

**SYLLABUS**  
**Physics III**  
**PHY-291 / CRN: 10310**  
**Summer 2008**

**Instructor:** Mr. Dennis Missavage

**Credit Hours:** 5

**Class Hours / Week:** 4

**Lab Hours / Week:** 3

**Prerequisites:** PHY-191 with a “C” or better

**Course Description:** Provides an introduction to the theories of fluids, heat, sound, and light. Topics include: statics and dynamics of fluids, ideal gases and kinetic theory, calorimetry, heat transfer, first and second laws thermodynamics, elasticity theory, oscillatory motion, mechanical waves, reflection and refraction of light, mirrors, lenses, and interference and diffraction of light. Laboratory required. Use of the computer and graphing calculator is an integral part of classroom and laboratory assignments.

**Competency Areas:**

Statics and Dynamics of Fluids

Gas Laws

Heat Transfer

Thermodynamics

Harmonic Motion

Wave Motion

Sound

Properties of Light

**Performance Objectives / Requirements**

To complete PHY-291 the student will be required to:

1. Define the three states of matter.
2. Define density and identify its unit.
3. Define pressure and identify its unit.
4. Determine the pressure in a fluid column of known density.
5. Determine the buoyant force of an object.
6. Solve problems with Bernoulli's equation.
7. Define the Celsius, Kelvin, and Fahrenheit temperature scales.
8. Explain the concepts of absolute temperature and pressure.
9. Solve problems using the ideal gas law.
10. Explain the difference between the terms heat energy and internal energy.
11. Identify the unit of heat energy.
12. Explain the concepts of specific heat capacity, heat of fusion, and heat of vaporization.
13. Solve calorimetric problems.
14. Solve problems on thermal expansion with the expansion coefficients.

15. Explain the three basic avenues of heat transfer.
16. Explain the concept of state variable.
17. Solve problems using the first law of thermodynamics.
18. Explain the four basic thermodynamic processes and the concept of a cyclic thermodynamic process.
19. Demonstrate the use of  $pV$ -diagrams.
20. Define thermal efficiency.
21. Determine the efficiency of a heat engine.
22. Explain the second law of thermodynamics.
23. Define stress and identify its unit.
24. Calculate stress.
25. Define strain and identify its unit.
26. Calculate the moduli of elasticity.
27. Solve problems involving simple harmonic motion.
28. Define the terms used to describe the properties of waves.
29. Explain wave reflection and the principle of superposition.
30. Explain standing waves.
31. Compute wavelength, frequency, and speed of various types of waves.
32. Explain the difference between transverse and longitudinal waves.
33. Explain the nature of sound as a compressional wave.
34. Compute the speed of sound given appropriate data.
35. Explain the concepts of intensity and intensity level.
36. Explain the phenomenon of beats.
37. Compute the resonant frequency of a system given appropriate data.
38. Explain the Doppler effect and compute frequency shift given appropriate data.
39. Determine the speed of light in various media.
40. Demonstrate knowledge of the dual nature of light.
41. Explain reflection and image formation by plane and spherical mirrors.
42. Explain refraction and image formation by lenses.
43. Solve problems using Snell's law.
44. Explain double slit interference patterns.
45. Explain the behavior of diffraction gratings.

**Text: Physics – Principles with Applications**, Sixth Edition, (2005) by Douglas C. Giancoli

**Required Workbook: Physlet Physics-Interactive Illustrations, Explorations, and Problems for Introductory Physics** (2004) by Wolfgang Christian and Mario Belloni

**Required Workbook: Ranking Task Exercises In Physics / Student Edition** (2004) by Thomas L. O’Kuma, David P. Maloney, and Curtis J. Hieggelke

**Homework via WebAssign: WebAssign Access Code Card**-Available in the college bookstore or online purchase with a credit card.

**Graphing Utility Required: TI-83, TI-84, TI-86, or TI-89**

**Instructor: Mr. Dennis Missavage**

**Office: Physics Laboratory** (Room: B121)

**Office Hours:**

<b>4:30 p.m. - 6:00 p.m.</b>	<b>MTWR</b>
<b>1:00 p.m. - 3:00 p.m.</b>	<b>Most Saturdays</b>
<b>Or by appointment</b>	

**Telephone & e-mail:**

<b>WebAssign</b>	<b>Communication / Private Message</b>
<b>Physics Lab</b>	<b>(770) 528-4589</b>
<b>Work e-mail</b>	<b><a href="mailto:dmissavage@chattcollege.com">dmissavage@chattcollege.com</a></b>

**Method of Evaluation:**

<b>Three Tests</b>	<b>40%</b>
<b>Quizzes, Group Quizzes, JiTTs, Take-Home Quizzes, Forum Work, and Physlets</b>	<b>15%</b>
<b>Homework (WebAssign)</b>	<b>20%</b>
<b>Laboratory</b>	<b>15%</b>
<b>Comprehensive Final Examination</b>	<b>10%</b>

**"Missed Test Policy"**: If a student misses a test and has a valid excuse, then it is the student's responsibility to make arrangements to make up the test missed.

**Retesting**: Some retesting may be available for the three tests subject to the following guidelines.

1. The instructor must agree to the retesting
2. Maximum score on a retest cannot exceed 70%
3. Retest grades cannot be used to achieve an overall course grade more than "C"
4. Retesting is **not** available for the Comprehensive Final Examination

**"Missed Quiz" or "Missed In-Class Group Work" Policy**: A short quiz is given during each class meeting. (Except for scheduled test dates) There is **no** make-up for missing a quiz or group work. There is **no** option for turning in a take-home quiz late. There is **no** extension for not turning in a JiTT or simulation by the due date. A grade of **zero** will be recorded.

**Laboratory: Each student is required to perform each assigned laboratory and complete a lab report. Lab reports turned in after the due date will be subject to a penalty.**

**Attendance Policy: Attendance and active participation are required.** Attendance will be taken at each class meeting. Notify your instructor before you must miss a class. If you miss a class without notification, please contact your instructor or one of your classmates to obtain the assignments missed. **Late to class, leaving before the end of class, temporary absence from class, and returning from break late are each equivalent to one-fourth of an absence.**

**Withdrawal From Class: Withdrawal from class is a student option.**

#### **Withdrawal Policy**

Through the end of the eighth (8<sup>th</sup>) week of the quarter, a student may drop some or all courses from his or her schedule. During weeks 1-5 a student will receive a grade of W; during weeks 6-8 a student will receive a grade of WF or WP. WF's are calculated into the grade point average just as an F would be. Withdrawal forms are available in the student services office.

## **NOTICE FOR STUDENTS WHO STOP ATTENDING CLASSES**

1. **STUDENTS must initiate withdrawal from a course(s) by completing the appropriate form through the STUDENT SERVICES OFFICE.**
2. **Instructors WILL NOT initiate withdrawal for students who stop attending any course(s). Withdrawal is a STUDENT option.**

3. **STUDENTS withdrawing from a course(s) after the drop/add period (July 1<sup>st</sup> - July 3<sup>rd</sup>) through the end of the 5<sup>th</sup> week of the quarter (August 6<sup>th</sup>) will receive a grade of "W."**
4. **STUDENTS withdrawing from a course(s) during the 6<sup>th</sup>, 7<sup>th</sup> or 8<sup>th</sup> weeks of the quarter (through August 27<sup>th</sup>) will receive a grade of "WP" or a "WF."**
5. **STUDENTS who have not withdrawn or do not attend class after the end of the 8<sup>th</sup> week of the quarter (August 27<sup>th</sup>) WILL NOT be withdrawn by the instructor and WILL receive the appropriate letter grade (A, B, C, D, or F).**

**Stopped Attending Policy:**

After a student has attended a class at least one time, he/she is considered to be on the class roster. Your instructor is required to submit students who have stopped attending as this status occurs. The definition of "stopped attending" for this course is:

- A student who has missed 3 consecutive days of a class that meets twice per week.
- It is the student's responsibility to contact the instructor if s/he is to be absent from class or has missed class. It is the instructor's decision as to whether to allow the student to return to class or to submit the student as "stopped attending" if the student misses the above defined number of classes.

Students submitted as "stopped attending" are not eligible to be reinstated into the course; they will receive a grade of F for the courses, unless the student withdraws from the course using the appropriate withdrawal procedure.

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**Academic Dishonesty**

Any student found to have committed the following misconduct is subject to disciplinary sanctions:

- Acts of dishonesty, including but not limited to the following:
  - Cheating, plagiarism, or other forms of academic dishonesty.

Furnishing false information to any staff or faculty member of Chattahoochee Technical College

**Equity Statement:** Offensive statements regarding one's race, sex, creed, national origin, physical ability, or mental ability are not appropriate in this course. These statements may be considered a violation of CTC's standard of conduct, as stated in the current catalog, and may result in disciplinary action.

**Work Ethics Grade:** A work ethics grade of 0, 1, 2, or 3 will be assigned to students in all courses. The work ethics grade is assigned in accordance with Georgia Department of Technical and Adult Education standards. The work ethics grade will be displayed on the student's official transcript but will *not* affect the academic grade point average. The work ethics grade is designed to evaluate and encourage good work habits.

**Accommodations:** Anyone who feels that they may need an accommodation based on a disability should contact me to arrange an appointment to discuss the course format and how it can be modified to meet your needs. I rely on the Disability Services Coordinator for assistance in verifying the need for accommodations and developing accommodations strategies. If you have not previously contacted the Disability Services Coordinator, I encourage you to do so. The telephone number of the Office of Disability Services is (770) 528-4529.

**Warranty:** Any graduate of Chattahoochee Technical College who is determined to be deficient in a competency identified in the state program standard shall be retrained at no cost upon the request of a graduate or the employer in conjunction with a graduate. This warranty is valid for two consecutive years following the date of graduation.

**Food and Drink:** **Food and drink are not permitted in the classroom or laboratory.**

**Telephones:** **All types of communication devices are not permitted in the Physics Laboratory. These devices include but are not limited to the following:**

1. Cell telephones
2. Ear telephones
3. Pagers
4. Headphones
5. Laptop computers / Notebook computers

**Additional prohibited items include:**

1. iPods
2. MP3 Players
3. Electronic video games
4. Digital cameras

**These devices are to be turned off and not available for use during lecture, laboratory, and while working in the physics laboratory. This last statement means:**

1. Not before class
2. Not during class
3. Not during break
4. Not after class
5. Not during office hours
6. Not during my planning periods
7. Not during the Saturday tutorial period
8. “not available for use” means the devices are to be stored away in book bags or purses. They are **not** to be left on the table while in

the laboratory. I recommend that you leave these devices in your automobile before coming into the laboratory.

**Failure to comply with the above regulations will result in a reduced work ethics grade and a reduced final course grade:**

1. Work ethics grade reduced to either a 1 or 0
2. Final course letter grade reduced by one letter grade (Example: “B” reduced to “C”)

**Grading System:**

The following grading system is used college-wide:

<b>Grade</b>	<b>Final Numerical Score %</b>	<b>Standard</b>	<b>Numerical Equivalency</b>
<b>A</b>	<b>90 – 100</b>	<b>Excellent</b>	<b>4</b>
<b>B</b>	<b>80 – 89</b>	<b>Good</b>	<b>3</b>
<b>C</b>	<b>70 – 79</b>	<b>Satisfactory</b>	<b>2</b>
<b>D</b>	<b>60 – 69</b>	<b>Poor</b>	<b>1</b>
<b>F</b>	<b>0 – 59</b>	<b>Failing</b>	<b>0</b>
<b>WF</b>		<b>Withdrew Failing</b>	<b>0</b>
<b>WP</b>		<b>Withdrew Passing</b>	<b>Not Computed</b>
<b>W</b>		<b>Withdrew</b>	<b>Not Computed</b>
<b>I</b>		<b>Incomplete</b>	<b>Not Computed</b>

## Tentative Daily Schedule

Date	Topics
July 1	Orientation and Chapters #9 & Chapter #10
July 3	Chapter #10 & Laboratory #1
July 8	Chapter #10 & Chapter #11
July 10	Chapter #11 & Laboratory #2
July 15	Chapter #11 & Chapter #12
July 17	Chapter #12 & Laboratory #3
<b>July 22</b>	No Class → Work on HW and Take-Home Quiz & Read Chapter #13
<b>July 24</b>	No Class → Work on HW and Take-Home Quiz & Read Chapter #13
July 29	Review & Chapter #13
<b>July 31</b>	<b>Test #1 &amp; Chapter #13</b>
August 5	Chapter #14 & Laboratory #4
<b>August 6</b>	<b>Last day to withdraw and receive a “W”</b>
August 7	Chapter #14 & Chapter #15
August 12	Chapter #15 & Laboratory #5
August 14	Review & Chapter #23
<b>August 19</b>	<b>Test #2 &amp; Chapter #23</b>
August 21	Chapter #24
August 26	Chapter #24 & Laboratory #6
<b>August 27</b>	<b>Last day to withdraw and receive a “WP” or “WF”</b>
August 28	Chapter #24 & Chapter #25
September 2	Chapter #25 & Review
<b>September 4</b>	<b>Test #3 &amp; Review</b>
<b>September 9</b>	<b>Comprehensive Final Examination</b>

The above test dates are tentative and subject to change upon notification. The number of tests given during the quarter may be reduced from three to two upon notification. This syllabus for PHY-291 is subject to change.

Revised: July 1, 2008

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