CSC4290  Introduction to Computer Networking  
Fall 2017

Course  
CSC4290

Time  
Friday  5:30 -- 8:00 P.M.

Location  
0118  STAT

Prerequisite  
CSC 2200 and CSC 2201 (both with grade of C or better), CSC 3100 and CSC 3101 or equiv.

Credit  
3

*Note: Students who have not finished the pre-requisites should not take this course. The Instructor reserves the right not to give any grade to those students who ignore this advice

Instructor  
Dr. Kamel Rushaidat  (Kamel.r@wayne.edu)

Office  
0118  STAT

Office hours  
8:00PM – 8:30 PM, or by appointment

Course Description

This course is designed for senior undergraduate and junior graduate students who are interested in the fundamentals of computer networks. Topics include network architecture, multiple access control, packet switching, routing and flow control, congestion control and quality-of-service, Internet protocols (e.g., IP, TCP, and BGP), network security, network management, and elements of distributed computing (e.g., naming, caching, and replication). We examine these topics from the perspectives of both the Internet and emerging networking technologies (such as wireless sensor networks, mobile ad hoc networks, and disruption tolerant networks).

In short, the objective of this course is to help students appreciate the underlying principles of computer networks, to help students build the foundation for understanding advanced topics in networked systems (such as those that will be covered in CSC 7290), and to help students build up their skill set necessary for making innovative contributions to both networking technologies and applications.

Supplementary information for the course is available at http://blackboard.wayne.edu. Log on with your Access ID for class notes, lecture slides, class announcements, the course syllabus, and other information for the course. You will submit your assignments and literature review and check grades there too.

*Note: All background material will be developed and offered in efficient and effective ways within the course itself and from scratch.

Required Textbook

Required:  

Recommended references:  
Flowchart of topics

- **Prelude**: history, current status, and future directions of computer networks
- **Foundation**: system requirements, network architecture, implementation issues, performance metrics and evaluation
- **Direct link networks**: encoding, framing, error detection, reliable transmission, media access control
- **Packet switching**: store-and-forward switches, bridges and extended LANs, cell switching, segmentation and reassembly
- **Internetworking**: best-effort service model, global addressing scheme, IP, ARP, DHCP, ICMP, virtual networks, Internet routing, multicast
- **End-to-end protocols**: TCP (connection establishment/termination, sliding window, flow control, adaptive timeout), UDP, remote procedure call
- **Congestion control and resource allocation**: queuing discipline, TCP congestion control, congestion avoidance, quality of service control (integrated services, differentiated services)
- **Network security**: cryptographic algorithms, security mechanisms, firewalls
- **Network management**: components of network management, Internet network management framework, presentation services
- **Elements of distributed computing**: naming, caching, replication
- **Applications**: SMTP, HTTP, overlay networks, multimedia applications

Grading

End-of-semester numeric scores will be weighted as follows.

- Three exams: 45% (15% for each)
- Final project: 35%
- Assignments: 20%

The final course grade will be determined based on the following scale:

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<thead>
<tr>
<th>Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93 - 100</td>
<td>A</td>
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<tr>
<td>90 - 92</td>
<td>A-</td>
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<td>85 - 89</td>
<td>B+</td>
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<td>80 - 84</td>
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<td>60 - 64</td>
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<td>0 - 59%</td>
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Tiny exams

Tiny exams in this course are closed to all books and notes. No computing devices or other students’ work or ideas may be used. **Web Students are required to come to the class hall to take the exams and do the final project presentations!**

Tiny exams will be scheduled in advance. Make-up exams will not be given except in case of a serious emergency. Unless prior arrangements are made, a grade of zero will be recorded for missed exams. If you must miss an exam, even if you are sick or injured, you or someone must contact the instructor before the exam. You must show evidence that you are physically unable to take the exam, such as a clearly worded doctor's note, before the exam. No make-ups will be granted for personal reasons such as travel, hardship, to ease exam week schedules, or leisure. No student will be permitted to take an exam early.
Exam Schedule:

1st exam: 9/22

2nd exam: 10/20

3rd exam: 11/17

Final project presentations: 12/1, and 12/8. The instructor will provide more details for the Online students about participation in the final presentations.

Assignments

Each student MUST complete the work on his/her own. Any assignment solution sharing/plagiarism are not tolerated.

Assignment Lateness Policy

- Full credit will be given for assignments (i.e., labs and literature review) uploaded to the blackboard on the due date. This means the assignment was turned in before 11pm on the due date.

- 80% credit for one day late. Assignments uploaded to the blackboard by 11pm the next school day after the due date will have a maximum possible credit of 80%.

- 50% credit for two days late. Assignment uploaded to the blackboard by 11pm two school days after the due date will have a maximum credit of 50%.

- NO credit given after two days late.

- Per-assignment extensions may also be granted in the case of a severe illness, or an unforeseen situation that forces you away from campus or otherwise makes it impossible for you to finish the assignments on time. Note that you must make your request for an extension before the assignment is due. Contact me in order to request an extension.

Student Class Participation & Collaboration Policy

While notes and reference materials may be posted at the blackboard, the class is not designed as online-based, besides the web section. Students in general section are expected to attend class. Absences should be rare and exceptional. If a student ends up have to skip a lecture, the instructor should be informed beforehand with strong reason. The Instructor reserves the right not to give any grade to those students who ignore this rule. Students are expected to have read chapters or pages prior to class in order to properly participate in the discussion and think critically about the concepts addressed.

As a general policy, students are encouraged to discuss materials presented in class, homework as well projects with other students, but definitely do not collaborate with anyone in solving the problems. That means that students must complete homework and projects individually. Any help you receive from classmates should be limited and should never involve details of how to code a solution.

Academic Dishonesty -- Plagiarism and Cheating (edited statement from the DOSO’s web site)

Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://www.doso.wayne.edu/student-conduct-services.html). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or
other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

**Cheating**: Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

**Fabrication**: Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

**Plagiarism**: To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**Other notes**

My responsibilities:
- reply to your e-mail messages in a timely manner. Commonly, I am going to reply it within one day.
- make sure to accommodate all your learning needs
- try my best to answer your questions and resolve other related issues
- give feedback and your grade on assignments within one week of the due date.
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Your responsibilities:
- behave actively in classroom discussions and activities. Let me know if you find any questions or suggestions in the syllabus, course material, or activity due dates
- watch the deadlines for exams and assignments.
- work hard and ask for help or assistance if need be.
- review my feedback on your assignments and let me know of any questions or concerns ASAP

**Acknowledgement**

Thanks to Dr. Hongwei Zhang for the course’s materials