ETR 111
Electronic Mathematics

Revised: Spring 2015

COURSE OUTLINE

Prerequisites:

Co-rerequisite: None
Pre-rerequisite: None

Course Description:

Course Description: Studies electronic logic or computer technology. Includes a basic numbering system and Boolean algebra with applications to logic diagrams and circuits. May additionally cover mathematics by reviewing algebra and trigonometry fundamentals and applying those topics to practical electronics problems. Lecture 3 hours per week.

Course credits: 3 cr. **Lecture Hours:** 3 **Lab Hours:** 0

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Course Outcomes

Course Objectives: At the end of the semester, the student will be able to:

1. Solve Equations and analyze data typical used in Electrical and Electronics applications.
2. Recite problems typical for ETR 114 and 280 lasses and provide background needed to solve problems in subsequent EET courses.
3. Use the Scientific Calculator and Computer in problem solving, graphing and curve-fitting.

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Required Materials:

Software:

1) OrCad PSpice 9.1 with Schematic Capture
2) EagleCad Circuit Board design Software
3) ETCAI Circuits Challenge.

These will be discussed in the first class meeting.

Equipment:

Scientific Calculator. Recommendations for this will be discussed in first class.

Textbook:

Text #1: Circuit Analysis Theory and Practice, 4th Edition, Allen H. Robbins and Wilhelm C. Miller, Thomson Delmar Learning. ISBN 13: 978-1-4180-3861-8

Text #2: Technical Mathematics, Sixth Edition, Paul A. Calter and Michael A. Calter. Whiley & Sons, Inc., ISBN 978-0-470-53492-2

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Topical Description:

Class (week)	Topic	Reference Notes
1	1. Campus Safety, Course Policies and Administrative Stuff. 2. Units and conversions 3. Binary, Octal, and Hexadecimal Number Systems	
2	1. Linear and Non-Linear Characteristics 2. Graphing from Laboratory Measurements 3. Using Excel to create Graphs 4. Curve Fitting with Excel	
3-4	1. Simultaneous Equations 2. Use of TI-85 to solve Equations	
4	1. Exponential Equations. 2. L-C Time Constants 3. The 555 Timer	
5	1. Solving Exponential Equations	
6	1. Electrical Applications of Logarithmic Quantities	
7-8	1. Trigonometry Review 2. Imaginary Quantities and theThe "j" Operator 3. Polar and Rectangular Coordinates	
9-10	Advanced Test Measurements Topics 1. Sound System Measurements 2. Video System Measurements 3. Receiver System Measurements	
11	1. Supplemental Topics/Project	
12-14	1. Supplemental Topics/Project	
15	1. Recitation and Review for Exam	
16 (5/5)	Final Exam TBA.	

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Notes to Instructors

1. Suggested Grading Scheme:
   Scheduled Tests 75%
   Comprehensive Final Exam 25%

   Grading Scale: A = 91 – 100
   B = 81 – 90
   C = 71 – 80
   D = 60 – 70
   F = below 60

2. Recommended lab materials, sample tests and supplemental handouts are available from the program head.

3. Instructors should notify the program head at least a day in advance for any special accommodations or materials that will be needed for class.

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