

ELECTRONIC SYSTEMS ENGINEERING (ESE)

ENEL 492/ENEL 792
Design of Computer Networks
Winter 2018

Computer networks fundamentals, computer networks hierarchical design approaches, network switching technologies, routing protocols and their design issues, LAN models and their design, internet technologies, internetworking principles and design, medium access control protocols, quality of service, network security, network traffic flow control and measurement.

Prerequisite: ENEL 393

Instructor: Irfan Al-Anbagi, Ph.D., P.Eng., SMIEEE

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Office hours: by appointment

Lectures location and times

EA 106.1, WF 01:00 - 02:15 pm

Recommended text books:

Name of Textbook : Data and Computer Communications
Edition: 10th Edition
Author: William Stallings
ISBN: ISBN-10: 0133506487, ISBN-13: 9780133506488
Publisher: Pearson 2014

Name of Textbook : Network Analysis, Architecture, and Design
Edition: 3rd Edition
Author: James D. McCabe
ISBN: ISBN-13: 978-0123704801, ISBN-10: 0123704804
Publisher: Morgan Kaufmann 2007

Additional Reading:

1. Name of Textbook : Computer Networks
Edition: 5th Edition
Author: Andrew S. Tanenbaum, David J. Wetherall
ISBN: ISBN-10: 0132126958, ISBN-13: 978-0132126953
Publisher: Pearson 2010
2. Name of Textbook: Top-Down Network Design
Edition: 3rd Edition
Author: Priscilla Oppenheimer
ISBN: ISBN-13: 978-1587202834, ISBN-10: 1587202832
Publisher: Cisco Press 2011

Network Simulation Software:

Riverbed Modeler Academic (formerly OPNET Modeler)

http://www.opnet.com/university_program/itguru_academic_edition/

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Mark Distribution:

- Class assignments = 5%
- Lab = 10%
- Design project: 20%
- Midterm test-1: 15%
- Midterm test-2: 15%
- Final Exam: 35%

Dates of class tests:

Midterm #1: Second week of February, 2018

Midterm #2: Second week of March, 2018

Important Notes:

- Lab assignments must be completed and passed to receive a passing grade in this course (i.e. all labs must be completed and submitted).
 - If you do not complete the Lab component of the course, you will receive a grade of NP.
- You must pass the exam portion of the course and you must pass the design project to receive a passing grade in the course.
 - If you do not pass the exam portion of the course and/or do not pass the design project, you will receive a grade of NP.
- Late submissions of class assignments will receive a mark of 0%.
- To check the similarity index, you are required to submit the design project and the assignments to Turnitin through UR Courses. You will get a second chance to submit your document if you have a high similarity index.

Course Outline:

1. Review of Data Communications and Data Networking
2. Review of the Open Systems Interconnection (OSI) model and TCP/IP
3. Circuit Switching and Packet Switching
4. Data Link Control Protocols
5. Routing in Switched Networks
6. Design of Local Area Networks
7. Ethernet Design Issues
8. Internet Protocols and Routing Architecture
9. Network Addressing
10. Transmission Control Protocol
11. Design of Virtual LANs and Virtual Private Networks
12. Network Design Techniques
13. Introduction to Network Analysis
14. Network Design Process
15. Network Security Architecture

Special Needs Students:

If there is any student in the course who, because of a disability, may have a need for accommodations, please come and discuss it with me, as well as contact the Centre for Student Accessibility at 585-4631.