# IOWA WESTERN COMMUNITY COLLEGE

**Course Syllabus Information**

**PHY 220 Classical Physics II – Calculus Level Online**

**Term: Fall 2015**

**I. Faculty Information:**

Instructor: Mr. Kurt Ubbelohde Phone: 402-516-2390

Email: [kubbelohde@iwcc.edu](mailto:kubbelohde@iwcc.edu)

Office: Lewis Hall L133

Office Hours: I do not have office hours.

**II. Course Information:**

Course Prefix/ No. Course Name Credits Lecture Lab

**PHY 220 Classical Physics II –Calculus Level 4 4 0**

Course Description:

Classical Physics II – Calculus Level is the second part of a two-semester continuing course for students majoring in science, mathematics or engineering. Thermal expansion, wave motion, electricity, magnetism, AC and DC circuits, light, lenses, and special relativity are covered. (4/0)

Prerequisites:

Prerequisite: Calculus II

Co-requisite: None

Course Meeting Times Course Location

Online Web

Required Textbooks

*Physics for Scientists & Engineers,* 4th edition, by Giancoli

ISBN13: 978-0-13-227559-0

Suggested Supplemental Textbooks, References

None

Materials and Supplies to be furnished by Student

TI-86 series Graphing Calculator or TI-36 calculator, or better

Course Learning Objectives and Course Competencies

Upon completion of this course students will be able to:

1. Solve physical problems and draw mathematically based conclusions through clear and logical reasoning from course assignments and laboratory exercises.
2. Use analytical techniques appropriate to the study of physics.
3. Symbolically represent vector quantities.
4. Select and use appropriate equipment for measuring and investigating.
5. Use appropriate units and apply dimensional analysis.
6. Manipulate equations and solve for variables.

1. Solve problems using calculus in thermodynamics.
2. Use calculus and geometric concepts to describe an object’s reaction to heat.
3. Describe and calculate appropriate quantities for a gas using the gas laws.
4. Describe and calculate appropriate quantities for an ideal gas.
5. Explain how thermodynamics relates to air conditioning and heating.
6. Describe the relationships in the first and second law of thermodynamics.

1. Solve problems using calculus in electricity and magnetism.
2. Use algebraic and geometric concepts to the flow of charge, electric potential, and electric fields.
3. Describe and calculate appropriate quantities of voltage, amperes, resistance, and charge.
4. Describe and calculate appropriate quantities of magnetic fields, electromagnetic induction, and electromagnet waves.
5. Explain how AC and DC motors and generators function.
6. Describe the relationships between resistance, capacitance, and inductance.

1. Solve problems in optics
2. Use algebraic and geometric concepts to examine the nature of light.
3. Describe and calculate appropriate quantities from Snell’s law and thin lens magnification.
4. Describe and calculate appropriate quantities of wave length speed and frequency of light.
5. Explain how optical instruments function.
6. Describe the relationships between the human eye and the glasses we wear.

1. Solve problems in special theory of relativity
2. Use algebraic and geometric concepts to solve problems in time dilation.
3. Describe and calculate appropriate quantities of length, time, and mass at speeds close the speed of light.
4. Describe and calculate appropriate quantities for the relativistic addition of velocities.
5. Explain the impact of special relativity on western culture.

 Course Practices:

1. Attendance requirements: This is an online course. Attendance is not taken but student is responsible for doing the work assigned per the schedule below.
2. Standards for written work: Homework may be typed or legibly hand-written. This is a physics course so work must be shown. Be cognizant of appropriate significant figures and units/dimensions. Proper grammar and punctuation, when necessary, are expected.
3. Submission of written work: This is an online course. All work is expected to be sent electronically to the appropriate dropbox. Email with work embedded or as an attachment is also permitted. Include Section # on any email. Use of a scanner or digital camera will help prepare work for electronic submission. Be considerate of size of email attachments.
4. Late assignments: Work should be completed in accordance with the schedule below. **Late work will be accepted until 11 Dec 2015**, but the instructor reserves the right to reduce the amount of credit awarded if circumstances warrant.
5. Missed exams: If a student misses a scheduled examination, a make-up exam may be taken without penalty. Coordinate with the instructor. The make-up exam will be comparable to, but different than, the original exam.
6. Extra Credit: None
7. Participation: Thoughtful, articulate responses to discussion items and essay questions are expected.
8. Classroom Management and Behavior: The classroom is virtual. Communication is via email and messaging. Proper etiquette is appreciated.
9. Communication with Instructor: Email is the best way to communicate. Student should include Name and Section # on all communication.

Grading

1. Homework/Quizzes/Discussion Items: There are Homework Problems, a Quiz, and a Discussion Item for each chapter. Homework will be graded on the basis of accuracy, work shown, timeliness, and completeness of an assignment. Homework is bundled in multiple chapter sets for grading. Homework for all the chapters in a particular set or bundle is worth 100 points. Discussion Items are worth 5 points each and will be graded on the basis of coherent, articulate application of relevant physics being learned in the chapter. Quizzes are graded on accuracy of answers to multiple choice, true-false, and fill-in the blank questions covering the material in the particular chapter. Quiz grades are calculated as a percentage of the total number of questions with correct answers.
2. Chapters Tests: There will be a total of three Chapters Tests during the semester. The tests will be primarily problems. Where appropriate, work should be shown as grading will be based on student understanding. Tests will be open book with calculator allowed. Test grades are calculated as a percentage of the total number of problems with correct plus partially correct answers.
3. Final Exam: The Final Exam will be cumulative and will be primarily problems. Where appropriate, work should be shown as grading will be based on student understanding. Exam will be open book with calculator allowed. Exam grade is calculated as a percentage of the total number of problems with correct plus partially correct answers.

GRADING POLICY:

Relative Weight of each component Grading Scale

Homework, quizzes, discussions 40% A 90%-100%

Chapter tests: 30% B 80%-89%

Final Exam: 30% C 70%-79%

Course Final Grade 100% D 60%-69%

F 0-59%

Important Dates (please refer to Academic Calendar in ROC)

|  |  |
| --- | --- |
| August 17 | Classes Begin |
| December 11 | End of Fall Semester |

Problem Resolution

If you have a conflict with me, concerns about my teaching and/or the course material, please discuss this with me first. If we cannot resolve the difficulty, contact Kim Carter, Dean of Math, Engineering and Industrial Technologies, in Lewis Hall Room 103A, phone number 712-325-3329.

Notice of Class Cancellation

1. Emergency closing of entire campus such as for weather – Students will be notified through the Reiver Alert system. Students must register for this service; find Reiver Alert on your ROC homepage.

2. Emergency cancellation of a class session such as for faculty illness – Students will be notified through an announcement on the ROC course page if possible and/or a posted note on the classroom door.

Schedule

| Week | Assignment | Homework |
| --- | --- | --- |
| 1 & 2  17-28 Aug 15 | Chapter 17  Chapter 18 | Pages 471-474; Problems 11, 21, 23, 29, 37, 45, 49, 55    Pages 492-494; Problems 9, 15, 17, 21, 25, 31, 39, 49, 55 |
| 3 & 4  31 Aug – 11 Sept 15 | Chapter 19  Chapter 20 | Pages 522-525; Problems 5, 11, 17, 25, 31, 35, 39, 47, 55, 59, 65    Pages 552-556; Problems 5, 11, 19, 27, 31, 37, 45, 53, 55 |
| **9 Sept 15** | **Test**  **Chapters 17-20** | **Due 11 Sept 15**  With homework, quizzes, discussion items, and PHY 221 labs |
| 5 & 6  14-25 Sept 15 | Chapter 21  Chapter 22  Chapter 23 | Pages 585-588; Problems 7, 13, 19, 29, 35, 43, 49, 57, 63  Pages 601-604; Problems 3, 7, 17, 29, 43    Pages 623-625; Problems 11, 19, 23, 27, 31, 37, 41, 45, 51, 57 |
| 7 & 8  28 Sept – 9 Oct 15 | Chapter 24  Chapter 25  Chapter 26 | Pages 644-647; Problems 5, 15, 19, 25, 31, 35, 45, 51, 57, 63    Pages 672-674; Problems 5, 15, 21, 27, 35, 43, 47, 55, 59    Pages 699-703; Problems 3, 17, 25, 31, 39, 51 |
| **7 Oct 15** | **Test Chapters 21-26** | **Due 9 Oct 15**  With homework, quizzes, discussion items, and PHY 221 labs |
| 9, 10 & 11  12 Oct – 30 Oct 15 | Chapter 27  Chapter 28  Chapter 29  Chapter 30  Chapter 31 | Pages 727-729; Problems 5, 11, 17, 31, 37, 45    Pages 751-754; Problems 7, 13, 19, 23, 29, 35, 41, 47    Pages 778-782; Problems 5, 11, 19, 29, 33, 39, 47, 51, 55  Pages 805-808; Problems 3, 9, 17, 21, 29, 35, 37, 43, 51, 59, 67  Pages 833-835; Problems 5, 11, 19, 25, 35, 41 |
| **4 Nov 15** | **Test Chapters**  **27-31** | **Due 6 Nov 15**  With homework, quizzes, discussion items, and PHY 221 labs |
| 12 & 13  2-13 Nov 15 | Chapter 32  Chapter 33  Chapter 34 | Pages 860-863; Problems 5, 15, 23, 29, 37, 41, 45, 49, 55, 61  Pages 894-896; Problems 5, 15, 21, 27, 37, 45, 55, 65 Pages 916-918; Problems 1, 5, 15, 25, 35 |
| 14 & 15  16-27 Nov 15 | Chapter 35  Chapter 36 | Pages 946-949; Problems 3, 11, 25, 35, 43, 51, 59Pages 982-984; Problems 7, 17, 19, 29, 37, 43, 55, 65 |
| 16 & 17  **2 Dec 15** | **Final Exam**  **Chapters 17-36** | Due 4 Dec 15With any other remaining homework, quizzes, discussion items, and PHY 221 labs.Late work will not be accepted after 11 Dec 2015. |

**III. College Policy/Information**

Honor Code – Academic Honesty

Upon enrolling at Iowa Western Community College, each student assumes an obligation to conduct her/his academic affairs in a manner compatible with the standards of academic honesty established by the College and its faculty. If this obligation is neglected or ignored by the student, disciplinary action will be taken.

Diversity Statement

Iowa Western Community College values diversity and supports learning experiences that promote intellectual growth and human enrichment.

American with Disabilities Act Statement

If you are an individual with a disability who requires an accommodation to fully participate in academic programs or campus activities, please email [disabilityservices@iwcc.edu](mailto:disabilityservices@iwcc.edu) or call 712-325-3299.  Accommodations are arranged through the Student Success Office, on the second floor of the Student Center on the Council Bluffs campus. Please allow for adequate time to implement your accommodations.

*Any student with mobility impairments should prepare for an emergency ahead of time by instructing faculty and/or classmates on how to assist in case of an evacuation.*

FERPA

Student rights concerning access to educational records are spelled out in Federal Public Law 98-380 as amended by Public Law 93-568 and in regulations published by the Department of Education. The law and regulations require educational institutions to limit the disclosure of information from the student’s record to those who have the student’s written consent or to officials specifically permitted within the law. Students who wish to grant access to their class schedule, transcript of final grades, and progress reports may do so by submitting an Access to Student Information Consent Form to the Records and Registration Office. Access to information is only given at the Records and Registration Office.

For more information, including the full Access to Student Information policy, refer to the Iowa Western Community College General Catalog or contact the Records and Registration Office.

Cyber-Library and Academic Support

* Students can access books, magazines, journals, newspapers, films and audio books 24/7 through the *Cyber-Library* by clicking on the Cyber Library under Academics in ROC.
* For questions about finding information at your campus or center, email [cyberlibrary@iwcc.edu](mailto:cyberlibrary@iwcc.edu) or call 712-325-3247 for the Council Bluffs Campus or 712-542-5117 for the Clarinda Campus.  You can find the library hours posted on ROC.
* FREE tutoring and academic assistance are available through the *Academic Support Center*, located on the second floor of the Student Center on the Council Bluffs campus in a variety of core, general requirement classes.
  + One-on-one assistance is available on a walk-in basis
  + Group tutoring is available, but must be scheduled in advance.
* FREE online tutoring is available through SMARTHINKING on ROC, to access SMARTHINKING, locate Online Tutoring next to My ROC Classes.
* For more information about tutoring services or help in your classes, email [tutoring@iwcc.edu](mailto:tutoring@iwcc.edu) or call 712-388-6841.  A full tutoring schedule is posted by subject area on ROC.

Dropping Classes

While we encourage you to do everything you can to complete your classes, it is always better to drop a class than to fail it. If it becomes necessary for you to drop a class you can drop a class online through ROC up to the last day to drop. We recommend that you always talk to your advisor and financial aid before you drop a class. For more information on dropping classes see the Advising Information Site in ROC under the Academics tab.

Personal Electronic Devices

To provide an environment conducive to learning, Iowa Western Community College requires that cellular phones, pagers, and other personal electronic devices be turned off or set to vibrate when entering classrooms, computer labs, library, offices, auditoriums, or arena areas. Cellular phones with picture taking capabilities are not allowed in bathrooms, locker rooms, or other areas where there is a reasonable expectation of privacy. Faculty members do have the right to prohibit the use of any electronic device in their classroom.

**EQUAL EDUCATIONAL OPPORTUNITY AND NON-HARASSMENT**

Iowa Western Community College is committed to a policy of equal educational opportunity. Therefore the College prohibits discrimination on the basis of unlawful criteria such as race, color, creed, religion, national or ethnic origin, ancestry, genetic information, physical or mental disability, age, sex, sexual orientation, gender identity or expression, pregnancy, marital status, veteran status, AIDS/HIV status, citizenship, or medical condition, as those terms are defined under applicable laws, in admitting students to its programs and facilities and in administering its admissions policies, educational policies, scholarship and loan programs, athletic programs, and other institutionally administered programs or programs made available to students. In keeping with this policy of equal educational opportunity, the College is committed to creating and maintaining an atmosphere free from all forms of harassment.