**COLLEGE OF COMPUTER & INFORMATION SCIENCES**

**COMPUTER ENGINEERING DEPARTMENT**

**3rd Semester 1443-1444H.**

**Course Title:** **Seminar in Computer Engineering**

**Course No.:** CEN 591

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**Course Objective:** This is a M.Sc.. level graduate course in computer networks Seminar topics. . The goals for this course is :

* To become familiar with the state of the art in current & recent advancement topics in computer Engineering
* To gain some practice in reading recent networking research papers and critically understanding the research in this field.
* To identify a selected topics research problem to be the core of a term project, that may lead to papers publication in a conference or a thesis proposal study.

**Syllabus: Selected topics that may be discussed in the course lectures but not limited to , include the following :**

* Sensor Networks/RFID Design topics (Routing , energy saving , identification etc.)
* Wireless Mesh Networks Design topics (Routing , Channel allocation , Deployment ,,,etc.)
* Internet of Things (IOT) Protocols , Security and Energy efficiency
* Machine learning (ML) /AI/ application in Networking
* Cloud and Fog Computing : Tasks offloading & Load balancing
* Wireless Mesh Networks Design topics (Routing , Channel allocation , Deployment ,,,etc.)
* Smart grid control and security
* Vehicular Networking Control & Security

**References Books : There is no book to be used as a text book. However , there is several good references about selected subjects that will be introduced throughout this course. Sample of books useful in building knowledge of current research topics and to get acquainted with recent advancement in networking include:**

1. Sensor Networks for Sustainable Development , Edited By: Mohammad Ilyas, Sami S. Alwakeel, Mohammed M. Alwakeel, el-Hadi M. Aggoune , CRC Press , June 25, 2014
2. Machine Learning for Future Wireless Communications ; 2019 Editor(s):Fa-Long Luo.
3. Smart Grids: Clouds, Communications, Open Source, And Automation ; 2014 by David Bakken (Editor)
4. A Reference Guide to the Internet of Things ; Edited by Kayla Little and Ron Pascuzz ; 2017
5. Cloud Computing : Concepts, Technology & Architecture ; The Pearson Service Technology Series By Thomas Erl , Ricardo Puttini Zaigham Mahmood
6. Class Handout , Selected papers from the recent literature

In your class tasks or assignment , you may use simulation to investigate a research problem or to build a case study project. A good book to get acquainted with simulation tools is :

**Simulation , Modeling & Analysis** , By Averill M . Law & David Kelton

**Organization and Workload**

The class consists of the following main activities:

1.**Papers and discussions**: We will read 1-2 papers or a given chapter from a reference book for each class, and discuss them in class. You will need to spend about 2 hours reading the handouts , and making notes, to prepare you to discuss them in class. This only works if you come to class ready to discuss the papers in detail, which is why 10% of your grade is for in-class participation. There will be as much as 8-10 hours of reading per week. Do not take this course unless you are willing and able to do a lot of reading.

**2. Critiques**

Before each class, you must submit a short critique of the required readings. Each critique should be about 1-3 pages report with a PPT file that summarizes the reviewed paper. The report should roughly cover the following questions:

 What is the paper/chapter about? What is the issue the authors are trying to solve?

 What was the state of the world before this handout? How did this change that?

 How do the authors go about trying to solve the issue? What's the main idea?

 How What are the handout's main contributions?

 How did the authors do? Is the evaluation sound and unbiased? Are the authors’ results sufficiently justified in the paper?

 Who does the subject affect? Will this handout be relevant in 10 years, or alternatively, has the paper stood the test of time?

 What do you think about the chapter/paper contents ? Is it well written?

Critiques will be submitted through Email. Critiques will be accepted until 12am (midnight) the night before class. This is the hard deadline It is not possible to make up for a missed critique

**3. In-class Participation**

Attendance is a necessary but not sufficient condition for good class participation. The general policy is that a student may receive a deduction of one letter grade for missing more than 2 lectures. Beyond attendance, class participation is evaluated by evaluating the student paper critique , observing how prepared students are to discuss the covered paper when they come to class. This is not a trivial requirement because the handouts to have been read thoroughly prior to lecture.

4. **HomeWorks/ Assignments**: You may do four – five HomeWorks / assignments depending on the topics covered

**5. A Midterms Exam** : One midterm will be given to evaluate your overall understanding of a selected course subjects

**6. Project** : A major component of this course is a term project. Ideally, the project should be on an original idea, a Survey paper on recent research topic or, an extended work of a current research paper. It is expected that the project may lead to papers which will be published in a conference. It may also help you to define a thesis/independent study proposal for your thesis plan later on.

**Grading Policy**

The class is graded as follows:

 Reading and in Class Participation: 10 %

 Critiques Reports and ppt file submission : 25 %

 Midterm exam 15%

 Home & Assignments: 10 %

 Term Project/Final presentation : 40%