CS 6603 – Advanced Topics in Wireless Networks
(Formerly CS 465)
Spring 2016

Instructor:
Dr. Abusayeed Saifullah
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Class Meeting:
Tuesdays and Thursdays 09:30am--10:45pm
Location: CS 203

Office Hour:
Tuesdays 11:00am—12:00pm. 335 Computer Science Building

Course Description:
This is an advanced wireless networking class for graduate students with sufficient background in computer networks. The objective of the course is to make students familiar with recent advances in wireless networking. Each student will be required to complete a semester-long individual research project related to the theme of this course. Any topic in the wireless networking field can be chosen upon approval from the instructor. This is not a group project. At the end of the semester, each student will present his/her work in class and turn in a full-length conference or journal-style paper describing the project. Topics to be covered in this course will include:

1. Wireless fundamentals, wireless characteristics, introduction to signal processing, Fourier Transformation applications, wireless advantages and challenges, interferences, Existing wireless technologies and applications
2. Digital modulation techniques: ASK, FSF, PSK, QAM, QPSK
3. Frequency division multiplexing, OFDM
4. Infrastructure and ad hoc networks
5. Wireless LAN
6. Wireless sensor networks: MAC protocols, link scheduling, convergecast, energy management, example applications and deployment
7. Real-time wireless
8. WirelessHART: sensing and control over wireless
9. Whitespace and cognitive radio networking

Prerequisite:
A "C" or better grade in CS 4600/5600 or equivalent or the permission of the instructor is the prerequisite for this course. The instructor also assumes that the students have sufficient background in algorithms and data structures.
Coursework:
1 Presentation (35 minutes including Q/A)
1 Research project (writing a paper)
3 Homework assignments

Weight Distribution:
- Attendance: 2%
- Class discussion: 3%
- Presentation: 25%
- Homework: 30%
- Project proposal: 10%
- Research project: 25%
- Student presentation participation: 5%

Score Distribution (on a Scale of 100) for Letter Grades:
- A: 85-100
- B: 75-84
- C: 55-74
- F: 0-54

Schedule:
- Homework 1: on Feb 04 due on Feb 11
- Two-page project proposal due on Mar 15
- Student presentation: Mar 01 – Mar 24
- Homework 2: on Feb 25 due on Mar 1
- Homework 3: on Apr 19 due on Apr 26
- Final project presentation (5 to 10 minutes) on May 3 and May 5
- Research paper due on May 5

Late Work Policy: Homework/tests cannot be submitted/taken late unless there is prior approval from the Instructor, or there is formal evidence of medical/other emergencies.

Classroom Policy: Class attendance is required. The instructor does not allow any usage of cell phones, laptops, or similar portable electronics during the lectures/exams. In case you need to make/receive any emergency call during lectures, you may do it going outside without interrupting anyone.

- Student Honor Code and Academic Integrity:

Please take a few minutes to stress the importance of academic integrity in class. Discuss why it should matter to the student, why it matters to you and your discipline, why it matters to Missouri S&T, and why it matters to future employers. Include a statement on your syllabus about the Honor Code developed and endorsed by the Missouri S&T Student Council: the Honor Code can be found at this link: http://stuco.mst.edu/about/honor.shtml. Encourage students to read and reflect upon the
Honor code and its emphasis on HONESTY and RESPECT.

Page 30 of the Student Academic Regulations handbook describes the student standard of conduct relative to the University of Missouri System's Collected Rules and Regulations section 200.010, and offers descriptions of academic dishonesty including cheating, plagiarism or sabotage (http://registrar.mst.edu/academicregs/index.html). Additional guidance for faculty, including the University’s Academic Dishonesty Procedures, is available on-line at http://ugs.mst.edu. Other informational resources for students regarding ethics and integrity can be found online at http://ugs.mst.edu/academicintegrity/studentresources-ai.

- **S&Tconnect**: https://blackboard.mst.edu/ (S&Tconnect tab)

  S&Tconnect provides an enhanced system that allows students to request appointments with their instructors and advisors via the S&Tconnect calendar, which syncs with the faculty or staff member’s Outlook Exchange calendar. S&Tconnect will also facilitate better communication overall to help build student academic success and increase student retention. S&Tconnect Early Alert has replaced the Academic Alert system used by Missouri S&T. If training is needed, please contact Rachel Morris at rachelm@mst.edu or 341-7600.

- **Classroom Egress Maps:**

  Faculty should explain where the classroom emergency exits are located. Please include a statement in your course syllabus asking the students to familiarize themselves with the classroom egress maps posted on-line at: http://designconstruction.mst.edu/floorplan/.

- **Disability Support Services**: http://dss.mst.edu

  Any student inquiring about academic accommodations because of a disability should be referred to Disability Support Services so that appropriate and reasonable accommodative services can be determined and recommended. Disability Support Services is located in 204 Norwood Hall. Their phone number is 341-4211 and their email is dss@mst.edu. Instructors may consider including the following statement on their course syllabus as a means of informing students about the services offered:

  "If you have a documented disability and anticipate needing accommodations in this course, you are strongly encouraged to meet with me early in the semester. You will need to request that the Disability Services staff send a letter to me verifying your disability and specifying the accommodation you will need before I can arrange your accommodation."

- **LEAD Learning Assistance** http://lead.mst.edu

  The Learning Enhancement Across Disciplines Program (LEAD) sponsors free learning assistance in a wide range of courses for students who wish to increase their understanding, improve their skills, and validate their mastery of concepts and content in order to achieve their full potential. LEAD assistance starts no later than the third week of
classes. Check out the online schedule at http://lead.mst.edu/assist, using zoom buttons to enlarge the view. Look to see what courses you are taking have collaborative LEAD learning centers (bottom half of schedule) and/or Individualized LEAD tutoring (top half of the schedule). For more information, contact the LEAD office at 341-7276 or email lead@mst.edu.

• The Burns & McDonnell Student Success Center

The Student Success Center is a centralized location designed for students to visit and feel comfortable about utilizing the campus resources available. The Student Success Center was developed as a campus wide initiative to foster a sense of responsibility and self-directedness to all S&T students by providing peer mentors, caring staff, and approachable faculty and administrators who are student centered and supportive of student success. Visit the B&MSSC at 198 Toomey Hall; 573-341-7596; success@mst.edu; facebook: www.facebook.com/SandTssc; web: http://studentsuccess.mst.edu/