University of Wisconsin-Milwaukee, Department of Physics Summer 2018
210 (Lec 401/Dis 601) General Physics II (Calculus Treatment): 4 credits

For information on UWM policies and procedures, see: http://www4.uwm.edu/secu/SyllabusLinks.pdf

1. SELECTED LEARNING GOALS:

At the end of this course, students should:

1) Understand the basics of electromagnetic theory using the appropriate mathematical tools of algebra, vectors, and calculus.

2) Understand clearly the concept, significance and properties of discrete and continuous distributions of electric charges and their role in the electromagnetic theory and be able to apply this knowledge to real world problems from physics, engineering, optics and biophysics.

3) Understand concepts such as electric charge, electrostatic and magnetic force and field, current, both qualitatively and quantitatively.

4) Understand the significance and application of conservation laws related to electric charge and energy and be able to apply this knowledge to real world problems from physics and biophysics.

5) Understand Maxwell’s equations conceptually and mathematically, and be able to apply the same to the solution of real world problems in physics, biophysics, and optics.

6) Be able to apply and extend the principles assimilated in topics 1) through 5), above, to AC and DC circuits containing various (resistor, inductor, capacitor and/or combinations) circuit elements.

7) Be able to apply and extend the principles assimilated in topics 1) through 5), above, to basic geometrical and physical optics; be able to analyze and solve quantitative problems

2. PREREQS AND SCHEDULE

Pre-reqs: Grade of C- or better in Physics 209(NP); Math 229(C) or 233(C). For further details go to: https://catalog.uwm.edu/courses/physics/

Please note that the (C) in the pre-req list following the MATH courses does not indicate a grade: it indicates that the course is a corequisite that may be taken either prior to or concurrently with Physics 210.

Class schedule:

Lectures: LEC 401: MTuWTh, 9:00 – 10.15 am, PHY 133; begins Monday June 25th.

Discussion: DIS 601 MTuWTh 10:30 – 11:20 am, PHY 133; begins Monday June 25th.

Please note that to be properly enrolled in this course, you must enroll in the 210-401 lecture AND the 210-601 discussion.

3. PERSONNEL

Instructor: Robert Wood  (Associate Chair of Department) Office: Kenwood IRC 3038
Phone: 414-229-5303   Email: chunnaic@uwm.edu

Office hours: TBA on the course website.   The instructor’s office hours will be updated every week.

Teaching assistant: Nathaniel Smith Office: KIRC 1190 Phone: 414-229-6407 or 414-229-6336
Email: smith839@uwm.edu
Please see the TA’s syllabus for his office hours etc.

Use of e-mail: If you e-mail the instructor or the TA, please state clearly:
1) Who you are (please use both given and family names)
2) Please include Physics 210 Summer 2018 in the subject line.
3) By default I shall address students as Ms/Mr and use the family name given in the PAWS class roster. If you want me to use another name or form of address, please let me know asap

If you don’t follow 1) and 2), above, there will be some delay in my replying to your message. You may not receive replies to e-mails sent after 5.30pm in the evening or at weekends until the following business day.
If you choose to send messages by e-mail that can reasonably be described as unintelligible, discourteous, or abusive do not expect a response and do expect (in the case of discourteous or abusive messages) your e-mail address to be added to the instructor’s spam filter.

4. COURSE MATERIALS

Text: Physics for Scientists and engineers: Foundation and Connections Vol 2 (Katz)
The instructor strongly recommends the e-book with WebAssign access.
Visit: [https://uwm.ecampus.com](https://uwm.ecampus.com) for updated prices and further details/purchase options. NOTE THAT YOU WILL NEED ACCESS TO THE ON-LINE HOMEWORK SYSTEM, WebAssign, so the cheapest option which includes the e-book and the access card for the WebAssign system is a good deal.

Course website: This course uses a standard Desire to Learn (D2L) website. Any UWM student enrolled in this class can reach the website: if you are unfamiliar with the D2L system, please refer to the notes on page 8 of this syllabus. Some essential course material including the weekly worksheets (see below) will be available ONLY on this website. The following link may also be helpful for students unfamiliar with the D2L system: [http://d2l.uwm.edu/](http://d2l.uwm.edu/)

Worksheets: Weekly worksheets will be posted on the course website. These worksheets include brief notes, examples/questions for lecture, and questions that you will complete during discussion with the guidance of the TA. New worksheets (for the following week) will be posted on Thursday or Friday: please make sure you have downloaded and printed these worksheets before the Monday lecture of the following week so that you can follow what the instructor and the TA are doing in lecture and discussion.

WebAssign access: Title and section of the class: PHYSICS 210 - Summer 2018
Class Key: **uwm 1196 1798**
Institutional Code: **uwm**
Student Quick Start Guide: [https://www.webassign.net/manual/WA_Student_Quick_Start.pdf](https://www.webassign.net/manual/WA_Student_Quick_Start.pdf)

IT IS ESSENTIAL THAT YOU HAVE ACCESS WEBASSIGN FOR THIS COURSE! STUDENTS WHO HAVE NOT CREATED A WEBASSIGN ACCOUNT AND LOGGED IN BY THE END OF THE FIRST DAY OF CLASS MAY START TO MISS HOMEWORK DEADLINES AND loose POINTS!

5. EXPECTED AVERAGE STUDENT TIME INVESTMENT

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class contact (lecture)</td>
<td>1.15 x 28 = 32.20 hrs</td>
</tr>
<tr>
<td>Class contact (discussion)</td>
<td>50/60 x 28 = 23.33 hrs</td>
</tr>
<tr>
<td>Assigned Reading:</td>
<td>8 weeks x 5 hrs = 40 hrs</td>
</tr>
<tr>
<td>On line quizzes:</td>
<td>28 x 30/60 = 14 hrs</td>
</tr>
<tr>
<td>Reviewing worksheets before lecture/discussion:</td>
<td>28 x 1 hr = 28 hrs</td>
</tr>
<tr>
<td>Assignments (on line):</td>
<td>24 x 1 hrs + 7 x 2 = 38 hrs</td>
</tr>
<tr>
<td>Reviewing for 3 tests:</td>
<td>3 x 8 hrs = 24 hrs</td>
</tr>
<tr>
<td>3 tests:</td>
<td>2 testsx1.15 +1x2 = 4.3 hrs</td>
</tr>
<tr>
<td>Total semester commitment</td>
<td>203.83 hrs</td>
</tr>
<tr>
<td>(including tests and online quizzes)</td>
<td>Weekly average (using 8 weeks): 25.48 hours</td>
</tr>
<tr>
<td>Hours per credit:</td>
<td>50.96 hrs/credit</td>
</tr>
</tbody>
</table>
6. GENERAL INFORMATION

**Level of difficulty:**  *The importance of basic math cannot be over-emphasized.* You *must* be comfortable with basic calculus, algebra, arithmetic, and trig: most students who perform poorly in this class do so not because of a weak background in physics but because of their weak math skills. Note that you are expected to handle problems that use *only* algebraic variables.

**Lab:**

The 215 Lab (1 credit) is separate from the 210 Lecture course (4 credits); it is graded independently. You do not have to enroll in the 215 lab course if you are enrolled in the 210 lecture course: whether you take the lab is your decision. Ask your program advisor(s) whether you need to take the lab course. Please note that the instructor of 210 CANNOT tell you whether your program/major requires the lab unless you are a UWM physics major: all UWM physics majors *MUST* take the lab to satisfy the requirements of the major.

**Calculator:**

1) Please bring a simple scientific calculator to each lecture and discussion. You do *NOT* need a fancy and expensive programmable calculator such as a TI-83 for basic calculations, but you do need a calculator that can handle trig functions and their inverses, logarithms and antilogarithms to base 10 and to base e, and exponent ([scientific](https://en.wikipedia.org/wiki/Scientific_notation)) notation.

2) The use of a non-programmable, non-graphing, "Scientific" calculator is allowed in tests, but under no circumstance will programmable and/or graphing calculators, cell-phones, and web-capable devices be considered appropriate. Calculators built into cell phones may *NOT* be used during tests.

### 7. Proposed schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Chapter/Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>M 25</td>
<td>Chapter 23: Electric forces</td>
</tr>
<tr>
<td>Tu 26</td>
<td>Chapter 23: Electric forces</td>
<td></td>
</tr>
<tr>
<td>W 27</td>
<td>Chapter 24: Electric fields</td>
<td></td>
</tr>
<tr>
<td>Th 28</td>
<td>Chapter 24: Electric fields</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>M 02</td>
<td>Chapter 25: Gauss’s law</td>
</tr>
<tr>
<td>Tu 03</td>
<td>Chapter 25: Gauss’s law</td>
<td></td>
</tr>
<tr>
<td>W 04</td>
<td>National Holiday</td>
<td>Chapter 26: Electric potential</td>
</tr>
<tr>
<td>Th 05</td>
<td>Chapter 26: Electrical potential</td>
<td></td>
</tr>
<tr>
<td>M 09</td>
<td>Chapter 26: Electrical potential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chapter 27: Capacitors and batteries</td>
<td></td>
</tr>
<tr>
<td>Tu 10</td>
<td>Chapter 27: Capacitors and batteries</td>
<td></td>
</tr>
<tr>
<td>W 11</td>
<td>Chapter 28: Current and resistance</td>
<td></td>
</tr>
<tr>
<td>Th 12</td>
<td>Test 01 (75 minutes)</td>
<td>Chapter 29: DC circuits</td>
</tr>
<tr>
<td>M 16</td>
<td>Chapter 29: DC circuits</td>
<td></td>
</tr>
<tr>
<td>Tu 17</td>
<td>Chapter 29: DC circuits</td>
<td></td>
</tr>
<tr>
<td>W 18</td>
<td>Chapter 30: Magnetic fields and forces</td>
<td></td>
</tr>
<tr>
<td>Th 19</td>
<td>Chapter 30: Magnetic fields and forces</td>
<td></td>
</tr>
<tr>
<td>M 23</td>
<td>Chapter 31: Gauss’s Law for magnetism and Ampere’s law</td>
<td></td>
</tr>
<tr>
<td>Tu 24</td>
<td>Chapter 31: Gauss’s Law for magnetism and Ampere’s law</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chapter 22: Vector calculus</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>Chapter 23: Electric forces</td>
<td></td>
</tr>
<tr>
<td>W 25</td>
<td>Chapter 23: Electric forces</td>
<td></td>
</tr>
<tr>
<td>Th 26</td>
<td>Chapter 23: Electric fields</td>
<td></td>
</tr>
<tr>
<td>M 30</td>
<td>Chapter 23: Electric fields</td>
<td></td>
</tr>
<tr>
<td>Tu 31</td>
<td>Test 2 (75 minutes)</td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>W 01</td>
<td>Chapter 34: Maxwell’s Equations and electromagnetic waves</td>
</tr>
<tr>
<td>Th 02</td>
<td>Chapter 34: Maxwell’s Equations and electromagnetic waves</td>
<td></td>
</tr>
<tr>
<td>M 06</td>
<td>Chapter 35: Diffraction and Interference</td>
<td></td>
</tr>
<tr>
<td>Tu 07</td>
<td>Chapter 35: Diffraction and Interference</td>
<td></td>
</tr>
<tr>
<td>W 08</td>
<td>Chapter 36: Applications of the wave model</td>
<td></td>
</tr>
<tr>
<td>Th 09</td>
<td>Chapter 37: Reflection and images formed by reflection</td>
<td></td>
</tr>
<tr>
<td>M 13</td>
<td>Chapter 37: Reflection and images formed by reflection</td>
<td></td>
</tr>
<tr>
<td>Tu 14</td>
<td>Chapter 38: Refraction and images formed by refraction</td>
<td></td>
</tr>
<tr>
<td>W 15</td>
<td>Chapter 38: Refraction and images formed by refraction</td>
<td></td>
</tr>
<tr>
<td>Th 16</td>
<td>Final (2 hours)</td>
<td></td>
</tr>
</tbody>
</table>

### 8. IMPORTANT UWM DATES

Please understand that these dates (see below) are decided by the school, *NOT by the instructor, who cannot change them either for your or for his own convenience.*

**June 29th** is the LAST DAY for students to add courses, late register or change grading basis for 8-week session classes.

**July 6th** is the LAST DAY to withdraw from 8-week session or drop 8-week session classes without transcript notation (W).

**July 29th** is the LAST DAY to drop 8-week session classes with transcript notation (W). After this date, drops and withdrawals require the signature of the instructor and the school/college advising office. Signatures are given on appeal only for non-academic reasons.

See also: [http://uwm.edu/onestop/dates-and-deadlines/important-dates-by-term/](http://uwm.edu/onestop/dates-and-deadlines/important-dates-by-term/)
9. IMPORTANT COURSE DATES (decided by instructor)

THREE tests will be held during the semester at regularly scheduled class times on the following dates: THURSDAY JULY 12th, TUESDAY JULY 31st, AND THURSDAY AUGUST 16th. Test dates will be rearranged for students who have conflicts with religious observance (see note 4, page 6 for official UW policy).

10. QUIZZES, ASSIGNMENTS, AND TESTS

Quizzes:

On-line, multiple-choice quizzes will be available each MONDAY, TUESDAY, WEDNESDAY, AND THURSDAY, beginning MONDAY JUNE 25th, on the D2L system. The quizzes open and close according to the following schedule:

<table>
<thead>
<tr>
<th>Quiz</th>
<th>Open Time</th>
<th>Close Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
<tr>
<td>Tuesday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
<tr>
<td>Wednesday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
<tr>
<td>Thursday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
</tbody>
</table>

The quizzes are timed and graded automatically, and you have THIRTY MINUTES to complete each attempt at any quiz; you are allowed TWO separate attempts at each quiz, and the average of the two scores will be used as your overall score for that quiz. After your first attempt, the questions which you answered incorrectly will be displayed to guide you through your second attempt; no scores/answers will be available until after the quiz has closed for the whole class. There are no make-up quizzes. To take care of illness etc., four quizzes will be dropped for each student at the end of the semester. The quizzes will cover a topic or topics taken directly from lecture, so if you have not been to lecture, don’t expect to be able to do the quiz. Scores (on the D2L course website gradebook) and the answer key for any quiz will be available ONLY after that quiz has closed. See Note 4, page 6 for Religious Observance. Exception: no quiz will be due on July 4th.

Assignments:

Short assignments are also available online using the WebAssign system. Instructions for using WebAssign will be provided before the start of classes on page 2 of an updated version of this syllabus. Beginning Monday June 25th, a new assignment will be available at 3pm after EACH lecture/discussion, that is on Monday, Tuesday, Wednesday, and Thursday. Each assignment is focused on a topic covered in lecture and/or discussion. No extensions will be given and no make-up assignments will be allowed. To take care of illness etc., four assignments will be dropped for each student at the end of the semester (but see Note 4, page 6 for Religious Observance). The assignments open and close according to the same schedule as that for the quizzes, which is repeated below.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Open Time</th>
<th>Close Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
<tr>
<td>Tuesday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
<tr>
<td>Wednesday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
<tr>
<td>Thursday</td>
<td>3pm</td>
<td>10pm</td>
</tr>
</tbody>
</table>

Exception: no assignment will be due on July 4th

Tests:

1) Three tests will be held during the semester at regularly scheduled class times on the following dates: THURSDAY JULY 12th, TUESDAY JULY 31st, AND THURSDAY AUGUST 16th. The material covered in each test will be specified in a brief test review guide that will be posted on the course website at least three days before the test. **NOTE THAT TEST 03 (FINAL TEST) WILL BE 2 HOURS LONG AND WILL BE COMPREHENSIVE (CUMULATIVE)**

2) If you want a passing/good grade, then you must attend all tests. Failure to do so will adversely affect your overall grade. Note that each test is administered during the regularly scheduled class time: Tests 01 and 02 are each 1 hour and 15 minutes long, and Test 03 is 2 hours long.

3) It is the responsibility of each student to attend the tests: oversleeping, lapses of memory, and similar excuses will not be considered grounds for a make-up.

4) Make up tests will be allowed only in cases of: illness resulting in hospitalization or a documented emergency/urgent care visit to a physician; documented family emergencies/bereavement; and verifiable (documented) traveling difficulties. All such absences must be supported by appropriate documents. If a student misses any test
for medical reasons, a physician’s note, clearly showing the signature and letterhead of the physician, must be produced before a make-up can be allowed. The note must state clearly that in the student was not fit to take the test. A note stating only that a student visited (for example) the campus Norris Health Center is not sufficient. Notes from family members/relations are not acceptable.

5) Tests will be rearranged for students who have conflicts with religious observance. See Note 4, page 6 for Religious Observance.

6) Students may NOT leave a test during the first thirty minutes. Students arriving late may NOT take the test if they arrive after any student has already left.

Test format: TEST 01 and 02 contain thirty questions of equal weight; Test 03 (cumulative final) will contain fifty questions of equal weight. Test questions involve both conceptual understanding and definitions, and more substantial quantitative problems involving interpretation, detailed calculations, and algebraic manipulation; some questions will involve working ONLY with algebraic variables.

Make sure you bring to each test:
1) Two #2 pencils, because you will record your answers on a standard scantron sheet which will be machine read.
2) A record of your UWM student id# (you can find out what this is from the PAWS website if you do not know it), which MUST be recorded on your scantron sheet.
3) A PHOTO ID.

Test content: Test problems will be based on the material covered during lecture, the material covered during discussion, the quizzes, and the questions you will find in the assignments. Please note that this DOES NOT mean that questions you have already seen will simply be repeated word for word on tests. You may NOT use note-cards, notes, solution sets, or textbooks during any test; you may use a calculator, and a formula sheet will be provided with the question paper for each test.

11. GRADES AND INCOMPLETES

Grades: The overall course grade will be determined as follows:
1) 65% from three tests (20% from each of tests 01 and 02 and 25% from test 3 =20+20+25=65%)
2) 17.5% - from on-line quizzes (4 quiz scores will be dropped for each student before overall grades are decided).
3) 17.5% - from online assignments (4 assignment scores will be dropped for each student before overall grades are decided).

Letter grades are determined such that the B-/C+ break point (grade boundary) coincides with the median total score determined by combining scores of the course components listed above with the weights also listed above. Estimated letter grades will be posted after each of the tests to give all students a clear indication of their progress in this course.

Incompletes: Incompletes. A notation of "incomplete" may be given in lieu of a final grade to a student who has carried a subject successfully until the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student's control, has been unable to take or complete the final examination or to complete some limited amount of term work. See https://www4.uwm.edu/secu/docs/other/S_31_INCOMPLETE_GRADES.pdf

INCOMPLETE POLICY FOR UNDERGRADUATES (Fac. Doc. #1558, 2536) An incomplete may be given to a student who has carried a subject successfully until near the end of the semester but, because of illness or other unusual and substantiated cause beyond that student's control, has been unable to take or complete the final examination or to complete some limited amount of term work. An incomplete is not given unless the student proves to the instructor that s/he was prevented from completing course requirements for just cause as indicated above.

A course marked incomplete must be completed during the next succeeding semester, excluding summer sessions and UWinterim. If the student does not remove the incomplete during this period, the report of "I" will lapse to "F".
12. OTHER IMPORTANT INFORMATION: PLEASE READ THIS CAREFULLY

1. **Discriminatory conduct (such as sexual harassment):** Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff.

   See: [http://uwm.edu/deanofstudents/conduct/](http://uwm.edu/deanofstudents/conduct/) [https://www4.uwm.edu/secu/docs/other/S_47_Discriminada duct_Policy.pdf](https://www4.uwm.edu/secu/docs/other/S_47_Discriminada duct_Policy.pdf)

2. **Cheating and academic misconduct:** all work handed in for grading (including electronic submissions) must be the result of your own efforts. Copying the work of another student or using solutions/answers to problems from an on-line or other source and presenting them as your own, original work, will be regarded as cheating. Cheating/academic misconduct will be dealt with by the instructor according to the UW policies and procedures. Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions, including failing a course or even suspension or dismissal from the University. For details see:

   See: [http://uwm.edu/deanofstudents/conduct/](http://uwm.edu/deanofstudents/conduct/) [http://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/](http://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/)

3. **Special Consideration.** The principle of equal treatment of all students shall be a fundamental guide in responding to requests for special consideration. No student should be given an opportunity to improve a grade that is not made available to all members of the class. This policy is not intended to exclude reasonable accommodation of verified student disability, or the completion of work missed as the result of religious observance, verified illness, or justified absence due to circumstances beyond the student's control. (Authority: UWM Faculty Documents 860B and 1927)

4. **Religious observance.** In the syllabus, you will find a schedule of tests. Please inform the instructor ASAP if you see a conflict with religious observance. Also inform the instructor ASAP if the deadline of a quiz or an assignment conflicts with religious observance. A suitable date/time for the test (that does not conflict with the religious observance) or other deadline can then be arranged. Please note the following official UW policies: [http://www4.uwm.edu/secu/docs/other/S1.5.htm](http://www4.uwm.edu/secu/docs/other/S1.5.htm) See also: [http://www.interfaith-calendar.org/2018.htm](http://www.interfaith-calendar.org/2018.htm)

**Authority: UWS 22 and UWM Fac. Doc. 1918**

I. Declaration of policy. It is the policy of the board of regents that students’ sincerely held religious beliefs shall be reasonably accommodated with respect to all examinations and other academic requirements. The board of regents adopts this chapter in order to ensure that all institutions of the university of Wisconsin system have in place appropriate mechanisms for ensuring the reasonable accommodation of students' sincerely held beliefs, and for appeals related to these matters.

II. Accommodation of religious beliefs.

1. A student shall be permitted to make up an examination or other academic requirement at another time or by an alternative method, without any prejudicial effect, where:

   (a) There is a scheduling conflict between the student’s sincerely held religious beliefs and taking the examination or meeting the academic requirements; and

   (b) The student has notified the instructor, within the first three weeks of the beginning of classes (within the first week of summer session and short courses), of the specific days or dates on which he or she will request relief from an examination or academic requirement.

2. Instructors may schedule a make-up examination or other academic requirement before or after the regularly scheduled examination or other academic requirement.

3. Instructors shall accept, at face value, the sincerity of students' religious beliefs.

4. Student notification of instructors and requests for relief under sub. (1) shall be kept confidential.

5. Complaints of failure to provide reasonable accommodation of a student’s sincerely held religious beliefs as required by this rule may be filed under UWM Complaint and Grievance Procedures.

6. The chancellor shall, through appropriate institutional publications (to include at a minimum the Schedule of Classes and Bulletin), provide notification to students and
instructors of the rules for accommodation of religious beliefs, and of the procedure and appropriate office for filing complaints.

5. **Students with disabilities:** please give me the written authorization issued by the Accessibility Resource Center (ARC) **as soon as possible.** Suitable arrangements can then be made for tests, quizzes etc. In all lecture theaters, there are tables (usually at the back of the lecture theaters) which are reserved for mobility-impaired students. **DO NOT USE THESE TABLES UNLESS YOU ARE MOBILITY IMPAIRED.** Students with special requirements/learning disabilities should see me as early as possible during the semester: this is the student’s responsibility. Please note that I cannot allow students to take tests under conditions different from those experienced by the rest of the class (extra time, separate room, etc.) **unless they have permission (written authorization) from the ARC.** The ARC will issue formal instructions to me about how students with disabilities are to be accommodated. Because of limited space in the Physics building, **ALL STUDENTS WHO REQUIRE SPECIAL ACCOMMODATIONS SUCH AS EXTRA TIME MUST ARRANGE TO TAKE THEIR TESTS IN ARC.** (See http://www4.uwm.edu/arc/ for ARC contact information).

6. **Students called to active military duty:** accommodations and advice for students who anticipate an absence due to call-up of reserves to active military duty are available at this link: http://uwm.edu/active-duty-military/

7. **Complaint procedures:** Students may direct complaints to the head of the academic unit or department in which the complaint occurs. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy. https://www4.uwm.edu/secu/docs/other/S_47_Discriminination_Policy.pdf

For your information:

**Chair of Physics:** Professor Prasenjit Gup tasarma:  KEN 3077, (414)229-6497, pg@uwm.edu

**Dean of Students’ Office:** http://www4.uwm.edu/dos/

**Equity and Diversity:** http://uwm.edu/equity-diversity-services/about/ **Please remember that instructors have the same legal protection and redress against libel, slander, defamation, and harassment as you: some students seem not to know or understand this**

8. **Grade appeal procedures:** A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College/School.

See http://www4.uwm.edu/secu/docs/other/S_28_Grade_Appeal_by_Students.pdf http://uwm.edu/letters-science/advising/answers-forms/policies/appeal-procedure-for-grades

9. **Behavior during lecture:** please do not disrupt the lecture by talking loudly with neighbors, refusing pay attention when the lecturer has started teaching by ostentatiously reading the newspaper, texting etc. Please be civil and reasonable.

10. **Cell phones:** please turn off cell phones during lectures, discussions, and tests; please do not sit in front of the instructor or TA during class while texting your friends (or anyone else).

11. **Attendance:** if you do not attend each lecture and discussion, you are wasting tuition dollars and almost certainly damaging your overall grade. Your choice, your responsibility.

13. **UW-Milwaukee Desire2Learn (D2L) course web sites:**

Materials for this course are available on a Desire2Learn (D2L) course web site. Students may see these materials there anytime using a standard web browser.
**Recommended browsers:** A complete and up-to-date list of recommended browsers and settings can always be found at: [http://kb.wisc.edu/helpdesk/page.php?id=3210](http://kb.wisc.edu/helpdesk/page.php?id=3210). Please contact the UWM Help Desk, as described at the bottom of this page, with any questions about these requirements.

**To find and browse the D2L course web site:**

1. Go directly to the D2L Landing page at [http://D2L.uwm.edu](http://D2L.uwm.edu).

2. On the D2L Landing page, choose the button labeled [UWM ePanther].

3. On the next page, type in your ePanther Username (your ePanther campus email, but without the "@uwm.edu") and Password (the same password you use for Panther Link and PAWS). Then hit [Login].
   - You may bookmark the D2L.UWM.edu landing page, if you wish.
   - To prevent failed log-ins, please DO NOT BOOKMARK the UWM ePanther login page.

4. On the D2L My Home screen, find the area called My Courses. You’ll see your active courses here, arranged by Semester, with the newest semester at the top.

5. Click any course title to see the Course Home page. Click [Content] in the navigation bar to begin exploring the site.

6. If you have any difficulty getting into the course web site, please close down your web browser completely and open it up again. Then try logging on again, using the instructions above. If you do not know your ePanther username or password, please get help as indicated below.

7. When you are finished looking around your D2L course sites, always click on [Logout]. This is especially important if you are in a computer lab. Otherwise, the next person who uses the machine will be using your D2L account!

**What to do if you have problems with Desire2Learn (D2L)**

If you have any difficulties with D2L, including problems with your login (e.g., you forgot your password, or if you just can't get on), please contact the UWM Help Desk. You may do one of the following:

- Report the problem via online web form at [GetTechHelp.uwm.edu](http://GetTechHelp.uwm.edu)
- Call the UWM Help Desk at 414.229.4040 if you are in Metro Milwaukee.
- Go to Bolton 225 (this lab is not open all day or on weekends – call 414.229.4040 for specific hours)
- From outside the 414 or 262 area codes, but from within the USA, you may call the UWM Help Desk at 1.877.381.3459

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**14. Physics 210 Physics II (Calculus-based) is aligned with divisional criteria 1), 2) and 4) and UW Shared Learning Goal 2**

**Student Learning Outcomes:**

1) Students will understand the basics of electromagnetic theory using the appropriate mathematical tools of calculus and vector algebra. Students will understand clearly the concept, significance, and properties of electric charges and their role in the electromagnetic theory. Students will be able to apply this knowledge to real world problems from physics, engineering, and optics. *(Aligns with criteria 1 and 2, and UW System Shared Learning Goal 2)*

2) Students will understand the significance and application of conservation laws related to electric charge and energy. Students will be able to apply this knowledge to real world problems from physics, engineering, and optics. *(Aligns with criteria 1 and 2, and UW System Shared Learning Goal 2)*

3) Students will learn to apply the above topics to new situations involving AC and DC circuits and solving complex circuit problems by use of Kirchoff’s rules. Students will be able to apply this knowledge to real world problems from physics and electrical engineering. *(Aligns with criteria 1 and 2, and UW System Shared Learning Goal 2)*
4) Students will understand Maxwell’s equations both conceptually and quantitatively, and will be able to apply the same to the solution of real world problems in physics, engineering, and optics. Students demonstrate mastery of concepts such as electric charge, electrostatic and magnetic force and field, current, etc. both qualitatively and quantitatively. 

(Aligns with criteria 1 and 2, and UW System Shared Learning Goal 2)

5) Students will learn to apply and extend the principles assimilated in topics 1) through 3), above, to AC and DC circuits containing various (resistor, inductor, capacitor and/or combinations) circuit elements, behavior and distribution of electric charge in various scenario, and electromagnetic wave; they will demonstrate their ability analyze and solve quantitative problems.

(Aligns with criteria 1 and 2, and UW System Shared Learning Goal 2)

6) Students will learn to apply and extend the principles assimilated in topics 1) through 3), above, to basic geometrical and physical optics; they will demonstrate their ability analyze and solve quantitative problems

(Aligns with criteria 1 and 2, and UW System Shared Learning Goal 2)

7) In general, in all topics, students will explore general principles by constructing and solving mathematical models for specific examples which will be drawn from many different fields, including basic electrical engineering, geometrical and physical optics. Students are encouraged to consider the assumptions built into their models and test the limitations that these assumptions impose on their results. Students, within the mathematical limitations of the course, will also learn to explore the consequences of relaxing these assumptions. Students will consider how well the predicted behavior of their model systems differs from that actually observed for such a system.

(Aligns with criteria 1, 2 and 4, and UW System Shared Learning Goal 2).

8) Ideas will be put in their historical context: for example, how the notion of electromagnetic “wave” puzzlingly dictated existence of undetectable medium called “ether” and how experimental evidence pointed repeatedly to null results (Michelson-Morley experiment). It is important for students to understand that hypotheses/theories that are now regarded as incorrect were once consistent with the best experimental evidence available.

(Aligns with criterion 4). 

Assessment: attainment of GER-NS Criteria 1, 2, and 4, and UW System Shared Learning Goal 2 will be assessed through recording the student responses to predetermined questions on three semester tests and the final. These questions are all five-response, multiple-choice format with no partial credit given; both conceptual questions and questions that require calculus and problem solving skills are included. Although students take on-line quizzes on average twice a week and regularly complete on-line assignments, the result of these course components are not be used for formal assessment. This is because in tests, almost the whole student body participates under controlled conditions.

It is significant that the same concepts will recur not in repeated questions but in new contexts: monitoring the count of correct responses for questions associated with a key concept, as it is applied to different contexts, provides a significant metric not only of student knowledge base but also of student ability to apply existing knowledge to novel or unfamiliar situations – in short, the development of critical scientific thinking. Monitoring collective student performance during the semester will allow the instructor quickly to identify topics that require more (or less) attention. However, the instructor(s) will collect detailed information every semester and it will be considered before the following semester by the undergraduate committee of the department; this will allow the department to suitably modify the teaching materials and presentation in future offerings of this course.

The assessment concerns questions that specifically address:

1) Coulomb’s Law applied both qualitatively and quantitatively
Understanding of the concept of field and potential (central to understanding electromagnetism and the manifestation of electric charges in motion).

2) Conservation Laws
Conservation of electric charge
Conservation of energy

3) Magnetism: origin and its connection with ‘electricity’.

4) How Maxwell’s equations summarize the electromagnetic theory and application of the above both qualitatively and quantitatively in various systems.

Electromagnetic waves, their properties and various physical phenomena (polarization, diffraction, interference)
Each student enrolled in this course is asked to sign the following statement and return it to the instructor no later than lecture on Wednesday June 27th. The instructor may administratively drop students who fail to do so this from the class.

Please print your name on the line below.
FAMILY NAME FIRST, GIVEN NAME LAST______________________________________________________

Statement by student:
1) I have READ THE SYLLABUS FOR THIS COURSE (Physics 210-401) and acquainted myself with the policies therein.
2) I have checked that I satisfy the pre-reqs for this course; if I do not satisfy them, I have discussed my situation with the instructor.
3) I have checked the schedule of tests for conflicts with religious observance and informed the instructor if such conflicts exist.
4) If I intend to ask for special accommodations because of a disability, I have at this date either handed the ARC forms to the instructor or I have notified the instructor that I have contacted the ARC which is currently assessing my case.
5) I have noted the two UWM drop dates clearly stated on page 3 of this syllabus.
6) I have created an account on, and logged in to, the WebAssign system.
7) I understand that failure to participate in the course may lead to my being dropped by the instructor.

Date________________________________________________________

Please sign your name legibly here______________________________________________________________