<u>ECEN 214 – 200, 504, 505; TR 2.20 – 3.35; ZACH 223B</u>   Electrical Circuit Theory   Fall 2007
Texas A&M University   **Department of Electrical and Computer Engineering**

INSTRUCTOR: Dr. Arum Han – 312B Zachry, Tel: 845-9686
                            Email: arum.han@ece.tamu.edu

OFFICE HOURS: T Th 10:00-11:00 or by appointment.

TEXTBOOKS: (a) Electric Circuits, Eighth Edition, James W. Nilsson and Susan A. Riedel,
                            Prentice Hall, NJ **(Required)**. Book Website:
                            http://vig.prenhall.com/catalog/academic/product/0,1144,0131465929,00.html
                            (b) Electric Circuits, Fourth Edition, M. Nahvi and J. Edminister
                            Schaum's Outlines, McGraw-Hill. **(Recommended for Supplementary
                            Problems)**
                            *e*Book available for free online at: http://www.netlibrary.com
                            (c) Laboratory Manual for ELEN 214 **(Required: Available on WebCT)**

COURSE WEBPAGE: http://elearning.tamu.edu/ Students login choose WebCT Vista login:
                            use your TAMU NEO account username & password. If you have login
                            problems contact: WebCT help desk: webct@tamu.edu . For problems
                            related to homework, contact: EE-214 Help Desk or Mr. Akbar Kamal
                            akbar144@tamu.edu Tel: 845-4834

PREREQUISITES: **Upper division status in ECE plus Physics 208 & Math 308 (can be
                            co-registered in Math 308)**

<p align="center"><u>Course Schedule</u></p>

Class of:	Sections	Topic
1. Aug. 28	Chapter 1	Circuit Variables & Circuit Elements
2. Aug. 30	Chapter 2	Circuit Elements
3. Sep. 4	Chapter 2	
4. Sep. 6	Chapter 3	Simple resistive circuits
5. Sep. 11	Chapter 4	Techniques of circuit analysis
6. Sep. 13	Chapter 4	
7. Sep. 18	Chapter 4	
8. Sep. 20	Chapter 4	
9. Sep. 25	Chapter 5	The Operational Amplifier

Exam # 1 – Sep 27th during Recitation: 5.30 to 6.20 PM in Room Zach 103

10. Sep. 27	Chapter 5	
11. Oct. 2	Chapter 5	
12. Oct. 4	Chapter 6	Inductance, Capacitance and Mutual Inductance
13. Oct. 9	Chapter 7	Response of first order RL and RC circuits
14. Oct. 11	Chapter 7	
15. Oct. 16	Chapter 7	
16. Oct. 18	Chapter 7	
17. Oct. 23	Chapter 8	

18. Oct. 25	Chapter 8	Natural and Step Responses of RLC Circuits
19. Oct. 30	**Exam #2**	
20. Nov. 1	Chapter 8	*Last day to Q Drop is Nov 2rd.*
21. Nov. 6	Chapter 8	
22. Nov. 8	Chapter 9	Sinusoidal steady state analysis
23. Nov. 13	Chapter 9	
24. Nov. 15	Chapter 9	Discussion on ideal transformer (Sec 9.11)
25. Nov. 20	Chapter 10	Sinusoidal steady state power calculations
26. Nov. 27	Chapter 10	
27. Nov. 29	Chapter 11	

EXAM # 3 – Nov 29th during Recitation: 5.30 to 6.20 PM in Room Zach 103
28. Dec. 4   Chapter 11   Balanced three phase circuits

FINAL EXAM – Friday, Dec 12th, Comprehensive, Time: 1:00 to 3:00 PM

Grading: There will be three exams and a final. The exams will take place as per the schedule above, unless you are notified of a change in date and time. Reading assignments will not be made; you are expected to study the book topics as appropriate. The dates indicated for the material are approximate; some modifications will be inevitable. There may be important email communications (like a change in the test date) to the class, so it is important for you to monitor your neo email account and the mail on WebCT.

3 Exams:	**40%**	**Note: ALL TESTS & LABS ARE REQUIRED. Persons skipping work**
Laboratory:	**15%**	**should expect a grade of zero. Attendance will be taken, absence can Negatively impact your Grade.**
Homework/Quiz:	**15%**	**(Homework = 10%; Quiz = 5%)**
Recitation:	**10%**	
Final Exam:	**20%**	**Laboratory attendance & grade is mandatory for a passing grade in the Course**
	_____	
	100%	

Note: Students repeating ECEN 214 for a better grade are required to repeat both the lecture and laboratory portions of the course. No exceptions..

Americans with Disabilities Act (ADA) Policy Statement:
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 contact the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.

Academic Integrity Statement
"An Aggie does not lie, cheat, or steal   or tolerate those who do."
The Honor Council Rules and Procedures are located at   http://www.tamu.edu/aggiehonor

Lab Schedule

Date:	Lab:
Week of August 27th	No Labs Meet Please read the first lab and take some time to become familiar with LabVIEW and PSPICE
Week of September 3rd	Intro Session. Be sure to read Lab #1 before coming to lab.
Week of September 10th	Lab #1 - Introduction to ECEN 214 Lab
Week of September 17th	Lab #2 - Non-Ideal Sources and Renewable Energy Sources **Lab Report #1 Due**
Week of September 24th	Lab #3 - Equivalent Networks and Superposition **Lab Report #2 Due**
Week of October 1st	LAB PRACTICUM #1 – Testing student on the use of the lab equipment. **Lab Report #3 Due**
Week of October 8th	Lab #4 - OpAmps/Security System Part 1
Week of October 16 5h	Lab #5 - OpAmps/Security System Part 2 **Lab Report #4 Due**
Week of October 22nd	Lab #6 - Using a Biomedical Transducer and the Transient Response **Lab Report #5 Due**
Week of October 29th	Lab #7 - Transient Response of a 1st Order RC Circuit **Lab Report #6 Due**
Week of November 5th	Lab #8 - Transient Responses of RLC circuits and Active 2nd Order Circuits **Lab Report #7 Due**
Week of November 12th	LAB PRACTICUM #2 **Lab Report #8 Due**
Week of November 19th	No Lab – Thanksgiving Holiday
Week of November 26th	Lab #9 - AC Power & Solar Lab
Week of December 3rd	No Labs **Lab Report # 9 & Solar Lab Report to your TA**

Lab / Recitation Timings

Section	Instructor	Day	Time	Room
200	Han	Thursday	11:10 – 1 PM	Zach 113D
504	Han	Monday	4:10 – 6 PM	Zach 113D
505	Han	Tuesday	4:20 – 6:10 PM	Zach 113D
Recitation for 200, 504, 505 Sections		Wednesday	5:30 – 6:20 PM	Zach 103
501	Russell	Wednesday	11:30 – 1:20 PM	Zach 113D
502	Russell	Thursday	2:20 – 4:20 PM	Zach 113D
503	Russell	Wednesday	4:10 – 6 PM	Zach 113D
Recitation for 501, 502, 503 Sections		Thursday	5:30 –6:20 PM	Zach 103
506	Cheng	Tuesday	2:20 – 4:10 PM	Zach 113D
507	Cheng	Wednesday	1:50 – 3:40 PM	Zach 113D
508	Cheng	Friday	12:40 – 2:30 PM	Zach 113D
Recitation for 506, 507, 508 Sections		Thursday	5:30 – 6:20 PM	Zach 103

Note: * At each lab session, a Prelab is due. No Late Prelabs are allowed.
         ** At the beginning of each lab session, there will be a short Lab Quiz.

Introduction to the Laboratory Portion of ECEN 214

The laboratory manual for ECEN 214 has been rewritten and developed for the current semester. To that end, many of the experiments have changed or have been expanded. The grading of the lab portion of the course has changed as well. Therefore, you must use the current lab manual (Available on WebCT) in order to perform this semester in lab.

There will be 9 experiments spaced throughout the semester. Every experiment, prelab, lab write-up and lab quiz is important. Attendance at lab is mandatory, and if you must miss a lab, you must arrange with your TA to make it up as soon as possible. Absence from lab can result in failing the course.

The laboratory portion of the course will count for 15% of your final grade. The way the grading for lab breaks down will be as follows:

Lab Reports	35%
Lab Quizzes each week	35%
Prelab Assignments	20%
Lab Practicums	10%
Total:	100%

Note: You cannot adequately perform the experiment each week if you have not completed your prelab first. Therefore, if you do not turn in your prelab at the beginning of the lab period, you will receive a zero on your prelab for that week. There will no exceptions to this.

Attendance in Lab is MANDATORY. You are responsible for attending your lab section each week of the semester. If there is some special situation, you must discuss it with your TA before the meeting of the lab section. Only university approved absences or excuses will be accepted.

A sample of how the lab will be run each week is:

1. Turn in Prelabs and Lab Reports
2. Take the Lab Quiz
3. The TA will explain any difficult details of the experiment to be performed
4. Perform the experiment
5. Have the TA check your results and initial your written data tables before leaving lab

Lab Reports –

One week after each lab experiment, you will be required to submit a lab report. For each lab, experiment performed, the lab report should include:
1. A title page
2. A brief summary of what the procedure you performed and how it demonstrated a specific electrical engineering theory
3. Data Tables with results
4. Example calculations and derivation of equations for any calculations needed in the data tables
5. Any graphs of data requested in the lab

6. Comments about each task for a lab, the theory you learned by doing the experiment, and any explanation of results that are more than +/- 10% of the expected value
7. A conclusion that summarizes why the experiment was performed and suggestions for further study of any theoretical concept

At the end of each procedure, there will be instructions as to which data tables are required and what data should be plotted in order to complete the lab report for the specific lab. Occasionally, you may be asked to answer certain questions in your discussion of a task or in the conclusion. Your individual lab TA will give you more specifics on what is required each week.

Lab TAs can decide their own penalties for accepting late lab reports. However, Lab Reports submitted more than 1 week late should receive 0 credit. Each group should submit one lab report. Each student will need to understand all aspects of the write up in order to do well on the lab quiz each week.

There are a couple of general guidelines that all students and TAs will be expected to follow when preparing their lab reports:
1. Lab reports must be typed. (This includes any formulas) MS Word is now installed on the lab computers to help with this.
2. Graphs must be done using a computer aided graphing program. MS Excel is now installed on the lab computers to help with this.
3. Everyone in the group should understand every aspect of the lab write-up.
4. Your lab report should be ready to hand in as soon as you come to lab. Do not finish putting it together during the quiz time. If you hand in your lab report after the lab quiz, it should be considered late.

Lab Quizzes –

At the beginning of each session of lab, there will be a brief lab quiz. The material to be covered on the lab quiz will include what was studied in the previous labs (usually just the week before, but at the discretion of the individual lab TAs). The material that should have been covered for the prelab will also be covered in the weekly lab quiz. Each lab quiz should last less than 15 minutes. If the lab write-up, prelab, and reading of the current lab are completed each week by the student, then the student should have no trouble scoring 100% on each lab quiz. Lab quiz grades are individually assigned. Throughout the lab manual, there are questions posed in the procedure and in the theory sections. A student should be able to answer these questions each week before taking the lab quiz. You individual lab TA will give you more information regarding the quizzes you will take each week.

Prelab Assignments –
Each week, you will have a prelab assignment to turn in. The prelab assignment will include any PSPICE we expect you to do regarding the experiment. The prelab will indicated exactly what from PSPICE should be handed in. A copy of PSPICE comes with your textbook.

Many weeks, you will also be required to write or work on an existing virtual instrument in LabVIEW. To aid you in preparing your prelab, LabVIEW has been installed on the computers in 113D, the Crystal Palace, and other electrical engineering computer labs. You can also purchase a student version of LabVIEW at:

In order to get the full benefit of the lab experiment, you must complete your prelab before coming to lab. If you have problems, seek help from your TA before the scheduled meeting of your lab.

Lab Practicum –

Twice during the semester, you will be given a lab practicum exam. This test will give you an opportunity to demonstrate your understanding of how to use the equipment in lab. You will be required to demonstrate that you have learned how to use the physical equipment in the lab as well as the virtual instruments on NI ELVIS. More information on this will be given closer to the time you take the lab practicum.

Solar Lab Assignments –
This semester we will be doing a solar lab at the end of the semester. The solar lab report will be due at the last meeting of lecture. It will be worth 2 lab reports. More information on this can be found on the Solar Lab webpage accessible through WebCT.

We have tried to match the concepts being studied in the course with the concepts being explored in the lab sections. However, this is rarely perfect. It is strongly suggested that a student start prelabs and finish lab reports several days before they are due in order to have an opportunity to seek help from a TA if needed. In the lab experiments we have tried to include an exploration of the theoretical concepts as well as direct references to your text book where you can find more information. Please take advantage of these resources before seeking for the lab schedule to be changed.

Recitation (& Design Studio For Honors Students)

Introduction to Recitation and Design Studio: This semester, the recitation (75 min) each week will focus on solving some example circuit problems and introduce you to a design studio concept. The intent of the design studio approach is to show students that there is more to electrical engineering than analyzing circuits and to provide a venue for exposing them to various fields that they might like to study. Design studio problems are stated in words, sometimes with no circuit diagrams. Several of them are open-ended, realistic, top down electrical engineering circuit problems that have numerous solutions, and often have either missing information or too much information. Additional real world constraints such as efficiency, size, weight, power requirements, cost and manufacturability will be specified as appropriate.

You are required to solve the specified problem and consider tradeoffs among various solutions in light of conflicting constraints to arrive at an optimum solution.

Students will be divided in groups and each group will receive a specific problem assignment each week. A teaching assistant will be available to explain the problem and supervise the design process involved. The teaching assistant will also grade the student solutions and take attendance.

Note: Design studio is for Honors Students Only.

Grading: 10%

Logging on to your WebCT Vista ECEN 214 Account

To access your homework assignments, lab assignments, design assignments, helpful tools, the Solar Lab webpage, and important information, you will need to log on to WebCT Vista. To do this, open a web browser (e.g. Microsoft Internet Explorer or Netscape Communicator) and go to the web address: http://elearning.tamu.edu/ Click on the link shown below:
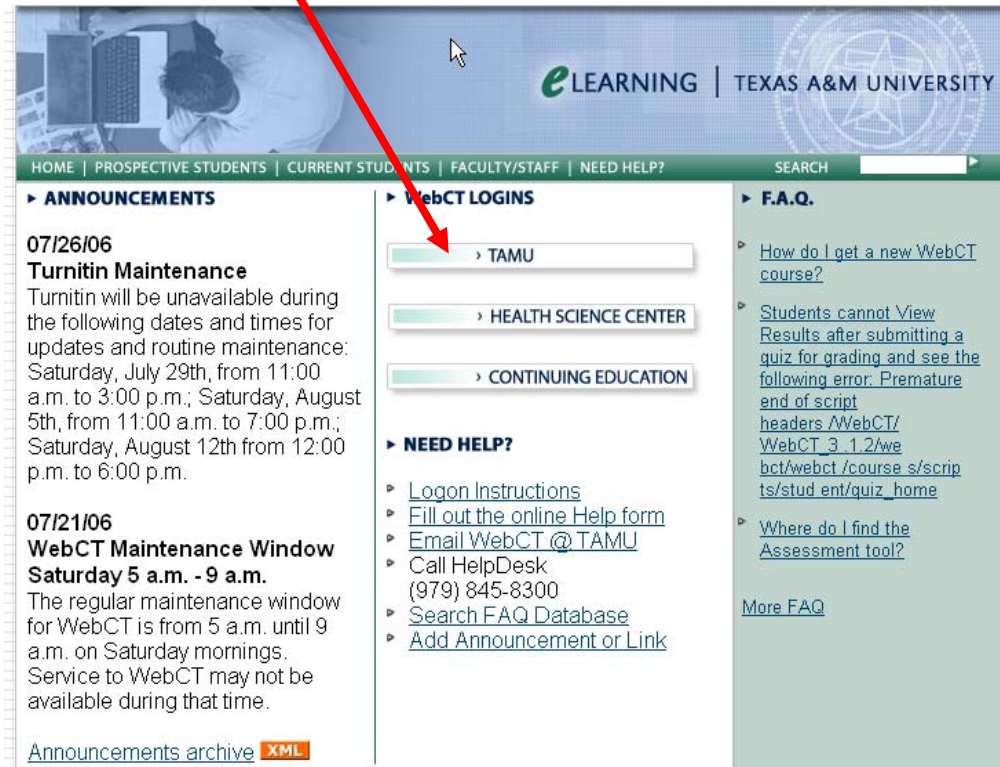
You will be forwarded to a new window that will ask for your User Name and Password. The domain you should use is NetID. Your user name and your password are the same ones you used to access neo email, WebCT SE (the previous version), or any other web service from Texas A&M. Feel free to consult your TA if you have any questions.