**PHYSICS 314 – ELECTRONICS - Science 259 - 3 Credit Hours**

**Spring Semester 2014, MW 2:00 - 3:15**

**Ralph Oberly, S254, S253, 696-2757, oberly@marshall.edu**

**Text: Curtis A. Meyer, Basic Electronics: An Introduction to Electronics for Scientists**

**Prerequisites: PHY 203, PHY 204**

**Physics 415/515** is a laboratory course to accompany this lecture course. It is a co-requisite.

DATES CHAPTER ASSIGNMENTS

January 13, 15, 22 1 Direct-Current Circuits

January 20 **No classes - Martin Luther King Day**

Jan. 27, 29, Feb. 3, 5 2 Alternating-Current Circuits

February 10, 12, 17, 19 3 Filtering Circuits

**February 26 First Exam – Chapters 1-3**

February 24, March 3, 5 4 Introduction to Semiconductors

March 10, 12, 24, 26 5 Transistors

March 17 – 21 **No classes – Spring Break**

Mar. 31, Apr. 2, 7, 9, 14 6 Feedback and Operational Amplifiers

**April 21 Second Exam – Chapters 4-6**

April 16, 21, 23 7 Digital Electronics

April 28, 30 8 Digital Filtering

**Monday, April 30 - 12:45 – 2:45 - Comprehensive Final Exam**

This schedule will be followed as closely as possible. Problem assignments and supplemental problems for each chapter will be given out in class. Students are expected to work all assigned problems. Selected problems from the assigned list will be collected and graded.

**Course Grade:** Your course grade will be determined by your scores on two exams (100 points each), your percentage on the collected problems (100 points), and the comprehensive final exam (200 points). Students are expected to attend all classes as demonstrations are an important part of the course. No specific grade is assigned to **attendance** but students ending up on a grade borderline will not get the benefit of the doubt if they have missed many classes. If a dispute exists on attendance see the University attendance policy posted on the instructor’s office door.

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Student attention during the class period should be directed to the physics being discussed in class. Cell phones, beepers and any other communication devices should not be active in the classroom, especially on exam days. Students are not to be logged-in on the desktop computers during class time.

**Office hours: MW 3:30 – 5:00**

**MWF 11:00 – 11:45**

**TR 1:00 – 2:00 and 4:00 – 5:00**

**Other hours by appointment**

**Objectives:** Each student is expected to learn concepts and problem solving techniques in the areas of simple electronics, electronic devices, and applications. The student is expected to solve problems relative to the assigned work. Students are encouraged to work in teams on homework assignments even though the work is turned in individually. Applications of the course material will be discussed and related to current commercial and research devices using electronic principles. Topics are selected based on available time and faculty/student interest.

This is primarily an algebra and trigonometry based course with some references to calculus operations and matrix algebra where absolutely necessary. Students are expected to think in logical and quantitative ways. Exams will consist of relevant conceptual and problem solving questions. Students are encouraged to use mathematics software in solving some problems such as the determinant method for simultaneous equations.

Students are expected to ask questions during class or after class on concepts and techniques that bother them. Students are strongly encouraged to work on problem assignments together. Work turned in for grading should be written out in each student’s own solution. Late work will have penalty points deducted at the instructor’s discretion.

**University Policies:** By enrolling in this course, you agree to the University Policies listed in the sources below. Please read the full text of each policy by going to [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to <http://www.marshall.edu/academic-affairs/?page_id=802> Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment