The University of Georgia
Department of Computer Science

Course Information Sheet
CSCI 4760
Computer Networks

Brief Course Description (50-words or less)	In-depth coverage of computer networks, including: digital data transmission and encoding, layered protocol models, Internet protocol, Internet client-server models and network design methodology.
Extended Course Description / Comments	Internet Protocol Stack is presented in details from application layer protocols such as HTTP, SMTP and DNS to transport layer protocols including TCP and UDP, routing algorithms, Data Link Layer and medium access protocols such as Ethernet and Wi-Fi. The latest advances in networking including Software Defined Networking, Data center network technologies and carrier ethernet are presented.
Pre-Requisites and/or Co-Requisites	CSCI 2720 Data Structures
Required, Elective or Selected Elective	Selected Elective Course
Approved Textbooks (if more than one listed, the textbook used is up to the instructor's discretion)	Author(s): James F. Kurose and Keith W. Ross Title: *Computer Networking: A Top-Down Approach* Edition: 7th edition Addison-Wesley, 2017 ISBN-13: 978-0133594140
Specific Learning Outcomes (Performance Indicators)	1. Design and implement a simple network protocol 2. Measure network connectivity properties by using software tools such as ping and traceroute. 3. Develop client programs that can communicate with real Internet servers. 4. Explain the connection setup and termination process of transport layer. 5. Parse a network trace dump. 6. Assign IP addresses to host and networks. 7. Give examples of access control mechanisms used by link layer protocols. 8. Understand the basic of network security and explain the need of secure network communication. 9. Describe the key aspect of protocols including HTTP, SMTP, DNS, TCP, UDP and IP 10. Understand the concept of reliable Data Transfer and how TCP implements them

ABET Learning Outcomes

a. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
b. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
c. Communicate effectively in a variety of professional contexts.
d. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
e. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
f. Apply computer science theory and software development fundamentals to produce computing-based solutions.

Relationship Between Student Outcomes and Learning Outcomes

Specific Learning Outcomes	ABET Learning Outcomes					
	a	b	c	d	e	f
1	●	●				●
2	●					
3	●	●				●
4	●					
5	●	●				●
6	●					
7	●	●				
8	●	●				●
9	●					●
10	●	●				●

Major Topics Covered (Approximate Course Hours)	Concept of Network Protocol (2-hours) Layering and Protocol Stack (3-hours) Addressing (3-hours)
3 credit hours = 37.5 contact hours 4 credit hours = 50 contact hours	Socket programming (3-hours) History of Internet (1-hour) Measurement of the Internet (3-hours) HTTP Protocol (2-hours)
Note: Exams count as a major topic covered	Performance model of HTTP (3-hours) Content Delivery Network (2-hours) Domain Name System (3-hours) Reliable Transmission (2-hours) TCP Protocol (2-hours) UDP Protocol (1-hours) Congestion Control (3-hours) TCP Flow Control (2-hours) Internet Routing (2-hours) Traffic Analysis (3-hours) Multiple Access Control (3-hours) Address Translation (2-hours) Fundamental of network security (3-hours) Recent development in computer networking (2-hours)
Course Master	Dr. Kang Li