COSC 5357.001 Wireless Sensor Networks
School of Engineering and Computer Science
Spring 2016

A. COURSE INFORMATION
   Course number/section:  COSC 5357.001
   Class meeting time:  MWF 8:00 - 8:50 AM
   Class location:  CS-103
   Course Website:  TBD

B. INSTRUCTOR INFORMATION
   Instructor:  Staff
   Office location:  TBD
   Office hours:  TBD
   Telephone:  TBD
   e-mail:  TBD
   Appointments:  TBD

C. COURSE DESCRIPTION
   Catalog Course Description
   This is a graduate level course on wireless sensor networks; one of the fastest developing areas in computer science and engineering. The focus of this course is on the design of optimized architectures and protocols for such unique networks. Topics include the design principles of wireless sensor networks, energy management, MAC protocols, naming and addressing, localization, routing protocols, applications of wireless sensor networks, and associated challenges and measures.
   
   Extended Course Description
   None

D. PREREQUISITES AND COREQUISITES
   Prerequisites
   None
   
   Corequisites
   None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   Required Textbook(s)
   •  None
Optional Textbook(s) or Other References
- Instructor's Handouts.

Supplies
None

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:
1. Demonstrate an understanding of the fundamentals of wireless sensor networks.
2. Understand the design principles of wireless sensor networks.
3. Understand standard communication algorithms including routing and naming protocols.
4. Familiarize with the wide range of WSN applications.
5. Understand major architectural and protocol challenges and solutions.
6. Understand major vulnerabilities and counter measures.
7. Familiarize with state-of-the-art WSN research.

Assessment of objectives will be conducted through exams, laboratory exercises, and programming assignments.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
This is a high-level core course. This is a difficult course that demands all students attend all classes! Regular completion of all reading, homework, and other outside assignments, are absolutely essential for success in this course.

H. MAJOR COURSE REQUIREMENTS AND GRADING
Your course grade will be decided on your performance in the homework assignments, quizzes, labs, presentations and three exams. The distribution of points is as follows:
<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exams</td>
<td>50</td>
</tr>
<tr>
<td>Quizzes and Class Participation</td>
<td>15</td>
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<tr>
<td>Presentations, Labs and Assignments</td>
<td>35</td>
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</tbody>
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**Grading scale:** A: 100-90, B: 89-80, C: 79-70, D: 69-60, and F: 59-0.

**Homework Assignments and Quizzes:** Approximately 5-6 homework assignments will be given. No late homework assignments will be accepted. Partial credit will be given for incomplete assignments. In addition, there may be a pop quiz from time-to-time.

**Presentations:** You will be having approximately 4-5 presentations.

**Exams:** The first exam will be given on February 22, 2016, the second exam will be given on March 30, 2016 during the scheduled class time, and the final exam will be given on May 6, 2016 from 8:00 – 10:30 am.

**I. COURSE CONTENT/SCHEDULE**

<table>
<thead>
<tr>
<th>Week 1:</th>
<th>Overview of Basic Networking Concepts</th>
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<tbody>
<tr>
<td>Week 2:</td>
<td>Ad Hoc Networking</td>
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<td>Week 3:</td>
<td>WSN Single Node Architecture</td>
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<td>Week 4:</td>
<td>WSN Architecture</td>
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<tr>
<td>Week 5:</td>
<td>WSN Medium Access Control (MAC) Protocols</td>
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<tr>
<td>Week 6:</td>
<td>WSN Medium Access Control (MAC) Protocols, <strong>Exam 1</strong></td>
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<td>Week 7:</td>
<td>Link Layer Protocols</td>
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<td>Week 8:</td>
<td>Link Layer Protocols</td>
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<td>Week 9:</td>
<td>Naming and Addressing</td>
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<td>Week 10:</td>
<td>Naming and Addressing</td>
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<td>Week 11:</td>
<td>Localization and Positioning</td>
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<td>Week 12:</td>
<td>Localization and Positioning, <strong>Exam 2</strong></td>
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<td>Week 13:</td>
<td>Topology Control</td>
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<td>Week 14:</td>
<td>Routing Protocols</td>
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<td>Week 15:</td>
<td>Routing Protocols</td>
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<tr>
<td>Week 16:</td>
<td>Transport Protocols</td>
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<tr>
<td><strong>Final Exam</strong></td>
<td>on Friday, May 6, 2016 from 8:00 – 10:30 AM.</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
J. COURSE POLICIES

Course Syllabus: We will meet for lecture on Mondays, Wednesdays and Fridays, when new material will be presented. We will follow the text generally, but non-text material may also be included in the lectures. The assignments and exams will be given during the class hours. You are responsible for all the material presented during the lecture.

Exams: Exams will cover all lecture and reading material discussed in the class. Exams must be taken on the hour they are scheduled.

Missed Exam: In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observations, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor). Once your cause is validated a make-up exam will be given.

Homework Assignments & Projects: They will significantly be based on the material from the lectures and other material considered essential for the successful completion of this course. They will be posted on the course web page or hard copies are handed out in the class during the lecture sessions. The submission details will be provided to you along with the assignment. All the homework assignments and projects are due at the beginning of the class on the due date. If the student is absent on the due date, it is the student's responsibility to see to it that the assignment is submitted on the designated date. No late homework assignments will be accepted. Late projects will be accepted. There is a penalty for late submissions. A project that is turned in after the class on the due date is considered one day late. There is a penalty for late submissions. 25% penalty for 1-2 days late. 50% penalty for 3-4 days late. 75% penalty for 5 days late. 100% penalty (i.e. no credit) if submitted after 5 days. If you have not completed your assignment by the due date, you should submit the work you have done for partial credit. No work will be accepted once the graded work has been returned or the solution has been disclosed to the class, except for unusual circumstances which the instructor feels reasonable. Note that any kind of hardware or software failure or machine unavailability in the lab does not merit an extension on the assignment. Diskettes upon which major examinations, assignments, projects or papers submitted may be retained by the instructor as a permanent record of the student's work.

Grading Error: All questions concerning a test score or grading of a returned test or assignment must be resolved within one week. It is always a good idea to keep all of your work until the end of the semester. In case of any recording errors or doubts, you may produce them for correction or verification.

Academic Honesty Policy: You are expected to avoid all forms of academic dishonesty as defined in Catalog. In addition, students are expected to behave in an ethical manner in all class activities. If you feel uncertain about a particular activity, please speak to me BEFORE problems arise. Ethical behavior is a requirement for passing this course. All work submitted
for grading must be the student's own work. Plagiarism will result in a score of 0 (zero) for the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work, of any class, is allowed. It is the student's duty to allow no one to copy his or her work. Anyone found cheating and/or copying, in the exams or assignments, in the instructor's opinion, will receive an automatic F for the course.

Collaboration: If two or more people collaborate on an assignment assigned it should be notified on the assignment and each student should submit his or her solutions for grading. The grade obtained on such an assignment is the total points obtained for the assignment divided by the square of the number of people who collaborated on the assignment (e.g., if 3 people collaborate on an assignment and the grade for that assignment is 90 out of 100, then each student receives a grade of 90/3^2 = 10). If you do not notify me of such collaboration it will be treated as copied and action will be taken as discussed under the academic honesty policy.

Attendance: You must attend all classes and labs. While in class or lab attendance will not directly affect the grade, you are responsible for any materials covered or handed out or announcements made for the tests and assignments in your absence. Records of your attendance will be maintained and reported to the university. Students found missing classes without the instructor's permission will be automatically withdrawn from the course.

Absence from class: Students are responsible for all materials covered in class and assigned. Should a student be absent from class, it is his/her responsibility to get the notes, etc. for that missed class. More important, should there be assignments, it is the student responsibility to obtain such assignments. No excuse will be accepted for assignments not turned in because the student was absent when it was due.

Cell Phone Use: Cell phones and pagers must be turned off during class. First violation receives a warning. All succeeding violations result in a ten point deduction on the last exam. Any violation during a quiz or exam results in a ten percent deduction off the corresponding paper. No warnings for quizzes or exams.

Laptop Use
Laptops, Tablets cannot be used in the class.

Food in Class
No food in the class or labs.

Student Security Statement: Please read the Student Security Statement.

K. COLLEGE AND UNIVERSITIY POLICIES

- Academic Integrity (University)
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals
who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

- **Classroom/Professional Behavior**
  You are expected to behave professionally in the classroom, labs and during office visits. Unprofessional behavior will be reported to the dean of students.

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course by Friday, April 8, 2016. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must submitted. After April 8, 2016 a student will not be allowed to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.
http://disabilityservices.tamucc.edu/

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

L. **OTHER INFORMATION**

  None

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.