

<b>Computer Networks Final Exam - Spring</b>		<b>Topics and slides</b>
<b>Questions on the Final Exam will come from this list of topics, but not all topics will be on the exam.</b>		
Networks_16_Transport Layer-part 1		Differences between UDP and TCP, advantages and disadvantages of each protocol, how port numbers are used to deliver packets to specific applications
Networks_17_Transport Layer-part 2		Know the benefits of using TCP, purpose of the TCP header fields, TCP connection (3-way handshake) and termination (4-way handshake)
Networks_18_TCP Flow Control-part 1		Differences between TCP Flow Control and IP Congestion Control, how TCP uses a sliding window to control traffic in transit, how Additive Increase/Multiplicative Decrease is used to control congestion (no questions on Slow Start)
Networks_19_TCP Flow Control-part 2		Purpose of TCP timeout and RTT, purpose of the IP checksum (no calculations), No questions on fast recovery/silly window, etc.
Networks_20_Applications-part 1		Types of application protocol, HTTP URLs, headers, cookies
Networks_21_Applications-part 2		HTTP static vs. dynamic pages, email, MIME, no questions on audio or video, streaming or IMAP
Networks_22_Applications-part 3		purpose and application of MIME and data compression (no calculations)
Networks_23_Cryptography-part 1		differences, advantages, disadvantages of symmetric and asymmetric encryption (no questions on specific algorithms)
Networks_24_Cryptography-part 2		how to use public key encryption to securely exchange data, benefits of single sign-on, purpose of cryptographic hash functions
Networks_25_Secure Communications		Network encryption methods (end-to-end, link, VPN) and their benefits & limits, what are SSH/SSL/TLS, IPsec modes and features
Networks_26_Mobile_Wireless		No questions
Networks_27_Network Security		purpose of network reconnaissance, benefits/limitations of firewalls

**In addition, there will be a bonus question that is repeated from the Midterm Exam. You should be familiar with all six of the following fields from the IP header. The exam question could include any of the six listed below. See the slides: Networks\_10\_Network Layer-part 1.**

**For each of the following fields in the IP header, answer the question regarding that field.**

- Version - what are the two active versions of the Internet Protocol (IP)?
- TTL - what is the purpose of the TTL field?
- Source Address - how many bits in the IP header are allocated for this field?
- HLen - how large (in bytes) is the header of a packet if the value in this field is 0x6?
- Checksum - what areas of an IP datagram are included when the checksum is calculated?
- Length - what is the maximum length of an IP packet (in bytes)?