ECEC 357/ECEC T580 Internet Architecture and Protocols
Winter 2019 Syllabus

Instructor Information

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	(Please include ECEC 432 or ECEC T580 in your email subject for prompt reply.

Teaching Assistant Information

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Course Catalog Description

ECEC 357/ECEC T580: Internet Architecture and Protocols 3.0 Credits
Covers architecture, protocols, and services of the Internet with an analytical approach focused on design principles; Internet architecture and topology; architecture of web and mail servers; router architectures; routing protocols; multicasting; multimedia over IP and associated protocols; Quality-of-Service issues in the Internet.
Pre-reqs: For Undergrad students: ECEC 357 or CS 472, for grad students: ECEC 531.

Course Objectives

The objective of this course, together with ECE-C357, is to provide students with a thorough introduction to a variety of important principles in networking, with a strong focus on the Internet. Specifically, the objectives of ECE-C432 are to develop in students a strong foundation in the following areas:

- Overview of Application and transport layer functionalities and protocols.
- Network Layer: Data plane – IP addressing and fragmentation, IPv6, generalized forwarding and Software Defined Networking (SDNs).
- Network Layer: Control plane – overview of routing algorithms, intra-AS routing (OSPF), inter-AS routing (BGP), SDN control plane.
- Link Layer: Switched local area networks overview, VLANS, link virtualization, data center networking.
- Wireless and Mobile Networks
- Principles of multimedia networking

Statement of Expected Learning

ECEC 432/T580 is a 3 credit course taught via 3 hours of lecture per week.

Course Outcomes

Upon completion of this course, students will be able to

- describe IP addressing assignment, explaining interface addressing and subnet as well as broadcast addresses.
- define software defined networking and provide an example of forwarding in SDNs.
- describe the functionalities of OSPF and BGP routing protocols in the Internet.
- define VLANS and data center networking
- describe the protocols and functionalities at work in wireless and mobile networks
- enumerate the principles of multimedia networking.

Textbook

Computer Networking: A Top-Down Approach
Authors: James F. Kurose and Keith W. Ross
7th edition, Addison Wesley

Assignments, Assessments and Graded Activities

The grading in the course is based on weekly recitation quizzes/assignments, Wireshark assignments, and two midterm examinations. The grade distribution will be as follows: Graduate students will have a SDN project instead of the Wireshark assignments.

Recitation Quizzes:	20%
Wireshark Assignments:	10%
Midterm 1:	35%
Midterm 2:	35%

Grading Scale

Final grades will be calculated numerically with letter grades being converted from numerical scores according to the chart below. Your course letter grade will be assigned as follows (may be curved):

95 – 100	A
90 – 94	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
65 – 69	D+
60 – 64	D
00 – 59	F

Syllabus and Class Schedule

The following is the schedule for the course, describing the portion of the syllabus to be covered between the exams. **This schedule is subject to change**.

January 8 to February 5:

- Overview of Application and transport layer functionalities and protocols.
- Network Layer: Data plane – IP addressing and fragmentation, IPv6, generalized forwarding and Software Defined Networking (SDNs).
- Network Layer: Control plane – overview of routing algorithms, intra-AS routing (OSPF), inter-AS routing (BGP), SDN control plane.

Midterm 1: February 7
Look under "Exams" for details on midterm 1.

February 12 to March 12:

- Link Layer: Switched local area networks overview, VLANS, link virtualization, data center networking.
- Wireless and Mobile Networks
- Principles of multimedia networking

Midterm 2: March 14
Look under "Exams" for details on midterm 2.

Assignments

- Homework

  Homework is due at the beginning of class, one week following the class in which it was assigned. Your homework solution must be uploaded within Learn by the due date/time (a phone picture of your handwritten homework is perfectly acceptable). Solutions to the homework will be posted in Learn. Late homework will not be accepted. **Homework will not be graded, however, a 1-question quiz will be issued a week after the homework is due and turning in your homework on time gives you access to its quiz**.

- Wireshark Assignments and Graduate Students Project

  Wireshark assignments require a personal computer (laptop or desktop). You will be asked to install the software and follow a tutorial on the same. Wireshark assignment reports are not to be handwritten – they often require data from your experiments, which should be copy and pasted into your report. You may use any software for this but your report should be in PDF format and include your name.

  Similarly, a graduate students' project will require access to a personal computer.

- Reading Assignments

  Graduate students will have reading assignments, from time to time, meant to further knowledge on the topic discussed. Most of these reading assignments will consist of research papers. The content of such papers may also be covered on the following weeks quiz.

Exams

- Weekly Quiz

  A 1-question quiz will be issued a week after the homework is due and turning in your homework on time gives you access to its quiz. The quiz will be based on the homework problems that is, the quiz will be a question on the material that is being covered on that homework. All disputes regarding quiz grades should be first taken to the teaching assistant for resolution, and then to the instructor in case the resolution is unsatisfactory to the student.

- Midterm 1 (February 7, 2019)

  This will be an 80-minute closed-book/notes examination held during the class hours. A handwritten cheat-sheet is allowed: a letter size paper handwritten on both sides with your name included at the top and that must be stapled to your exam prior to starting the exam.

  This exam will include questions and problems on all material covered in the course before the date of the exam. The exam may include questions on material from sections even if they are not specifically covered in class. Similarly, the exam may also include any material covered in the classes but not specifically covered in the sections of the textbook.

  Calculators are not permitted and the use of cell phones, laptops or any other devices capable of more advanced computing is prohibited.

- Midterm 2 (March 14, 2019)

  This will be an 80-minute closed-book/notes examination held during the class hours. A handwritten cheat-sheet is allowed: a letter size paper handwritten on both sides with your name included at the top and that must be stapled to your exam prior to starting the exam.

  This exam will include questions and problems on all material covered in the course before the date of the exam. The exam may include questions on material from sections even if they are not specifically covered in class. Similarly, the exam may also include any material covered in the classes but not specifically covered in the sections of the textbook.

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Instructor Feedback

The instructor will make every effort to respond to emails within 24 hours. However, do not expect to hear from me on Saturdays. Exams will be graded promptly. The instructor will provide feedback on any assignment submitted on time within a week. Policy on Absences Absence from examinations will be excused only under extraordinary circumstances with the prior approval of the in- structor. A missed examination or a homework without prior approval and without legitimate reasons will be graded at zero points. An absence from an examination will be excused only if the student is able to provide legitimate documentation (such as a physicians note). An absence from an examination with prior approval will require the student to take an alternate exam at a later time. Special examinations will not be held earlier or on later dates to accommodate, for example, flight schedules for vacations.

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Policy on Academic Honesty

Each student is expected to complete the weekly assignments independently; it is not acceptable to copy another student's work or to copy solutions from any other source. Barring action on flagrant violations, an honor system will be assumed.

The following is a partial list of activities that will be considered to constitute academic dishonesty:

- Presenting the work of another person (fellow student or not) as your own.
- Cheating in an examination such as through conversations with other students, sharing textbooks, calculators or other materials with another student, using unauthorized books not approved by the instructor in an open book examination, or by inappropriate or unauthorized use of technology such as laptops and cell-phones during an examination.
- Using or attempting to use the work of another student or providing answers to other students.
- Failing to take reasonable measures to protect your work from use by other students in assignments, projects or examinations.

Penalties for academic dishonesty will be strictly enforced and will include a lowering of the grade or a failing grade in the course.

University Policies

Add/Drop/Withdrawal: Please note that the add/drop period finishes at the end of week 1. Withdrawal period extends from week 2 through week 7.

Missed Classes: Absence from class will be based on the Universitys absence policy. Please review the link below:
http://drexel.edu/provost/policies/absence/

Academic Integrity, Plagiarism and Cheating Policy: Please review the University policy regarding academic integrity:
http://drexel.edu/provost/policies/academic-integrity/
http://drexel.edu/studentlife/community_standards/studentHandbook/

Office of Equality and Diversity - Disability Resources: Students requesting accommodations due to a disability at Drexel University need to request a current Accommodations Verification Letter (AVL) in the ClockWork database before accommodations can be made. These requests are received by Disability Resources (DR), who then issues the AVL to the appropriate contacts. For additional information, visit the DR website at drexel.edu/oed/disabilityResources/overview/, or contact DR for more information by phone at 215.895.1401, or by email at disability@drexel.edu.

Course Drop Policy:
http://drexel.edu/provost/policies/course-add-drop/

Course Withdrawal Policy:
http://drexel.edu/provost/policies/course-withdrawal/

Course Change Policy: The instructor reserves the right to modify the course, as necessary, during the term: including policies, evaluations, due dates, course content, schedule, assignments or requirements. All changes will be communicated in lecture and/or via the course DrexelLearn page.

Weather, Emergencies and University Closing: University closing or delayed opening information will be posted on www.drexel.edu. In the event of the need to close or delay the daily opening of a campus, the University will provide notice via Web, telephone, and the DrexelALERT system. Closing or delayed opening information will be announced at 215-895-MELT (6358). The University determines whether to close or delay opening due to inclement weather, not the instructor. Therefore, please do not contact the instructor for this information.