  1. Application layer- Chapter two  * Principles of network applications * The web and HTTP * File Transfer: FTP * Electronic mail in the internet * DNS- The internet directory service * Peer-to-peer applications * Socket Programming with TCP  1. Wireless and Mobile Networks- Chapter Six  * Wireless Links and Network Characteristics * WiFi: 802.11 Wireless LANs * Cellular Internet Access * Mobility Management * Mobile IP * Managing Mobility in Cellular Networks  1. Multimedia Networking- Chapter Seven  * Multimedia Networking Applications * Streaming Stored Audio and Video * Making the best of the Effort Service * Protocols for Real time interactive Applications * Providing Multiple classes of service * Providing Quality of service Guarantees  1. Security in computer Networks – Chapter Eight  * What is Network Security * Principles of Cryptography * Messages integrity and End-Point Authentication * Securing Email * Securing TCP connections: SSL * Network Layer Security: IPsec and Virtual Private Networks * Securing Wireless LANS * Operational Security: Firewalls and Intrusion detection Systems |

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| Schedule- MIS 540 | | | | | |
| **Week** | | **Description** | **Chapter** | **In Class Assignments** | **Home Works** | |
| *1* |  | Syllabus, Schedule, Text Book.  Chapter 1:  Computer Networks and the Internet. | 1 | R3, R4, R1, R5, R7, R8, R9, R10, R15 | **Wireshark Lab 0: Getting Started.**  Nothing to turn in! | |
| *2* |  | Chapter 1:  Computer Networks and the Internet. | 1 | R16, R22, R23, R24, R25, R26, R27 | P9, P10, P11, P12, P13 | |
| 3 |  | Chapter 2:  Application Layer:  HTTP, FTP | 2 |  | **Wireshark Lab 1: HTTP**  Turn to Blackboard  Due date Week 4 Wednesday 6PM | |
| 4 |  | Chapter 2  Application Layer:  SMTP, POP, IMAP, DNS | 2 | P1, P2, P3, R1, R2 |  | |
| 5 |  | Midterm- Open Book/ Closed Notes | 1, 2 | Midterm Exam | **Wireshark Lab 2: DNS**  Turn to Blackboard  Due date Week 6 Wednesday 6PM | |
| *6* |  | Wireless and Mobile Networks | 6 | R1, R2, R3, R4, R5, R7 | **Wireshark Lab 3: 802.11**  Turn to Blackboard  Due date Week 7 Wednesday 6PM | |
| *7* |  | Multimedia Networking | 7 | R2, R4, R5, R6, R9, R11, R13 |  | |
| *8* |  | Security in Computer Networks | 8 | R1, R2, R3, R4, R9, R12, R13 | **Wireshark Lab 4: SSL**  Turn to Blackboard  Due date Week 9 Wednesday 6PM | |
| *9* |  | Hands on test:  Wireshark labs |  | Hands on Test | Prepare for your Final Exam  Chapters 6, 7 and 8 | |
| *10* |  | Final Exam | 6, 7, 8 | Final Exam |  | |

**Weekly Presentations:**

**Almost every week you will be presenting a topic related to our discussion. You should use power point. This is an individual work; you must get the instructor permission if you would like to work with a partner. Your presentation should be around 10 minutes long. You should prepare three topics a week before your presentation. You will discuss these topics with your instructor a week before the presentation. One topic will be selected.**

**Course Grading Criteria**

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| **Home works and In class Assignments** | **20%** |
| **Labs** | **20%** |
| **Attendance & Participation** | **10 %** |
| **Midterm** | **20%** |
| **Final** | **30%** |
| **Total:** | **100%** |

# Policies and Additional Information:

# Students are expected to have read chapters or any assigned readings prior to class.

# Late Work Policy: Assignments are due at 6:00 PM, central time on the day of this course.  No exceptions are made and will receive a grade of 0.  Always back up your work as technical issues are not a reason to turn in assignments late.  Any uncoordinated, unexcused, missed exam will result in a score of 0 for that exam.

# Missed Exam. If you must miss the midterm exam (very few excuses are permitted) let me know as soon as possible before the scheduled exam. It is unlikely a make-up exam will be offered unless the student is ill or had an acceptable conflicting event.

# It is imperative that you check Blackboard and your email account each day.

# Cell phones should be off or on silent during ALL class activities.

# Professional behavior is expected from all students at all levels of communications, and conduct.

* HW assignments and cases will be posted with more precision, weekly on blackboard under assignments.
* Assignment submissions will only be accepted through the assignment link on blackboard, **NOT OTHERWISE**.
* No make up for tests/quizzes over a week old, and scheduling subject to instructor’s discretion.
* Feedback will be submitted through the assignment link only!
* All students must comply with the policies that regulate all forms of academic dishonesty, or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage.

***Changes may occur to the syllabus at the instructor's discretion. When changes are made, students will be notified via an announcement in Blackboard.***