ECE 2204: Electronics-I
VIRGINIA TECH
Course Syllabus (CRN *82301)*
Fall 2015 MWF 11:15am-12:05 pm (Room: *SURGE 104A)*

I.   ECE 2204 ELECTRONICS-I

Instructor: Prof. Mantu Hudait, Dept. of ECE, 626 Whittemore Hall
Phone: 540-231-6663   Email: mantu.hudait@vt.edu

Office Hours: Wednesday and Thursday: 1:30-2:30 and by appointment (e-mail please).

Prerequisites: ECE 2004 (C- or above). Co-requisite: ECE 2274

Midterm Exam Dates:	September 30th (Midterm-I) and November 4th (Midterm-II), 2014	Final Exam Date:	December 14, 2015
Begin Time:	11:15AM	Begin Time:	3:25PM
End Time:	12:05PM	End Time:	5:25PM
Place	SURGE 104A		SURGE 104A

II. Course description

Introduction to basic electronic devices including diodes, field effect and bipolar transistors and their operating principles. Analysis of electronic circuits operating under DC bias and switching conditions. Application of devices in digital electronic circuits.

III. Major Measurable Learning Objectives:

Having successfully completed this course, the student will be able to:
1.   Describe the operating principles of electronic devices including diodes and transistors.
2.   Analyze electronic circuits operating under dc bias conditions.
3.   Analyze electronic circuits operating under switching conditions.
4.   Describe basic digital logic families.
5.   Design and analyze simple digital gates.
6.   Use PSpice to model circuits containing transistors and other electronic devices.

IV.   TEXTS AND SPECIAL TEACHING AIDS

Donald A. Neamen, Microelectronics Circuit Analysis and Design, 4th Ed., McGraw-Hill. ISBN: 978-0-07-338064-3

V. COURSE OUTLINE

CONTENT   CHAPTER

Review of circuit analysis	Read lecture notes
Semiconductor Materials and Diodes	Ch. 1
Diodes and Diode circuits	Ch. 2 (2.1, 2.2, 2.4)
The Field-effect transistors	Ch. 3 (3.1-3.3)
FET amplifier	Ch. 4 (4.1-4.3)
Bipolar junction transistors	Ch. 5 (5.1, 5.2, 5.4)
Digital electronics	Ch. 16 (16.1-16.5)
Bipolar digital logic	Ch. 17 (17.1-17.3)

VI.   GRADING POLICY

Class Attendance	5%
Homework	15%
Midterm Exam I	20%
Midterm Exam II	30%
Final Exam	30%
	100%

Home Work

Homework problems will be typically be assigned on a weekly basis and will be due at the end of class one week following its assignment. Homework may be turned in one day late with a 25% deduction. **No assignments will be accepted beyond one day late,** except in the case of unforeseen, officially documented absences.

Each problem solution should be **neatly worked out**. If a given assignment requires multiple pages of work, it must be stapled together prior to submission. Use neatly trimmed 8.5" x 11" paper and write on one side only. When possible, sketch illustrative diagrams and label current, voltage, and other relevant quantities on the diagrams. Very rough sketches with no labels will receive no credit. Use industrially accepted notation for units, per discussion on Day 1 of class.

I will collect ALL assigned problems for grading. *However, all problems may not necessarily be graded.* I expect you to have worked ALL the problems and to be prepared to submit the problem solutions in the above format at the end of class on the date due.

You may consult with other students and with your instructor while you are working on assigned problems but your goal in consulting should be limited to exploring options and approaches rather than avoiding work. The ability to solve problems develops through disciplined effort and the exams will require you to be able to solve problems. To obtain full credit for a homework assignment you must submit it to your instructor in class on the due date. Note that if you use open source solution for your homework, you will have a difficulty to answer questions in either midterm or final exam.

In-Class Activities:

There will be regular activities assigned during class, which will require your participation and may result in a submission at the end of the class period. I will grade you on your preparation for these activities, your level of participation, and the conclusions that you draw from these activities. These activities should help strengthen your understanding of the course materials and assist in preparing you for the exams.

Exams:

There will be only 2 mid-term exams and one final exam (September 30th for Midterm-I; November 4th Midterm-II; December 14th Final). **No make-up exams will be given** except for unforeseen, underlined officially documented absences. If such a circumstance arises on a test date, it is your responsibility to contact me as soon as possible. If you expect to be absent on a test date for any legitimate reason (conferences, job interviews, project team competitions, etc.), it is your responsibility to give me sufficient prior notice so that we can make other arrangements. There will be a **FINAL exam** at the end of this course.

Academic Integrity:

The Virginia Tech Honor Code establishes the standard for **ACADEMIC INTEGRITY** in this course, and will be strictly enforced. *Discussion* of class material with your classmates or the instructor is encouraged; however, ALL submitted work, must represent your own efforts, and you must pledge to this effect on all work. For more details on the relevant honor codes, consult the websites listed below:

o   Undergraduate Honor System, http://www.honorsystem.vt.edu/index.html

Announcements:

I will use Scholar to post homework assignments, homework solutions, and other information pertaining to the course materials. You should check your email and the Scholar on a regular basis. In case, I use any teaching materials not from the text book, I will post **only those lecture notes** in Scholar. Lecture notes I prepared for enhancement you participation in class. You need to read the text book prior to class or after the class, please!

Attendance:

Attendance all lecture classes is expected and critical to your successfully completing the requirements of this course. I have reserved 5% credits for attending this course throughout this semester. While I may periodically check attendance against the class roll, I have no *explicit* penalties for your missing class. However, chronic absenteeism will be noted, and I will not be inclined to give such individuals the benefit of the doubt in judgment situations such as borderline final grades. In the event that you miss a lecture, it is your responsibility to ask one of your classmates or read text book. If you have a conflict with a scheduled exam or with the submission of any in-class assignments, you must make arrangements with your instructor well in advance so that alternate times can be scheduled.