UNIVERSITY OF CALIFORNIA, LOS ANGELES

CS M117 Computer Networks: The Physical Layer

FALL 2014

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Introduction
This course is a lab oriented course. It is designed to give basic knowledge of the principles of modern data communications and networking through hands-on experience. The focus is on physical and media access layers of the network protocol stack. A series of lab experiments complements the class lectures. **No Midterms, No Finals.**

Not open for students with credit for course M171L.

Course Objectives
- To provide fundamental knowledge of the principles underlying wireless data communication systems relevant to digital data communications.
- To provide hands-on experience by performing a series of laboratory experiments.
- To gain experience in preparing formal technical report and project based upon Special Wireless laboratory experiments (SWE).

Meeting Places and Times

Lecture	Tue/Thu	2:00-3:50 AM	9436 BH
Lab 1A	**Wednesdays**	**10:00-11:50**	**3704 BH**
Lab 1B	**Wednesdays**	**12:00-1:50 AM**	**3704 BH**

Office Hours (tentative)

R. Dzhanidze	1:00-1:50 am	Tue/Thu	3704 BH
TA - Lab 1A	9:00-10:00	Wednesdays	3704 BH
TA - Lab 1B	2:00-3:00	Wednesdays	3704 BH

Newsgroup and Website
- http://www.cs.ucla.edu/classes/14/fall117
- ucla.classes.cs.m117 - available on CSnet and SEASnet news servers

Units
CS 117 is a **4 unit course.**

Workload (Weekly)
2 hours lecture
2 hours pre-laboratory homework
2 hours lab experiments
2 hours lab report and project
2 hours outside study
2 hours wireless experiments

TA Mailbox
The 24-hour accessible TA mailbox (labeled CS 117) is located in BH 4428.

Homework
HW (Pre-laboratory) assignments will be placed on the class webpage each week. The HW should be typed and spell-checked (no hand-written HW will be accepted). HW should be written up independently, and any other students involved in HW discussion should be noted on the HW. **However, copying of HW will not be permitted** – only general ideas, which must be credited. HW must be completed correctly (using equation editor) before the student can begin the experiment session. Each student should complete them at home before coming to the lab. HW should be left on the TA deck before the beginning of the corresponding due day. They will be evaluated (by the TA). If you have any questions, consult the TA and/or Professors during office hours. No one will be allowed to start an experiment without his/her Pre-laboratory HW checked off by the TA.

Lab Report and Raw Data Sheets
The report and raw data sheets (simplified report) should be typed (using equation editor) and spell-checked (no hand-written reports will be accepted). The graphs may be hand-drawn, but they should be neat and readable.
1 Report, and 1 Project should be presented in PPT slides and comply with the structural requirements (see posted recommendations).
Report : **"Wireless Communications**" based on Lab#2 & #3);

Project based on Special Wireless Lab Experiments

Lab Results and Row Data Sheets
Please show your lab Raw Data to the TA before leaving the lab! After each lab experiments you must complete at home all calculations required by your Row Data Sheet. **RDS due** are **at the beginning** of the next lab.

Experiment Conduction
Each experiment will be conducted by a group of 3 to 4 students. Each group is expected to carry out the experiment independently; the TA and instructor will assist in the case of problems. During the experiment students should complete the notes - **RDS**. **Please show all of your data to the TA before leaving the lab**!

Report Turn-in and Late Reports
The report may be turned in either in person or left in the mailbox. All reports are **due at 10:00 am** on the date designated in the schedule. Penalties will apply for late reports (see the TA).

Lab Experiments:
Lab 1 -   AM, FM & PM) (RDS 1)
Lab 2 -   Data Transmission over 802.11b Wireless LAN (RDS 2)
Lab 3 -   Bluetooth PAN **(Report based on Lab 2 &3)**
Labs for Project -   Special Wireless Experiments (SWE)

Grading

Homework	**(3)**	**(HW)**	**20%**
Report	**(1)**	**(RP)**	**20%**
Project	**(1)**	**(PJ)**	**50%**
Quiz Test	**(1)**	**(QT)**	**10%**
RDS	**(3)**	**(RDS)**	**Pass, No Pass**
Final Grade Includes		**(FG)**	**100%**

Lab Groups and Collaboration

Students in CS 117 work in teams on experiments, usually of 3 to 4 students. Collaboration in preparation and execution of the experiment is not only encouraged but required. Experiment report must be **entirely the work of each individual student**. A general rule is that partners may collaborate on all sections of the experiment report **except the ABSTRACT, DISCUSSION and ERROR ANALYSIS.** Each student must do his/her own abstract and error analysis. Sharing plots and tables is permissible between within a single group ONLY. **Plagiarism will not be tolerated in this class. Any student suspected of plagiarism will be investigated and potentially punished.**

Recommended References:

R Dzhanidze, M. Gerla, Course Notes and Handouts for CS M117. 2014-15.
Course Reader Materials, 1081 Westwood Blvd, 1st floor Los Angeles, CA 90024; Special needs Entrance / 1080 Broxton Av.-Main Entrance; (310) 443-3303

A. Tanenbaum. "Computer Networks". Prentice Hall PTR. 2002.

J. Schiller. "Mobile Communications", Second Edition. Addison-Wesley. 2003.

CS M117. The Schedule   FALL 2014

WEEK	Lectures Tuesday. 2:00-3:50 pm 9436 BH		Lab: Group 1A, 1B, 1C; 1A: W, 10:00-11:50 am 1B: W. 12:00-1:50 pm 3704 BH	Lectures Thursday. 2:00-3:50 pm 9436 BH
1				Introduction to CS M117 class Lec.1b. AM, PM& FM; (Prelab HW1, due 10/15) October 2nd
2	Intro to the wireless projects Lec.1a. Computer networks, Introduction October 7th		**Lab Training** **October 8th**	Lec.2a Wireless Channels October 9th
3	**SWE– Project designs proposed by TA** October 14th		**Lab #1 AM, FM & PM RDS 1* due on 10/22 October 15th**	Lec.2b Wireless LAN, MAC (Prelab HW2, due 10/22) October 16th
4	**SWE– project designs proposed by students Discussion of proposed projects** October 21st		**Lab # 2 (W LAN) RDS2* due on 04/29** **October 22nd**	Lec.3b. BT PAN. 802.15 (Prelab HW3, due 10/29) October 23rd
5	**Equipment handed out, Teams formed. Project Assignments October 28th**		**Lab # 3 BT PAN REP due on 11/05** **October 29th**	Lec.3a Ad-Hoc, ZigBee, Cell Communications October 30eth
6	**SWE* for Project With tutor supervision**	**November 4th**	**November 5th**	Lec.3a Ad-Hoc, ZigBee, Cell Communications November 6th
7		Holiday 11/11th	**November 12th**	**Discussion of proposed projects November 13th**
8		**November 18th**	**November 19th**	Concluding Lecture November 20eth
9	**PROJECT Due 10/03-10/04**	**Quiz Test November 25th**	**November 26th**	Holiday 11/27th
10		**Consultations December 2nd**	**Project Presentation December 3rd**	**Project Presentation December 4th**

* **Laboratory experiment Row Data Sheet (RDS)**
* Special Wireless Experiments (SWE)
* Prelab-Prelaboratory Home Work
* Additional lab time may be scheduled by appointment with the TA.
* **No Midterms, No Finals**

- **Everyone must attend meetings in bold type.**