MAT 379 Course Schedule - Spring 2015	
Week	Topics[1]
	Introduction and fundamentals
1	(1.1)The Internet. (1.2) Network Core: Packet, Circuit Switching (1.3) Network of networks. Viewing packets with Wireshark. Discussion of first Wireshark homework assignment.
2	(1.4). Delay and loss in packet switched networks (1.5). Protocol Layers and their service models (1.6). Networks under attack. Discussion of assigned homework problems.
	Network Applications and Application-Layer Protocols.
3	(2.1) Principles of network applications. (2.2). The World Wide Web and Hypertext Transfer Protocol (2.5) Domain Name System. Discussion of assigned readings.
4	(2.7) Socket programming with TCP/UDP – Python based client/server applications. Discusson of Project 1 - A Simplified Web Server.
	The Transport Layer (Transmission Control Protocol and User Datagram Protocol)
5	(3.1) Transport-Layer Services (3.2). Mutiplexing and Demultiplexing (3.3). Connectionless Transport: UDP (3.4). Connection oriented reliable transport: TCP (3.7) TCP Congestion Control Discussion of homework assignment: Exploring UDP and DNS with Wireshark
6	(3.4). Connection oriented reliable transport: TCP (3.5) Principles of reliable connection oriented transport (3.7) TCP Congestion Control Discussion of homework assignment: Exploring TCP and Web connections with Wireshark
7	Midterm Exam
	Network Layer and Routing
8	(4.1) Forwarding and Routing, Network Service Models (4.2) Datagram Networks. (4.3) Routers (4.4) The Internet Protocol. (4.5) Routing: Link State, Distance Vector and Hierarchical.. Discussion of homework assignment: Examining IP with Wireshark
9	(4.6) Internet Routing (Inter Autonomous System Routing – the Border Gateway Protocol) Discussion of Project II: Building a router to provide controlled access to a public network from a private network using Network Address Translation. Review of Linux IPTable Firewalls. Tools to monitoring and analyze traffic flows.
	Link Layer and Local Area Networks
10	(5.1) The Data Link Layer (5.2). Error Detection and Recover (5.3) Random Access Protocols – The Ethernet protocols. (5.4) Switched LANS and Address Resolution Protocol (ARP) (5.5) Virtual LANS (5.7) Discussion of homework assignment: Using Wireshark to perform a detailed analysis of packets associated with a web session. . .
	Miscellaneous Topics
11	Why is the Internet so Hard to Secure (paper). Improving HTTP – the next step (paper).
12	A brief introduction to network attacks (paper). Ethical considerations and statutory limitations encountered in managing networks (paper).
13,14	Four floating lectures provide additional time to discuss assignments and projects. In addition, these lectures will allow the instructor to devote additional time to difficult topics or topics of interest to the class.

[1]The Course Schedule provides the list of topics covered and indicates which topics will be covered each week. Generally we will attempt to follow this schedule. However, depending on the use of floating lectures, some deviation is possible.