

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

Course Syllabus

Course Information: PHYS 242-001 and PHYS 242-002, General Physics II, Spring, 2017. MTWF 8:00-8:50 and 9:00-9:50.

Professor Contact Information: I'm Dr. Tom Sandin, (336)285-2124, sandint@ncat.edu. My office is Marteena 308B (left rear door inside the MA 308 lab). My office hours are MWR 12-3 PM or by appointment.

Prerequisite: Physics 241 (I strongly discourage enrollment with C- or less.). **Corequisite:** Physics 252.

Course Description: A calculus-based study of the fundamental principles of electromagnetism, wave motion, sound, and optics.

Student Learning Objectives/Outcomes: We'll hand out a sheet of specific objectives for each of the course's fourteen blocks of material (also downloadable in pdf form from phys242.ncat.edu). The intended outcome of this course is the development of an analytical and conceptual understanding of those areas of electromagnetism, waves, sound, and optics that are fundamental to study in science, engineering, and math.

Required Textbook: *Sears and Zemansky's University Physics*, 14th edition.

Assignments & Academic Calendar: The reading assignments are the text sections below. You should also download the pdf notes for each block (from phys242.ncat.edu). We will *not* hand out the notes. The written assignments are the Drill Sets, which we will hand out (also downloadable in pdf form from phys242.ncat.edu). The block exam dates are the final dates of each block below (always Tuesdays with assigned seats in 103 Marteena at 8:00 am for section 001 and at 9:00 am for section 002). You may bring one 3" by 5" card to each exam with anything written in your handwriting on both of its sides (exception: two such cards for Exam 12). You may not use a cell phone nor any other non-medical electronic device while taking your exams (exception: a simple calculator for make-up exams).

BLOCK	DATES	TEXT SECTIONS	MAIN TOPICS OF THE BLOCK
1	Jan 11- Jan 24.	21.1 to 21.7	Charge, Coulomb's Law, Electric Field and Forces, Electric Dipole Torque and Potential Energy.
2	Jan 25- Jan 31.	22.2 to 22.5	Electric Flux, Gauss's Law and its Applications.
3	Feb 1- Feb 7.	23.1 to 23.5	Electric Potential Energy, Electric Potential, Equipotentials, Potential Gradients.
4	Feb 8- Feb 14.	24.1, 24.3 to 24.6	Capacitance, Dielectrics, Electric-Field Energy.
5	Feb 15- Feb 21.	27.1 to 27.7, 27.9	Magnetic Field, Flux, Force, and Dipole (Torque and Potential Energy).
6	Feb 22- Feb 28.	28.1 to 28.8	Law of Biot and Savart, Ampere's Law, Magnetic Materials.
7	Mar 1- Mar 14.	29.1 to 29.7, 30.1 to 30.3	Faraday's Law, Lenz's Law, Displacement Current, Maxwell's Equations, Inductance, Magnetic Field Energy.
8	Mar 15- Mar 21.	15.1 to 15.7	Traveling and Standing Mechanical Waves.
9	Mar 22- Mar 28.	15.8, 16.1 to 16.5, 16.7	Sound Waves, Intensity, Sound Intensity Level, Resonance, Beats.
10	Mar 29- Apr 4.	16.8, 16.9, 32.1 to 32.5	Doppler Effect and Shock Waves for Sound, Electromagnetic Waves (Classical Production, Descriptions, Speed, Energy, Pressure, Spectrum).
11	Apr 5- Apr 11.	33.1 to 33.7	Reflection, Refraction, Dispersion, Polarization.
12	Apr 12- Apr 18.	34.1, 34.2, 34.4	Plane and Spherical Mirrors, Thin Lenses.
13	Apr 19- Apr 25.	34.7, 34.8, 35.1 to 35.5	Some Optical Instruments, Coherence, Interference.
14	Apr 26- May 2.	36.1 to 36.8	Diffraction, Diffraction Grating, Resolving Power, Holograms.
Finals	May 8	1-3 PM for Section 001	Comprehensive Final Examination. Material from all 14 Objectives sheets; 52 four-point, multiple-choice questions.
	May 9	1-3 PM for Section 002	

Grading Policy: We have fourteen blocks. Their exams and drill sets total 1400 points. The final exam adds 200 nominal points. Thus I base the course grade on a total of 1600 points. GUARANTEED PERCENTAGE GRADES are: A = 93%, A- = 90%, B+ = 87%, B = 83%, B- = 80%, C+ = 77%, C = 73%, C- = 70%, D+ = 67%, and D = 60% as the minima.

I apologize to most of you for having to include this statement, but cheating on an exam means an F for the entire course and letters to the cheater's department chairperson and dean.

Course Policies: Make-up exams: To change an exam grade for any block, you can take a (slightly more difficult) make-up exam over the same objectives. The make-up exams are on Thursday at 7 AM in our classroom, Marteen 312. This make-up grade, whether higher or lower, then becomes your exam grade for the block. Therefore you should never take a make-up exam unless you're certain you know more (or because you missed the regular exam). You may take no more than six make-up exams for any reason.

Extra Credit: I'll give you information about three optional extra-credit lectures near their time.

Late Work: You've missed an exam if you arrive after the first student has left that exam. You can take special make-ups (but not above the total allowed maximum of six) only if you have an excellent reason, for example, hospitalization or a University excuse. **There are no make-ups for late or missed drill sets for any reason.**

Class Attendance: I may consider class attendance in determining final grades for students with borderline grades.

Classroom Citizenship: "Consideration for others is the basis of a good life, of a good society."—Confucius

The preceding information is subject to change at my discretion.

Technical Support: If you experience any problems with your A&T account you may call Aggie Tech Support (formerly Help Desk) at 334-7195.

Field Trip Policies / Off-Campus Instruction and Course Activities

Student Affairs website should be accessible from <http://www.ncat.edu/>.

Student Handbook: should be accessible from <http://www.ncat.edu/>.

Student Travel Procedures and Student Travel Activity Waiver: should be accessible from <http://www.ncat.edu/>.

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations should be accessible from <http://www.ncat.edu/>.

Additional information is available from the office of Student Affairs.

Below is a description of any travel and/or risk-related activity associated with this course.

None.

Other Policies (e.g., copyright guidelines, confidentiality, etc.): should be accessible from <http://www.ncat.edu/>.

Student Handbook: should be accessible from <http://www.ncat.edu/>.

Family Educational Rights and Privacy Act: should be accessible from <http://www.ncat.edu/>.

Student Conduct & Discipline

North Carolina A&T State University has rules and regulations that govern student conduct and discipline meant to ensure the orderly and efficient conduct of the educational enterprise. It is the responsibility of each student to be knowledgeable about these rules and regulations. Please consult the undergraduate and graduate bulletins, which should be accessible from <http://www.ncat.edu/>.

See the latest Graduate Catalog and student handbook for detailed information about specific policies such as academic dishonesty, cell phones, change of grade, disability services, disruptive behavior, general class attendance, grade appeal, incomplete grades, make up work, student grievance procedures, withdrawal, etc., which should be accessible from <http://www.ncat.edu/>.