

Syllabus  
**OEES 205 – Semiconductors (4 credits)**  
(OEES stands for Occupational Education, Electronics Service.)  
Spring 2007

**Instructor**

Bruce McDowell, Electronics/Electrical Program Manager	E-mail: <a href="mailto:bruce@mountttaylor.com">bruce@mountttaylor.com</a>
Office phone: 287-6636 Home phone: 285-4600 (Weekdays 11 a.m. to 12:30 p.m.)	Office hours: Monday – Friday, 9:00 to 9:30 a.m., 1:00 to 2:00 p.m.
Web site for this course: <a href="http://mounttaylor.com/s205">mounttaylor.com/s205</a>	Web site for NMSU Grants: <a href="http://grants.nmsu.edu">grants.nmsu.edu</a>

**Book:** *Foundations of Electronics, Circuits and Devices*, 4<sup>th</sup> edition, by Russell Meade, ISBN 0-7668-4035-2

**Materials Needed**

- A calculator that can do calculations accurate to three significant digits.
  - Essentially all calculators can do this, with the exception of the calculator functions of some cell phones.
  - If you're going to be buying a calculator anyway, I recommend you get one that can use parentheses. This isn't absolutely necessary, but it makes some calculations easier.
  - If you're going to be taking a digital class this semester or sometime in the future (and are going to be buying a calculator anyway) you might consider getting one that can convert between these number systems: binary, octal, decimal, and hexadecimal. Such calculators usually have these abbreviations next to some of the buttons: BIN, OCT, DEC, HEX. You don't need a calculator with these functions for the digital classes here at NMSU-Grants. These functions would make number conversions easier. However, we wouldn't be doing a lot of number conversions.
- Pencil and large eraser.
  - We'll be drawing a lot of diagrams, and you'll be erasing a lot. I recommend a mechanical pencil and an eraser pencil (an eraser that clips onto your pocket and lets you bring out more eraser material as needed).
- Floppy disk or flash drive
  - We'll be doing some computer circuit simulation, and I encourage you to back up your files onto a floppy disk or flash drive.
- Optional: 3-ring binder with dividers.
  - There will be a lot of hand-out sheets for this class, and you'll need some way of keeping them in order.
  - You might as well get a zip pouch to put into the binder. You can keep your calculator and other things in the pouch.

**Course Description**

OEES 205. Semiconductor Devices, 4 credits, (3 hrs. lecture, 3 hrs. lab.). Analysis and troubleshooting of linear electronic circuits including amplifiers, op-amps, power supplies, and oscillators.

## Expected Outcomes From Taking This Course

After completing this course, you should be able to successfully do the following:

- Design basic circuits containing diodes, transistors, and op-amps.
- Troubleshoot fairly complex circuits containing diodes, transistors, and op-amps.
- Design basic power supplies.
- Troubleshoot most power supplies.
- Design and troubleshoot basic oscillators.

## My Philosophy of Teaching

I believe an instructor's job is to help everyone succeed. There are several techniques I use. You'll get lots of one-on-one help from me. Also, I'll do my best to make the course exciting. And, I encourage students to help each other (but, of course, not by doing work for other students!). If you find yourself getting overwhelmed, and are tempted to be absent a lot, talk to me! Or, if you think you understand the material so well that you can miss a lot of class, talk to me! If you're bored, I can give you some interesting extra credit projects to work on. Electronics books are usually written with a one-size-fits-all approach, and they are often overly theoretical. Material I present during class will help overcome these deficiencies.

## Assignment List

Detailed assignments will be listed on the course's Web site (see address under "Instructor" above). New assignments will be added from time to time. I have not reached perfection yet (and never will). Thus, I'm constantly striving to improve the courses I teach and don't like to have everything spelled out in advance.

A general week-by-week list of what we'll be covering will be added later as an addendum to this syllabus.

## Components of Your Grade for the Class

Homework, class exercises, and lab work	40%
Surprise quizzes (Relax, I have to make them easier than non-surprise quizzes!)	40%
Instructor's evaluation (Includes attendance, extra credit, giving help to other students, and getting help from other students. Will normally be used only to raise your grade if warranted. Only in rare cases will it have a negative effect on your grade.)	10%
Final Exam	10%
Total	100%

At the end of the semester, I'll add up everyone's homework, class exercise, and lab points. I'll then make a grading curve to determine how many points are required for an A, how many for a B, etc.

Grading Scale for the Course	Why This Grading Scale?
95 - 100%    A	I believe that the basics are highly important, and I stress them a lot in quizzes and assignments. My quizzes and assignments are easier than they would be with the more common 90%=A, 80%=B, etc. grading scale. Because of this, the 90%=A scale results in too many A's and B's. The good news is that with my grading scale, you'd have to be a total goof-off to get lower than a C in the class! I feel that anyone who has mastered the basics deserves at least a C.
90 - 94%    B	
70 - 89%    C	
60 - 69%    D	
0 - 59%     F	

## Homework & Class Exercises

1. Be sure to put your **name, assignment number, and date turned in** in the **upper right-hand corner** of any assignments you submit. [2 percentage points lower if not done this way.]
2. If you send me any e-mails, be sure to put **"S205" at the very beginning of the subject line.**

3. For the first fifteen class periods that an assignment is **late**, two percentage points will be subtracted for each class period late. If your assignment is 30 or more days late, you will only lose 30%. No credit will be given for late assignments turned in during the last two weeks of the course.
4. **Class exercises cannot be made up.** However, your Extra Credit Grade will be substituted for the first three class exercises you miss.

### Quizzes

- The quizzes will all be surprise quizzes, in order for me to gauge what's actually in your head to stay. These quizzes will be easier than if they were announced quizzes. Also, about 70% of the problems will be based on the fundamentals for this course—in other words, they should be quite easy.
- Instead of makeup quizzes, I will use your Extra Credit Grade for any quizzes you've missed.

### Extra Credit

After the course is over, I will tally-up extra credit points. I will then make a grading curve to determine how many points for an A, how many for a B, etc. Extra credit will help you in the following ways:

- Part of the Instructor's Evaluation score
- Used as your grade when you miss a quiz or a class period. Also used for the first three class exercises that you may miss.

### Attendance and Punctuality

Electronics/electrical classes are not like some other classes where you can read the book and catch up. Much of the learning in our class will be of a hands-on nature, with class exercises and interaction with the instructor being an important part. Arriving late will make grasping the concepts of this class more difficult for you.

### How to Get a Lot Out of This Class (and also have an enjoyable time)

- Be **attentive** to what I'm covering during class.
  - Many of the concepts are difficult to grasp. If you give me a chance, I'll do my best to help you with them.
- **Let me know right away** (during class) when you don't understand something.
  - If you don't understand something, chances are others don't either.
- Keep up with your **homework**.
  - Difficult concepts aren't so difficult when you read about them and do problems designed to help you understand.
- Let yourself **get excited** about the things you're learning.
  - Electronics is often like magic. If you give electronics a chance, you'll find yourself being wowed by it.

### Assignment Record Sheets

- Each week, you'll be turning in a sheet listing homework, class exercises, and lab work.
  - For each such assignment, I'll tell you how many points you get for successfully completing it.
  - I'll also give you a unique assignment number.
- You'll also be maintaining a cumulative log for the entire semester. This log will let you see on a continuing basis how you're doing in the class.
  - Periodically, I'll tell you the highest and lowest scores for the class. This will give you some idea where you would fit on the grading curve.

### My Policies

The temptation is great to turn in work done (in all or in part) by other students. I frequently catch students who do this. Don't take the chance—the punishment will be severe! Except for such cheating, I'm a very merciful instructor and will give you lots of help during class and office hours to insure that you do well. Talk to me if you're worried about getting a low grade. I'll go the extra mile to help you get a good grade.

## College-wide policies

- **Kids:** Don't let your kids run wild while you're taking a class. They must be supervised at all times.
- **Americans With Disabilities Act (ADA):** If you have, or believe you have, a disability and would benefit from any accommodation(s), you may wish to register with the Student Services Office on the first floor of Martinez Hall. All medical information will be treated confidentially.

After you have registered, please make sure that your instructors receive a copy of the accommodation memorandum from Student Services within the first two weeks of class. It will be your responsibility to inform your instructors or the office of Student Services (in a timely manner) if the services/accommodations provided are not meeting your needs.

If you have a condition that may affect your ability to exit safely from the premises in an emergency or that may cause an emergency during class, you are encouraged to discuss any concerns with Ms. Irene Lutz, Campus Student Services Officer at 287-6629, or with your instructor(s).

Feel free to call Ms. Lutz at the number above or Mr. Paul Gayle-Smith, NMSU Director of Institutional Equity, at (505)646-3635 with any questions about the Americans with Disabilities Act (ADA), and/or Section 504 of the Rehabilitation Act of 1973.

- **Academic misconduct:** Any Student found guilty of academic misconduct shall be subject to disciplinary action. Academic misconduct includes, but is not limited to, the following actions: cheating; plagiarism; unauthorized possession of examinations, reserve library materials, or laboratory materials; unauthorized changing of grades on an examination, instructor's grade book, or grade report; nondisclosure or misrepresentation in filing out applications or other college records; or violation of computer use policies. The following disciplinary actions and sanctions may be imposed for any of the above infractions or regulations: disciplinary probation, disciplinary suspension, dismissal, expulsion.