

ESE 548 Syllabus*
Fall 2018

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Learning Objective: To give students a broad background in computer networking technology and an introduction to performance evaluation.

This is a **hybrid course** that is part online and part in class on Mondays from 4 to 5 PM. The **mandatory on campus midterm** is Monday Oct. 15th from 4 PM to 5:20 PM in the regular classroom.

Texts:

(A) Networks and Grids: Technology and Theory, 1st ed. by Thomas Robertazzi, 2007. Publisher: Springer (www.springer.com).

(B) Introduction to Computer Networking by Thomas Robertazzi, 2017. Publisher: Springer (www.springer.com).

Week 1 (Week of Aug. 27th): Probability Review and Problems

Week 2 (Sept. 3): Probability Review and Problems (continued)

Week 3 (Sept. 10th): Introduction to Networks.

Week 4 (Sept. 17th): Error Codes

Week 5 (Sept. 24): Routing, **Project 1 due Monday, Sept. 24th.**

Week 6 (Oct. 1): Ethernet. **Essay 1 due on Ethernet.**

Week 7 (Oct. 8): Infiniband.

Week 8 (Oct. 15): Wireless Networks (WiFi, Bluetooth, LTE and 5G). **The mandatory on campus midterm is today, Oct. 15th at 4 PM to 5:20 PM.**

Week 9 (Oct. 22): MPLS. **Essay 2 due on Wireless Networks.**

Week 10 (Oct. 29): Optical Networks for Telecommunications. **Portfolios due Monday, Oct. 29th.**

Week 11 (Nov. 5): Software Defined Networking (SDN).

Week 12: (Nov. 12): Networks on Chips. **Essay 3 due on either Software Defined Networking or Networks on Chips.**

Week 13 (Nov. 19): Space Networking. **Project 2 due Monday Nov. 19th.**

Week 14 (Nov. 26): Grids, Clouds and Data Centers. **Essay 4 due on either Space Networking or Grids, Clouds and Data Centers.**

Week 15 (Dec. 3rd): Advanced Encryption Standard and Quantum Computing. **Self-Final Exam due Monday, Dec. 3rd.**

Grading:

Midterm: 20%, Projects (two projects at 10% each): 20%, Essays (four assignments at 5% each): 20%, Portfolio: 20%, Self-Final: 20% Total is 100 points.

Essays: For some chapters the Introduction to Computer Networking text you will write 500 words on some aspect of the chapter coverage that you find interesting. Additional sources can be used but are not necessary. See viewing schedule for due dates.

Portfolio:

This is a collection of five original problems and solutions you submit involving probability, error codes and routing. It is marked for neatness, coverage, correctness and to some extent for originality, especially for the probability problems. There should be at least two probability problems. Portfolios can be hand written.

Self Final Exam:

Students create their own exam based on the qualitative networking material of Introduction to Computer Networking. Create five questions and answers. Grading is based on choice of questions and reasonableness of answers. Questions should make one think a bit. For instance, a good question might be "What would be more appropriate to give connectivity to an airport lounge, WiFi or Bluetooth. Why?" A poor question would be "What is the second largest SONET data rate". The first question requires some thought, the second is a too simple look-up.

*revised 8-12-18