PHYS-2426 SYLLABUS
UNIVERSITY PHYSICS II (WEB VERSION)

Link to Collin College General Course Syllabi

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COURSE DESCRIPTION

This course is a calculus-based physics course designed for science majors in fields such as physics, computer science and engineering. Topics include: electric fields, AC and DC currents, dielectrics, magnetic fields, magnetic properties of matter, inductance, electromagnetism, properties of waves and optics, relativity, and modern physics.

To ensure your success in this course, please be sure you meet the minimum prerequisites. They are
(1) MATH 2414 (Calculus II) and PHYS 2425 within the last five years with a C or better.

4 credit hours

STUDENT LEARNING OUTCOMES

Upon successful completion of this course, the student will be able to:
1. Use the basic SI units of measurement in problem solving
2. Solve problems involving the theoretical derivation of relationships and equations using calculus
3. Solve problems in electricity and magnetism
4. Solve problems involving the relationship between electricity and magnetism using Maxwell’s equations
5. Analyze and solve problems involving light
6. Analyze and solve problems using Einstein’s Special Theory of Relativity
7. Solve problems involving the basic principles of photons and matter waves
8. Apply concepts from classical mechanics to topics covered in this course
9. Demonstrate the proper collection, analysis, and reporting of scientific data

COURSE MATERIALS

Students need to have the following items:
- scientific calculator
- access to a computer with internet access
- the digital physics textbook and virtual labs (purchase information below)
- access to on-line assignments (more information below)
- SCANTRON forms for exams

TEXTBOOK

This course uses a digital physics text book developed by Kinetic Books. The book title is Physics for Scientists and Engineers and must be purchased at the Kinetic Books web site (purchase information is given below). All “lectures” in this course are given by the student reading and interacting with the digital textbook.

The digital physics textbook contains the usual textual information found in most physics books that outline and explain physics concepts. However, the Kinetic Books digital physics textbook is unique in that woven into the digital text are animations, audio & video information, interactive examples & practice problems, and games. The digital textbook can be accessed via CD or on-line from the Kinetic Books web site.
Chapters covered:

Electricity and Magnetism
- 23 Electric Charge and Coulomb's Law
- 24 Electric Fields
- 25 Electric Potential
- 26 Electric Flux and Gauss' Law
- 27 Electric Current and Resistance
- 28 Capacitors
- 29 Direct Current Circuits
- 30 Magnetic Fields
- 31 Electric Currents and Mag Fields
- 32 Electromagnetic Induction
- 33 Alternating Current Circuits
- 34 Electromagnetic Radiation

Light and Optics
- 35 Reflection
- 36 Refraction
- 37 Lenses
- 38 Interference
- 39 Diffraction

Modern Physics
- 40 Special Relativity
- 41 Quantum Physics Part One
- 42 Quantum Physics Part Two
- 43 Nuclear Physics
- 44 Nuclear Physics

LABS

One-half of the labs in this course will be taught as traditional on-campus labs. The other labs will involve participation in online simulations with accompanying worksheets. The lab manuals for the on-campus labs are free. For access information and more lab details see the course “Physics Lab Page.” The lab simulation exercises are available for purchase from Kinetic Books (details follow).

HOW TO PURCHASE YOUR DIGITAL PHYSICS TEXTBOOK AND VIRTUAL PHYSICS LABS

Students should purchase their digital textbook and virtual physics labs immediately upon enrolling in this course. These are available for purchase at the Kinetic Books on-line store via credit card at:

https://webstore.kineticbooks.com

Click the “Products” link (under “Categories”) to see a list of available textbooks for purchase. The textbook to purchase for this course is titled “Physics for Scientists and Engineers” (scroll down to find available versions).

For this course two versions of “Physics for Scientists and Engineers” DIGITAL TEXTBOOK are available:

VERSION 1 (Click following link for direct purchase connection)
Physics for Scientists and Engineers - INDIVIDUAL LICENSE (CD) $64.95

Version 1 is mailed out on CD and may be installed on only one computer. This textbook version may only be accessed from this one computer but does not time out. This product is not transferable - it cannot be returned for use by another student another year. The textbook will be delivered by mail on CD.

VERSION 2 (Click following link for direct purchase connection)
Physics for Scientists and Engineers - WEB ACCESS LICENSE $64.95

The Web Access license is a 1 year subscription to the digital textbook, over the internet, from Kinetic Books servers. The digital textbook may be access from any computer with an internet connection (a small installation must be done). After 1 year this web version digital textbook will expire and will no longer be accessible.
For the simulations, two versions of the VIRTUAL PHYSICS LABS are available:

**VERSION 1** (Click following link for direct purchase connection)

**Virtual Physics Lab - INDIVIDUAL LICENSE (CD) $29.95**

Version 1 is mailed out on CD and may be installed on only one computer. This lab version may only be accessed from this one computer but does not time out. This product is not transferable - it cannot be returned for use by another student another year. The virtual labs will be delivered by mail on CD.

**VERSION 2** (Click following link for direct purchase connection)

**Virtual Physics Labs - WEB ACCESS LICENSE $29.95**

The Web Access license is a 1 year subscription to the virtual labs, over the internet, from Kinetic Books servers. The labs may be accessed from any computer with an internet connection (a small installation must be done). After 1 year this web version will expire and will no longer be accessible.

**NOTE:** Each textbook and virtual lab set contains content for both PHYS 2425 and PHYS 2426 online courses. With the web access license, PHYS 2426 must be taken within one year of PHYS 2425 to use the same textbook and/or labs before they expire.

**ASSIGNMENTS**

Your assignments for this class consists of the following components:

1. Homework problems which you will complete online via the Kinetic Books website
2. Physics Video Worksheets which you will complete as you watch the Mechanical Universe physics video series
3. A "Physics of Technology" project

Your chapter assignment problems will be completed online at the Kinetic Books website and are based on the digital physics textbook you must purchase. Assignments cannot be completed without the textbook. Students must purchase (cost is $10) an online assignment account to access and complete their assignments. Online assignments accounts may be purchased at:

**Kinetic Books Store - Physics Online Homework**

Upon purchase students may log in to their assignment page at [http://homework.kineticbooks.com](http://homework.kineticbooks.com). To see your assignments you must first use the menu options to APPLY for this course (under Professor Brooks at Collin College). I will then accept you into my class at which time you will have access to your assignments for this course. Detailed assignment information, including due dates, is available at this website. Students log on to the server to confirm their identity and create a password in order to be able to upload their answers. You do not need to be online to answer the questions, but you do need to be online to submit your answers.

Completing homework assignments thoroughly and on time is very important. The best way to study for tests in this course is to thoroughly complete and understand the homework. Test problems will reflect an understanding of both homework problems and examples worked in the digital textbook.

You may ask questions regarding homework assignments by emailing Professor Brooks using Blackboard mail or, preferably, by posting a discussion question in Blackboard.

Additional assignment information is available once class begins under the “Assignments” link on the course Blackboard website.

**TESTS**

Two exams will be given on-campus at the PRESTON RIDGE CAMPUS testing center in Founders Hall (room F209). These exams are not available at other campuses. See the ‘Testing and Assignments” page for the testing schedule. Students must bring a SCANTRON form to the testing center as all tests are multiple choice.

Students may bring to each test a 5”x8” note card with notes and equations written on both sides. For the midterm students may bring one index card, for the final exam two index cards. Any type of paper can be used for making index cards, but oversized index cards will not be allowed in the testing center by the staff. So if in doubt, measure. The testing center staff will clear in and out any programmable calculators brought to the testing center. Students should make back up copies of any programs that will be deleted. Additionally, many programmable calculators will default to the RADIAn mode when cleared. Keep this in mind when doing trig calculations. Be sure to check the testing center hours before taking a test. For information on hours visit [www.collin.edu/studentresources/testing](http://www.collin.edu/studentresources/testing) and select "Testing."
Tests for this course consist of approximately 40 multiple choice questions and problems that reflect concepts covered in the digital physics textbook. Several of the test questions come directly from the assigned homework problems. Some of the problems pose a conceptual question that requires a non-numeric (qualitative) answer. Other problems involve equations and mathematical calculations with a numeric (quantitative) answer. The best way to prepare for tests is to complete the homework assignments thoroughly.

Tests are not given back to students. Test scores will be posted online (via Blackboard) usually within 1 or 2 days after the test ends. Students who wish to review their test may schedule an appointment with Professor Brooks.

**GRADES**

Course averages will be calculated as follows:

- Homework Problems: 30%
- Physics Video Assignments: 10%
- Technology Physics Project: 5%
- Lab Reports: 25%
- Midterm: 15%
- Final Exam: 15%

Complete possible 100%

Grades will be determined as follows:

- 90 – 100 = A
- 80 – 89  = B
- 70 – 79  = C
- 60 – 69  = D
- 0 – 59   = F

**LEARNING STYLES EXTRA CREDIT**

Current research clearly shows that we all learn differently and, in fact, have a preferred learning style. We also tend to teach to our learning style. In an effort to further study and evaluate the learning needs of students in this course, extra credit will be given to students who participate in taking two free on-line personality/learning style surveys. These learning style surveys are accessible at iws.collin.edu/mbrooks (Click “Student Resources” then “Learning Styles”).

Upon completion of these Learning Style surveys, you may email me copies of your results, or drop them by my mail box in D-158 at PRC.

**CLASS COMMUNICATIONS**

Communication with your instructor and peers is vitally important in this class, especially in regards to completing assignments. All communication for this course will be handled through Blackboard via the communication tools available through this course website. You are expected to interact with this class site on a regular basis (that means at least once a week, if not more frequently). I will usually reply to emails or discussion questions the same or next day. See the course orientation for more information.

**INSTRUCTOR WEB SITE**

Instructor information, including office hours, is available at iws.collin.edu/mbrooks. Useful course information is also given including a library of physics animations that illustrate course concepts. Note that grades for this course are only available at the Blackboard site and are NOT available on Professor Books’ personal web site.
TECHNICAL SUPPORT

Technical support for Blackboard is available 24 hours a day, 7 days a week, 365 days a year. You may contact technical support toll-free by calling 972-377-1777 or emailing sts@collin.edu. In addition, online support is available through the college Online Support Center. This course includes distance learning components which may contain links to Web sites operated and maintained by other public or private entities. While Collin College instructors provide link information to these sites, the College assumes no responsibility for the privacy practices or the content of such web sites. It is recommended that users consider the individual privacy policy statements of each web site they visit.

ACADEMIC ETHICS

Every member of the Collin College community is expected to maintain the highest standards of academic integrity. Collin College may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission of one’s own work material that is not one’s own. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher’s editions, use of information about exams posted on the Internet or electronic medium, and/or falsifying academic records. While specific examples are listed below, this is not an exhaustive list and scholastic dishonesty may encompass other conduct, including any conduct through electronic or computerized means:

- **Plagiarism** is the use of an author’s words or ideas as if they were one’s own without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation.
- **Cheating** is the willful giving or receiving of information in an unauthorized manner during an examination; collaborating with another student during an examination without authority; using, buying, selling, soliciting, stealing, or otherwise obtaining course assignments and/or examination questions in advance, copying computer or Internet files, using someone else’s work for assignments as if it were one’s own; or any other dishonest means of attempting to fulfill the requirements of a course.
- **Collusion** is intentionally or unintentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, failing to secure academic work; providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate about an examination or any other course assignment; removing tests or answer sheets from a test site, and allowing a classmate to copy answers.

See the current Collin Student Handbook for additional information.

RELIGIOUS HOLY DAYS

Please refer to the current Collin Student Handbook.

ADA STATEMENT

It is the policy of Collin College to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, State and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student’s responsibility to contact the ACCESS office, SCC-G200 or 972.881.5898 (V/TTD: 972.881.5950) in a timely manner to arrange for appropriate accommodations.