

August 15, 2008

Antenna Theory: 4400:453 and 4400:553

Texts: Constantine A. Balanis, Antenna Theory, Wiley, (optional).
N. Ida, Engineering Electromagnetics, 2nd edition, Springer Verlag, 2004.

Time: MW 2:15-3:30 PM

Room: LH 307

Dr. N. Ida (ASEC N252), e-mail: ida@uakron.edu, TEL: 972-6525

Outline:

1. Introduction: types and purpose of antennas.
2. The Hertzian dipole (Chapter 4, section 2 + Chapter 18EE)
3. Antenna parameters and properties (Chapter 2 + Chapter 18EE).
4. Linear antennas (Chapter 4 + Chapter 18EE).
5. Loop Antennas (Chapter 5 + Chapter 18EE).
6. Antenna arrays (Chapter 6 + Chapter 18EE).
7. Radiating systems (Chapter 3 + Chapter 18EE)
9. The method of moments (Chapter 8 + Chapter 6EE).
10. Numerical methods for wire antenna design (Chapter 8).

Note 1: The first part of the course is based almost entirely on Chapter 18 of your electromagnetics book (marked as EE in the outline above). The book by Balanis will be used for some homework assignments and for section 10 of the outline.

Note 2: I assume that you still have your Electromagnetics book. If not, let me know and I will supply you with a copy of Chapters 18 and 6. The book by Balanis is optional. It is a very good book and if you can spare the money, I recommend you buy it. However it is not essential and those sections that are important will be photocopied and distributed (mostly Homework problems and part of Chapter 8).

Note 3: If you have the first edition of the Engineering Electromagnetics book, you may still use it. However, before you do so, log on to the Springer website and download the errata file for the 1st edition. (this is part of the “supplementary files”). You may have to first go to <http://www.springeronline.com/> and then search for the book title.

Grading policy:

There will be two midterm exams, homework assignments, a computer project and an optional final exam as follows:

Option A:

1st midterm:	15%	(October 1, Tentative)
2nd midterm	20%	(November 26, Firm – See Note 2)
Computer project	20%	
Final exam	30%	
Homework	15%	

You may choose to take the final exam. If you do not, your grade will be calculated as follows:

Option B:

1st midterm:	25%
2nd midterm	30%
Computer project	30%
Homework	15%

Notes:

1. The final exam will be given at the scheduled time. It is your choice to take it or not. If you do, your grade is calculated based on **Option A**. If you do not take the final exam, your grade is calculated based on **Option B**. There is no need to tell me of your choice but you are welcome to discuss it with me. Also, I will use the formula that gives you the best grade. Therefore, unless you are satisfied with the preliminary grade, you should take the final.
2. I will be willing to move the second exam earlier but will not agree to have it after thanksgiving so that you may enjoy the thanksgiving break.
3. Before each exam, I will make available sample exams. These will be posted on my web site - <http://ee.ascs3.uakron.edu/ida/> under the heading Antenna Theory, for downloading. The number of exams may vary but usually there will be two exams with solutions and one without solutions. The purpose of this third exam is for you to try on your own.

Homework: There will be 5-6 homework assignments during the Semester and a final “project”. Normally you will have two weeks to do the homework and about 1 month for the project. More will be said on the project during the semester.

Office hours: Any time of day between 7:00 AM and 6:00 PM. Please feel free to see me anytime. There will be instances in which I will be busy with other activities. In such cases I ask that you either wait or see me at other times. Also, if you are not on campus, call me to ensure I am available. I also have set office hours on Monday Wednesday and Friday, 9-11 AM.

Grader: The grader for this course is Dinesh Gade. In all questions of grading of homework please address him first. However, I will grade all exams so any question about exams and final grades should be addressed to me

Software: If you have not done so yet, I recommend you download the software “Electromagnetic Simulations”. The part on waves will be useful in understanding some issues on antennas. The software is written in Matlab.