New Jersey Institute of Technology
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NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

Course Name: Fundamentals of Network Communication Systems

Course Number: ECET 415

Course Structure: 2-2-3 (lecture hr/wk – lab hr/wk – course credits)

Course Description: The focus of this course is on network data communication systems and related protocols. Main topics include transmission media including coax, twisted pair, fiber optics, wired, and wireless media. The Transmission Control Protocol/Internet Protocol (TCP/IP) model as well as the Open System Interface (OSI) model are discussed with emphasis on the details of the TCP/IP model. Additional topics such as wired and wireless LAN, backbone networks, wide area networks, The Internet, networking security, and networking design are covered.

Prerequisites: ECET 214

Corequisites: None

Required, Elective, or Selected Elective: Elective

Required Materials: **Text:** Name: Business Data Communications and Networking
Author: Jerry FtizGerald
Year: 2011
ISBN: 978-1-11-808683-4

Course Outcomes: By the end of the course students are able to:

1. List the components and types of data communication networks.
2. Describe and differentiate between the TCP/IP and the OSI models.
3. Understand the fundamental concepts of the application layer of the TCP/IP model and how it uses the rest of the networking layers.
4. Describe how data is transmitted over computer networks.
5. Explain how the physical layer works.
6. Explain the data link layer and its types of protocols.
7. Understand and describe the networking and the transport layers.
8. Differentiate between wired and wireless local area networks.
9. Describe backbone networks and its types: switched, routed, and virtual local area networks.
10. Differentiate among wide area networks and the technologies used to implement such networks for example: SONET, ATM, and Frame Relay.
11. Experiment and describe how voice over IP works.
12. Explain and differentiate among different data centers designs.
13. Make use of networking tools and command line tools.

New Jersey's Science & Technology University

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Class Topics:	Networking Protocols	Modulation
	OSI Model	Network Security
	Voice Over IP	Network Protocols

Student Outcomes: The Course Learning Outcomes support achievement of the following Student Outcomes from the ETAC of ABET Criterion 3 requirements.

Student Outcome d: An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives.
Related Course Learning Outcomes: 13

Student Outcome f: An ability to identify, analyze, and solve broadly-defined engineering technology problems.
Related Course Learning Outcomes: 5, 7, & 10

Academic Integrity: NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. Please visit the Dean of Students website at http://www.njit.edu/doss for a list of student policies relating to academic integrity and student conduct.

Modification to Course: The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

Prepared By: Daniel Brateris

Course Coordinator: Daniel Brateris