

ECT281L  
WIRELESS COMMUNICATIONS LAB

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CREDIT HOURS: 1.0

TEXT: Pruitt, ECT-281 Laboratory (DeVry University); obtain from:  
[http://faculty.kc.devry.edu/bpruitt/ECT\\_281A/Labs/ect\\_281a\\_labs.htm](http://faculty.kc.devry.edu/bpruitt/ECT_281A/Labs/ect_281a_labs.htm)

LAB#	DESCRIPTION	REPORT DUE WEEK #
1	Radio Wave Propagation and Direction Finding	3
2	Transmission Line Transient Characteristics	5
3	Multipath Reception	7
4	RF Antenna Construction	8
5	Measuring RF Antenna Frequency	10
6	RF Transmission and Reception	12
7	RF Antenna Directivity	14
8	Wireless Data Link (Bonus Lab)	15

**Lab Reports**

Every person will write and turn in a complete lab report for each experiment performed in ECT281L. **Each person must write his or her own report, even when working with a partner.** The report format is similar to what might be required of a technician in industry. The general content will be as follows:

- a) COVER PAGE -- Must be on UNLINED WHITE paper. Must be typed or computer generated. Refer to the provided example; the following information is required:

YOUR NAME  
COURSE NAME AND SECTION (ECT281L 4TDA)  
FOR: SR. PROFESSOR WHEELER  
LAB NUMBER AND TITLE  
DUE DATE (WEEK #)  
THIS IS THE ORIGINAL WORK OF  
(*YOUR SIGNATURE*)  
  
OPERATIONAL SIGN OFF \_\_\_\_\_  
FINAL GRADE \_\_\_\_\_

*Hint: Make sure to have a completed cover page when you start each lab.  
This makes it easy to get a sign-off when the experiment is completed.*

- b) **SCHEMATIC PAGE:** Contains the schematic of the section you constructed in lab. Must be technically correct and neatly drawn. OrCAD or other electronic drawing programs can be used as long as the output is clearly presented. **Your name must appear on the schematic diagram.** Some experiments may not require a schematic diagram.
- c) **RECORDED DATA AND PROCEDURE PAGES --** All required waveforms, voltage and current readings, **procedures** and data of any other sort will be NEATLY recorded in this section. Each lab has different requirements for this area; the requirements are in each experiment. Waveforms should be captured using the digital storage oscilloscopes.
- d) **WRITTEN:** Contains the answers to the *questions* presented at the end of each experiment. The answers will be word-processed. **They must be written in the form of complete sentences.**
- e) **CONCLUSION:** Contains your written conclusions about the procedures and data collected during the experiment.

## Grading

Each report in ECT281L is worth 100 points. A total of 7 reports are required, therefore, 700 points are possible in this course. Lab 8 may be completed as a “bonus” exercise (it is not a required experiment, but highly recommended.)

Letter grades are assigned as follows. For your reference, the supplied example is typical of work that will score in the 95-100 percentile range. Your efforts should be modeled accordingly.

Letter Grade	Percentage %	Quality Of Work
A	90 - 100%	Excellent. Quality far exceeding basic requirements.
B	80 - 89 %	Good. Quality exceeds most expectations.
C	70 - 79 %	Average; meets basic expectations.
D	60 - 69 %	Below expectations; needs improvement.
F	< 60 %	Inadequate, failing. Far below minimum standards.

## GETTING A SIGNOFF

Operational signoffs are normally given during the assigned laboratory period. **Your circuit board must be clearly marked with your name in order to receive a sign-off.** It is preferred that you mark it on *top*, but if that bothers you while constructing circuits, you may mark it on the side (but not the bottom.) Operational signoffs are given on the laboratory cover page, so you should have this printed and ready.

## COURSE POLICIES

I. **Lab Partners:** There are *no* lab partners allowed in ECT281L.

II. **Handing Work in:** Work should be given directly to the instructor or his authorized assistant. Under no circumstances should work be turned in to any other persons (including the office) without advance permission from the instructor.

III. **Late Work: Reports are due during the assigned lab period, and are late when that period is over.** *The laboratory period ends at xx:50 UTC of the second hour of the assigned period.* (UTC=Coordinated Universal Time, Standard World Time). Late reports are assessed a 10% penalty. Reports more than one week late are not accepted.

IV. Lab Success Hints: The successful student will have all circuits built and ready to test before coming to lab. Lab handouts and other information distributed in class are extremely important, and should be studied and understood before attempting the experiment. Try a "dry run" in your mind the day before the experiment to see if you can recall the important steps, setups, and results. **SAVE ALL LAB HANDOUTS, YOU WILL NEED THE INFORMATION FROM THEM ALL TERM!**

V. Plagiarism: *Copying the work of another, and claiming it to be your own is plagiarism.* This includes (but is not limited to) copying others homework, copying from a lab manual or textbook, or collusion. The minimum penalty for cheating in any form is a grade of zero for the element involved; in some cases, failure of the course and/or expulsion from the Institute will also result. **All cases of misconduct will be documented and forwarded to Student Services for disciplinary consideration.** The DeVry Student Handbook contains complete information on this topic.

Please do not turn in any work that is not your own! If in doubt, ask the instructor. Here are some ways to avoid any problems:

- Don't share your computer files (text files, schematics, etc) with anyone else.
- Don't share a diskette (or other media) with another student; it's too easy to get files mixed up.
- Don't copy answers from a neighbor. If you don't understand how to do it, ask!
- Decline any request from fellow students for a copy of your work. Anybody needing this level of help should ask the instructor.

### MISCELLANEOUS INFORMATION

Emergency Procedures: There are plaques located in the lab discussing emergency procedures. The instructor will remain in charge of your class group in an emergency.

Food and Drink: For your safety (and to protect our investment in laboratory equipment), these are not allowed in the laboratory at any time, even in closed containers. Violators will be expelled from the laboratory.

### GOOD DATA PROCESSING PROCEDURES

Computers will be used extensively in this lab. The following tips will help to minimize the chance of losing a project:

- Make frequent backups. These backups should be in at least two different physical locations.
- Always keep schoolwork on two different diskettes. Both of these disks will contain identical information. If a computer damages one diskette, the data can still be recovered from the other during the lab period.
- Don't save your data to the hard disk on the workstation, except in an emergency. The hard disks on lab workstations are periodically "cleaned" of any extra information as part of a housekeeping program.
- Keep the work for each class on a separate disk.
- Write your name, course, section, and professor's name on each disk. This will make it easier for others to return your work to you should you accidentally leave a disk behind. It happens to all of us!
- If you're using a computer at home, an *anti-virus* program is strongly recommended.