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 DC and AC circuits containing various (resistor, inductor, capacitor and/or combinations) circuit components.

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 using the techniques of wave and ray optics.

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/ Pre-reqs will be enforced. 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: M, W, F, 10:00 – 10:50AM, PHY 133 begins Wednesday January 23rd.

Discussion: begins Tuesday January 22nd.

<table>
<thead>
<tr>
<th>DIS 602</th>
<th>TR</th>
<th>9:00 - 9:50 AM</th>
<th>PHY 147</th>
<th>Brandon Piotrzkowski</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIS 603</td>
<td>TR</td>
<td>10:00 – 10:50 AM</td>
<td>PHY 143</td>
<td>Brandon Piotrzkowski</td>
</tr>
<tr>
<td>DIS 604</td>
<td>TR</td>
<td>NOON – 12:50PM</td>
<td>PHY 149</td>
<td>Brandon Piotrzkowski</td>
</tr>
</tbody>
</table>

Please note that to be properly enrolled in this course, you must enroll in the 210-401 lecture and one of the discussions 602, 603, or 604. Attendance will be taken at each lecture and your attendance record is a part of your grade. See page 6 for grade details.

3. PERSONNEL

Instructor: Robert Wood, Kenwood IRC 3038 (Associate Chair of Department) (Phone: 229-5303, e-mail: chunnaic@uwm.edu)

Office hours: TBA on the course website (which uses D2L NOT Canvas). The instructor's office hours will be updated every week.

Teaching assistant: Brandon Piotrzkowski
**Use of e-mail:**
If you e-mail the instructor or the TA, please state clearly:
1) **Who you are** (to avoid confusion, please use both given and family names)
2) Please include **Physics 210-401 Spring 2019** 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 in writing 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. **THIS IS NOT AN ON-LINE COURSE.**

**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)*  
Visit [https://uwecampus.com](https://uwecampus.com) for updated prices and further details/purchase options. Below is a screenshot of what you will see at this link. **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 (that’s the first choice below)**. **NOTE: PRICES MAY CHANGE!**

Students need to choose either the ebook with access code or the loose-leaf with access card, not both.

**Choice**

<table>
<thead>
<tr>
<th>Option</th>
<th>List Price:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ebook with access code</td>
<td>$109.00</td>
</tr>
<tr>
<td>Loose-leaf with access card</td>
<td>$145.66</td>
</tr>
</tbody>
</table>

**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 9 of this syllabus. Some essential course material including the weekly worksheets and quizzes (see below) will be available ONLY on this website. The following link may also be helpful for students unfamiliar with the D2L system: [http://uwmltc.org/](http://uwmltc.org/)

**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 Tuesday 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, section 401
- **Course key:** uwm 6490 2466
- **Institutional Code:** uwm

Student Quick Start Guide: https://www.webassign.net/manual/WA_Student_Quick_Start.pdf

**IT IS ESSENTIAL THAT YOU USE THE INFORMATION GIVEN ABOVE TO ACCESS WEBASSIGN AS SOON AS POSSIBLE! STUDENTS WHO HAVE NOT CREATED A WEBASSIGN ACCOUNT AND LOGGED IN BY THE END OF THE FIRST DAY OF CLASS MAY MISS HOMEWORK DEADLINES AND LOSE POINTS!**

### 5. EXPECTED AVERAGE STUDENT TIME INVESTMENT

| Class contact (lecture):         | 50/60 x 40 = 33.33 hrs. |
| Class contact (discussion):      | 50/60 x 30 = 25 hrs.    |
| Assigned Reading:                | 14 weeks x 3 hrs. = 42 hrs. |
| On line quizzes:                 | 24 x 30/60 = 12 hrs.    |
| Assignments (on line):           | 24 x 1 hrs. = 24 hrs.   |
| Reviewing for 2 tests:           | 3 x 8 hrs. = 24 hrs.    |
| 3 tests:                         | 50/60 x 3= 2.5 hrs.     |
| Reviewing for final:             | 10 hrs.                 |
| Final exam:                      | 2 hrs.                  |

Total semester commitment (including tests and online quizzes): 204.83 hrs.

Weekly average (using 14.5 weeks): 14.1 hours

Hours per credit: 51.2 hrs./credit

### 6. Proposed schedule

<table>
<thead>
<tr>
<th>January</th>
<th>W 23 Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F 25 Chapter 23: Electric forces</td>
</tr>
<tr>
<td></td>
<td>M 28 Chapter 23: Electric forces</td>
</tr>
<tr>
<td></td>
<td>W 30 Chapter 24: Electric fields</td>
</tr>
<tr>
<td>February</td>
<td>F 01 Chapter 24: Electric fields</td>
</tr>
<tr>
<td></td>
<td>M 04 Chapter 24: Electric fields</td>
</tr>
<tr>
<td></td>
<td>W 06 Chapter 25: Gauss’s law</td>
</tr>
<tr>
<td></td>
<td>F 08 Chapter 25: Gauss’s law</td>
</tr>
<tr>
<td></td>
<td>M 11 Chapter 26: Electric potential</td>
</tr>
<tr>
<td></td>
<td>W 13 Test 01 (50 minutes)</td>
</tr>
<tr>
<td></td>
<td>F 15 Chapter 26: Electric potential</td>
</tr>
<tr>
<td></td>
<td>M 18 Chapter 27: Capacitors and batteries</td>
</tr>
<tr>
<td></td>
<td>W 20 Chapter 27: Capacitors and batteries</td>
</tr>
<tr>
<td></td>
<td>F 22 Chapter 28: Current and resistance</td>
</tr>
<tr>
<td></td>
<td>M 25 Chapter 28: Current and resistance</td>
</tr>
<tr>
<td></td>
<td>W 27 Chapter 29: DC circuits</td>
</tr>
<tr>
<td>March</td>
<td>F 01 Chapter 29: DC circuits</td>
</tr>
<tr>
<td></td>
<td>M 04 Chapter 30: Magnetic fields and forces</td>
</tr>
<tr>
<td></td>
<td>W 06 Chapter 30: Magnetic fields and forces</td>
</tr>
<tr>
<td></td>
<td>F 08 Chapter 31: Gauss’s Law for magnetism and Ampere’s law</td>
</tr>
<tr>
<td></td>
<td>M 11 Chapter 31: Gauss’s Law for magnetism and Ampere’s law</td>
</tr>
<tr>
<td></td>
<td>W 13 Test 2 (50 minutes)</td>
</tr>
<tr>
<td></td>
<td>F 15 Chapter 32: Faraday’s Law of Induction</td>
</tr>
<tr>
<td></td>
<td>18-22 Spring Break</td>
</tr>
<tr>
<td></td>
<td>M 25 Chapter 32: Faraday’s Law of Induction</td>
</tr>
<tr>
<td></td>
<td>W 27 Chapter 32: Faraday’s Law of Induction</td>
</tr>
<tr>
<td></td>
<td>F 29 Chapter 33: Inductors and AC circuits</td>
</tr>
<tr>
<td>April</td>
<td>M 01 Chapter 33: Inductors and AC circuits</td>
</tr>
<tr>
<td></td>
<td>W 03 Chapter 34: Maxwell’s Equations and electromagnetic waves</td>
</tr>
<tr>
<td></td>
<td>F 05 Chapter 34: Maxwell’s Equations and electromagnetic waves</td>
</tr>
<tr>
<td></td>
<td>M 08 Chapter 34: Maxwell’s Equations and electromagnetic waves</td>
</tr>
<tr>
<td></td>
<td>W 10 Chapter 35: Diffraction and Interference</td>
</tr>
<tr>
<td></td>
<td>F 12 Chapter 35: Diffraction and Interference</td>
</tr>
<tr>
<td></td>
<td>M 15 Chapter 35: Diffraction and Interference</td>
</tr>
<tr>
<td></td>
<td>W 17 Chapter 36: Applications of the wave model</td>
</tr>
<tr>
<td></td>
<td>F 19 Chapter 36: Applications of the wave model</td>
</tr>
<tr>
<td></td>
<td>M 22 Chapter 36: Applications of the wave model</td>
</tr>
<tr>
<td></td>
<td>W 24 Chapter 37: Reflection and images formed by reflection</td>
</tr>
<tr>
<td></td>
<td>F 26 Test 3 (50 minutes)</td>
</tr>
<tr>
<td></td>
<td>W 27 Chapter 38: Reflection and images formed by reflection</td>
</tr>
<tr>
<td></td>
<td>F 03 Chapter 38: Refraction and images formed by refraction</td>
</tr>
<tr>
<td>May</td>
<td>M 29 Chapter 37: Reflection and images formed by refraction</td>
</tr>
<tr>
<td></td>
<td>F 03 Chapter 38: Refraction and images formed by refraction</td>
</tr>
<tr>
<td></td>
<td>M 06 Chapter 38: Refraction and images formed by refraction</td>
</tr>
<tr>
<td></td>
<td>W 08 Wrap-up</td>
</tr>
</tbody>
</table>
7. 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) 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.

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.

- **February 4**th is the LAST DAY for students to add full-term courses.
- **February 18**th is the LAST DAY to withdraw from classes without W on transcript.
- **April 7**th is the LAST DAY to drop 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 and 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/)

**FINAL:** Thursday May 16, 7:30 – 9:30am, in Physics 133
  See [http://uwm.edu/onestop/enrolling/finding-classes/final-exam-schedule/](http://uwm.edu/onestop/enrolling/finding-classes/final-exam-schedule/)

9. IMPORTANT COURSE DATES (decided by instructor)

Three tests will be held during the semester at regularly scheduled class times on the following dates: **Wednesday February 13**th; **Wednesday March 13**th; and **Friday April 26**th. Test dates will be rearranged for students who have conflicts with religious observance (see note 5, page 7 for official UW policy).

10. QUIZZES, ASSIGNMENTS, AND TESTS

**Quizzes:**

Beginning Thursday January 24th and ending Thursday May 2nd, online quizzes (on the course website – see "Quizzes" in the navigation bar) will be available on Tuesday and Thursday each week. These quizzes will open at 2pm each Tuesday and Thursday and close at Midnight SIX (6) days later (thus the first on-line quiz will be available at 2pm on Thursday January 24th and will close at Midnight on Wednesday January 30th). 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 (4) 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 5, page 7 for Religious Observance.

**Assignments:**
Assignments will be available only online using the **WebAssign system (NOT D2L).** Instructions for using WebAssign are given in the links provided on page 3 of this syllabus. Beginning **Thursday January 24th,** a new assignment will be available at 2pm on Tuesday 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 (4) assignments will be dropped for each student at the end of the semester (but see Note 5, page 7 for Religious Observance). These assignments will open at 2pm each Tuesday and Thursday and close at **Midnight SIX (6) days later** (thus the first on-line quiz will be available at 2pm on **Thursday January 24th** and will close at **Midnight on Wednesday January 30th**).

**Tests:**
1) **Wednesday February 13th; Wednesday March 13th; and Friday April 26th.** The material covered in each test will be specified in a brief topic guide that will be posted on the course website at least three days before the test.
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 50 minute lecture period.
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 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 5, page 7 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:**
All tests are multiple-choice format and contain TWENTY (20), 5-response multiple-choice questions, each worth one point; the test questions involve both conceptual understanding and definitions, and more substantial quantitative problems involving interpretation, detailed calculations, algebraic manipulation. Some questions may 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.**

**Final:**
7:30 – 9:30AM, **THURSDAY 16th May in Physics 133** (the usual lecture theater in which the class meets). The final is comprehensive (cumulative). The final is also mandatory: you are responsible for making sure that you can attend at this time. If you do not attend the final, you have not completed the course: you will receive an F or an I
(incomplete), depending on the circumstances. Incompletes are issued only for valid reasons (e.g., medical emergency).

Other official UWM policies concerning finals are given below. For full details go to:
http://www4.uwm.edu/secu/docs/other/S22.htm
https://uwm.edu/onestop/enrolling/finding-classes/#finals

**Final Examination Policy:** One-hour final examinations in one-credit courses may be given during the last class period; two-hour final examinations in all other courses shall be given during the regular examination period. The time of a final examination for an individual or a class may be changed only with the prior approval of the dean or director. The change will involve a postponement to a later date. The Provost’s Office and Classroom Assignments shall be notified of any approved changes in final examinations in order to avoid scheduling conflicts of day, hour and room.

**Conflict:** When a departmental combined-lecture examination conflicts with another examination, it is the responsibility of the department giving the combined-lecture examination to resolve the conflict.

**Student Responsibility for Scheduling:** Each student is responsible for arranging a study list that will permit satisfactory progress towards degree requirements and a class schedule that avoids (a) class and final exam scheduling conflicts and (b) an excessively demanding exam schedule.

11. GRADES AND INCOMPLETES

**Grades:** The overall course grade will be determined as follows:
1) 5% from attendance at lecture. You must sign in for each lecture (excluding tests). An attendance record with only FOUR (4) unexcused absences from lecture gets you the full 5% credit; thereafter, 0.25% is deducted for each unexcused absence. But see Note 5, page 7 for absences connected with Religious Observance which will be excused IF THE INSTRUCTOR IS NOTIFIED DURING THE FIRST WEEK OF THE SEMESTER
2) 45% from THREE tests (15% from each of tests 01, 02, and 03)
3) 10% - from on-line quizzes (4 quiz scores will be dropped for each student before overall grades are decided).
4) 15% - from online assignments (4 assignment scores will be dropped for each student before overall grades are decided).
5) 25% from cumulative final. **IF YOU SCORE LESS THAN 50% ON THE FINAL, YOU CANNOT GET A HIGHER GRADE THAN C WHATEVER YOUR SCORES IN OTHER COMPONENTS OF THIS COURSE! IF YOU NO-SHOW THE FINAL YOU WILL RECEIVE AN F**

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.

**Incomplete:**

Incomplete. 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_Discrimina_duct_Policy.pdf](https://www4.uwm.edu/secu/docs/other/S_47_Discrimina_duct_Policy.pdf)

2. Title IX/Sexual Violence. Title IX is a federal law that prohibits sex discrimination in education program or activities, and UWM policy prohibits such conduct (see Discriminatory Conduct, above). This includes sexual violence, which may include sexual harassment, sexual assault, relationship violence, and/or stalking in all educational programs and education-related areas. UWM strongly encourages its students to report any instance of sex discrimination to UWM’s Title IX Coordinator (titleix@uwm.edu). Whether or not a student wishes to report an incident of sexual violence, the Title IX Coordinator can connect students to resources at UWM and/or in the community including, but not limited to, victim advocacy, medical and counseling services, and/or law enforcement. For more information, please visit: [https://uwm.edu/titleix/](https://uwm.edu/titleix/)

3. 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 online 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/conduct_procedures/academic-misconduct/](http://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/)

4. 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)

5. 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/2019.htm](http://www.interfaith-calendar.org/2019.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.

6. Students with disabilities: please arrange for the authorization for special accommodations issued by the Accessibility Resource Center (ARC) to be sent to the instructor as soon as possible. The link for the ARC is https://uwm.edu/arc/connect/

This is what you will see if you go to this link; this is a new system which has replaced the old paper "visa forms".

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 from the ARC. This permission is issued by ARC in the form of an email, but it is the student’s responsibility to make the appropriate contact with 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.**

7. 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/

8. 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_Discrimina_Duct_Policy.pdf

For your information:

Chair of Physics: Professor Prasenjit Guptasarma: 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.

9. **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_Appe_by_Students.pdf](http://www4.uwm.edu/secu/docs/other/S_28_Grade_Appe_by_Students.pdf) [http://uwm.edu/letters-science/advising/answers-forms/policies/appeal-procedure-for-grades](http://uwm.edu/letters-science/advising/answers-forms/policies/appeal-procedure-for-grades)

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

11. **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).

12. **Attendance:** Mandatory, see page 6 of this syllabus for more details, including conflicts with religious observance

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**](http://D2L.uwm.edu).

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**](http://D2L.uwm.edu). 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://D2L.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)
Subject 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 Kirchhoff'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)*

**Assessment Rubric and target scores:**
All questions are multiple choice, with no partial credit.

Tests ("second pass" for a topic/application, following quizzes and assignments):
*Qualitative questions: at least 65% of students have correct answers*
*Quantitative questions: at least 55% of students have the correct answers*

Final
*Qualitative questions: at least 75% of students have correct answers*
*Quantitative questions: at least 65% of students have the correct answers*
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 January 30th. Students who fail to do this may be administratively dropped and students from the wait-list (if any) may then be added to the course.

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 arranged for the ARC authorization (the "Accommodation Plan") to be sent to the instructor (see page 8 of the syllabus) 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 4 of this syllabus.
6) I have logged in to the WebAssign system.
7) I have noted the date and time of the final and checked this on the official schedule of finals at: https://uwm.edu/onestop/enrolling/finding-classes/#finals

Date_____________________________________________________________________

Please sign your name legibly here________________________________________________________________________