PHYSICS 301: INTERMEDIATE ELECTROMAGNETISM
SYLLABUS AND COURSE GUIDELINES
Fall 2010

1. COURSE INFORMATION
PHYS0301a-F10, Course Ref. Number: 90132
Class meetings are 11:15am-12:05pm on Mon, Wed, Fri
McCardell Bicentennial Hall 538

The unified description of electricity and magnetism is one of the greatest triumphs of physics. This course provides a thorough grounding in the nature of electric and magnetic fields and their interaction with matter. Mathematical techniques appropriate to the solution of problems in electromagnetism are also introduced. The primary emphasis is on static fields, with the full time-dependent Maxwell equations and electromagnetic waves introduced in the final part of the course. (prereq. Phys 0212).

2. INSTRUCTOR
Anne Goodsell, Assistant Professor of Physics
Contact information: agoodsell@middlebury.edu, MBH 529
Office hours: Tue 11am-12:30pm; Thur 6-7:30pm (primarily for Phys 301);
or e-mail or come by for an appointment

3. TEXTS AND ONLINE MATERIALS
Course website: http://blogs.middlebury.edu/phys0301af10

4. ASSIGNED WORK AND READING
Weekly problem sets: due by 4pm Friday unless otherwise scheduled.
Submit to box across from MBH 525.

Working through problems is essential for learning this material, and assigned problems will reflect the content of class meetings. Solutions/responses should be submitted neatly on one side of the paper only and will be returned within a week. See description below regarding collaboration. Solutions to problems will be available shortly after the due date for each problem set (same-day availability before exams).

Readings from Griffiths, Schey, or other sources (provided by instructor) will be required or suggested. Course meetings and exams may include questions based on required or suggested reading, with more emphasis on required material.

Objectives of assigned work:
- Read and comprehend physics and math.
- When solving problems, do work that is more detailed/thorough/extensive than class time allows.
- Practice methods learned in class.
- Improve verbal and mathematical skills.
- Do cognitive processing alone and with others.
- Consider many explanations, examples, questions, and problems.
- Become more cognizant of your strengths and preferences in solving problems.
No late work will be admitted except under extenuating circumstances documented by your Commons Dean. When sufficient notice is given (at least 14 days), I may be able to provide assignments early in situations where a serious conflict arises due to athletic or other extracurricular requirements, excluding planned travel for personal reasons.

5. **Collaboration and Academic Integrity**

I encourage you to consult with your classmates on work that is assigned outside of class, and you may use resources and references of your choosing, provided that:

- You always think about the assigned work by yourself before collaborating.
- Collaboration is voluntary and mutual.
- You independently write up your own solutions, without copying those of a classmate or from any other source.
- In your solutions, you give credit for direct and/or substantial assistance from other sources (please cite source of information, such as book, article, classmate(s), experts, tutors, website, etc). I may request additional details about sources.
- You do not read solutions or exam questions from previous years of this course unless I provide such materials directly.
- Conversation about grades or achievement is respectful and conducted only with mutual consent.

All conduct should comply with the Honor Code. No penalty is incurred for responsible citation and collaboration. Please ask if you have questions.

6. **Live Action**

Your insights and contributions are valuable. Participation during class meetings is expected and encouraged, and it is incorporated in your grade for the course. Grading of participation is based primarily on particular homework assignments that have a short in-class oral component. Voluntary formal and informal conversation may continue during office hours or occasionally via e-mail.

7. **Assessment and Exams**

All assessed work is graded for skillful calculation, accuracy of relevant content, thoughtfulness and clarity of reasoning, and well-justified conclusions. Points may be gained or lost for any of these categories.

Midterm assessments and the final examination require mathematical and prose responses. Each assessment/exam is cumulative, with more emphasis placed on recent material. Weighting for graded material is based on a combination of the time allotted for completion of assignments/exams and how much the work can reflect your personal understanding.

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<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Problem Sets</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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<tr>
<td>Midterm Assessment #2</td>
<td>18%</td>
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<tr>
<td>Midterm Assessment #1</td>
<td>15%</td>
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<tr>
<td>Participation</td>
<td>7%</td>
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8th Dec., 7-10pm
4th Nov., 7:30pm
4th Oct., 7:30pm

While I attempt to administer fair and reasonable assessments/exams, I do not typically write tests for which an “A” grade requires obtaining 90% of the total possible points. I may make adjustments (“re-center” the point distribution) at my discretion, before exams are returned, to accommodate the overall performance of the class and difficulty of the exam. I will tell you clearly if such adjustments are made.
As with assignments, no make-up assessment/exam will be administered except under extenuating circumstances documented by your Commons Dean. However, if an examination for another course overlaps with a midterm assessment in this course, it may be possible to shift the time of the midterm assessment. Please give sufficient notice (14 days).

Your final course grade is determined by the weighted accumulation of points earned, with weighting indicated above.

Formal opportunities for you to provide feedback about the course, content, and teaching occur after each assessment/exam. I also encourage informal dialogue outside of these opportunities.

8. **Detailed Schedules**

   Detailed schedules are provided in three installments, starting at the first day of class and followed by the second and third installments at the time of the midterm assessments. Each document will be available online at the course website and includes the list of material covered in class meetings, suggested and required excerpts from the texts, and exam dates.

9. **Remarks**

   When all is said and done, this course is about tackling some hard and interesting questions in physics. I hope that your grade for this course will reflect your best ability under the given circumstances. I also hope that the lasting benefit of the course will go beyond the final letter you earn. You may be able to solve these problems much more easily, or much less easily, in ten years’ time, depending on what path works for you beyond Middlebury. Regardless of whether you can recite Gauss’ Law in the future, I hope you find yourself remembering techniques, explanations, emotions, ideas, people, and moments of insight from this course. Welcome to intermediate electromagnetism.