**PURDUE UNIVERSITY**

**REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE**

**(10000-40000 LEVEL)**

**DEPARTMENT:** Physics  
**EFFECTIVE SESSION:** Fall 2009

**INSTRUCTIONS:** Please check the items below which describe the purpose of this request.

- [x] 1. New course with supporting documents
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit type
- [ ] 7. Change in course attributes (department head signature only)
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

**PROPOSED:**

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>PHYS</th>
<th>Subject Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number</td>
<td>312</td>
<td>Course Number</td>
</tr>
<tr>
<td>Long Title</td>
<td>Intermediate Electricity and Magnetism II</td>
<td></td>
</tr>
<tr>
<td>Short Title</td>
<td>E&amp;M II</td>
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</tr>
</tbody>
</table>

**TERMS OFFERED:**

- [ ] Summer
- [x] Fall
- [ ] Spring

**CAMPUS(ES) INVOLVED:**

- [x] Calumet
- [ ] Cost Ed
- [ ] Tech Statewide
- [x] Ft. Wayne
- [ ] W. Lafayette
- [ ] Indianapolis

**CREDIT TYPE:**

1. Fixed Credit: Cr. Hrs.  
   - [ ] 3

2. Variable Credit Range:
   - Minimum Cr. Hrs:
   - Maximum Cr. Hrs:
   - (Check One) To
   - Yes
   - No
   - [ ] Or

3. Equivalent Credit:
   - Yes
   - [ ] No

**COURSE ATTRIBUTES:**

- [ ] 1. Pass/Not Pass Only
- [ ] 2. Satisfactory/Unsatisfactory Only
- [ ] 3. Repeatable
- [ ] 4. Credit by Examination
- [ ] 5. Special Fees
- [ ] 6. Registration Approval Type
- [ ] 7. Variable Title
- [ ] 8. Honors
- [ ] 9. Full Time Privilege
- [ ] 10. Off-Campus Experience

**COURSE DESCRIPTION (INCLUDE REQUIREMENTS/RESTRICTIONS):**

Continued study of electrostatics and magnetostatics, electric currents, electromagnetic induction, applications of Maxwell's equations to electromagnetic waves, boundaries, dispersion, and radiation. P: PHYS311

**Offices:**

- [ ] Calumet Department Head  
  - Date: 10/23/08
  - Signature: [Signature]

- [ ] Fort Wayne Department Head  
  - Date: [Date]
  - Signature: [Signature]

- [ ] Indianapolis Department Head  
  - Date: [Date]
  - Signature: [Signature]

- [ ] North Central Department Head  
  - Date: [Date]
  - Signature: [Signature]

- [ ] West Lafayette Department Head  
  - Date: [Date]
  - Signature: [Signature]

**OFFICE OF THE REGISTRAR**
Intermediate Electricity and Magnetism II

PHYS 312 Tentative Syllabus

Instructor: Gang Wang
Office: Kettler Hall 125
Phone: 481-6154
Email: wanggg@ipfw.edu
Website: http://users.ipfw.edu/wangg
Office hours: Monday, Wednesday 3:30 pm - 4:30 pm, Monday 12 pm – 1:00 pm.

Course requirements:
Textbook: Classical Electromagnetism, (Recommended) By Robert H. Good, (Saunders College Publishing)
Lectures: Tuesday and Thursday 4:30 pm – 5:45 pm, KT 129

Grading:
Homework assignments ..................................................30%
Midterm Exam 1 (Wed. 9/12).............................................20%
Midterm Exam 2 (Wed. 10/3).............................................20%
Final Exam (Wed. 12/12).................................................30%

General Policies:
1. Final exam counts 30% toward your final grade, however, you must score D or higher in the final Exam to pass the class.
2. Homework assignments are due by 4:30 on the indicated dates. Late submission may be accepted with penalty. A third of the full score of that assignment will be taken off PER DAY past due.
3. If you catch me for any mistake on the blackboard, (no matter how silly it is), you get 0.25 extra point each time, up to 5 points total for the semester.

Objective of the class:
This course is designed as the continuity of the previous semester electromagnetism course. The knowledge from the previous course will be reinforced and used in advanced examples. The special relativity is going to be introduced in this class. The students who successfully finished this course will have a strong understanding and mathematical skills for the electromagnetism phenomena.
<table>
<thead>
<tr>
<th>Week</th>
<th>Days</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/20</td>
<td>M</td>
<td>Ch 18: Introduction of relativity</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Ch 18: Relativity</td>
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<tr>
<td>8/27</td>
<td>M</td>
<td>Ch 18: Relativity</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 18: Relativity</td>
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<tr>
<td>9/3</td>
<td>M</td>
<td>Labor day, no class</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 18: Relativity</td>
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<tr>
<td>9/10</td>
<td>M</td>
<td>Ch 18: Relativity</td>
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<tr>
<td></td>
<td>W</td>
<td>Midterm Exam I</td>
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<tr>
<td>9/17</td>
<td>M</td>
<td>Review of 1st semester E&amp;M</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 1-8: Static electromagnetism in electric materials</td>
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<tr>
<td>9/24</td>
<td>M</td>
<td>Ch 1-8: Complicate static problems</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 9-10: Laplace’ equation and Poisson’s equation</td>
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<tr>
<td>10/1</td>
<td>M</td>
<td>Advanced problem solving:</td>
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<tr>
<td></td>
<td>W</td>
<td>Midterm Exam II</td>
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<tr>
<td>10/8</td>
<td>M</td>
<td>Fall break</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 11: Time dependence of Maxwell equations</td>
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<tr>
<td>10/15</td>
<td>M</td>
<td>Ch 11: Application of Maxwell equations</td>
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<tr>
<td></td>
<td>W</td>
<td>Solving Maxwell equations in various coordinates</td>
</tr>
<tr>
<td>10/22</td>
<td>M</td>
<td>Advanced problem solving: Maxwell equations</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 12: Boundary condition problems</td>
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<tr>
<td>10/29</td>
<td>M</td>
<td>Ch 13: Circuits</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 14-17: Electromagnetic waves</td>
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<tr>
<td>11/5</td>
<td>M</td>
<td>Ch 14-17: Electromagnetic waves</td>
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<td>W</td>
<td>Ch 14-17: Electromagnetic waves</td>
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<tr>
<td>11/12</td>
<td>M</td>
<td>Ch 14-17: Electromagnetic waves</td>
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<tr>
<td></td>
<td>W</td>
<td>Ch 14-17: Dispersions and radiation</td>
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<td>11/19</td>
<td>M</td>
<td>Ch 14-17: radiation from moving charges</td>
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<td></td>
<td>W</td>
<td>Ch 18: relativity consideration of EM waves</td>
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<tr>
<td>11/26</td>
<td>M</td>
<td>Ch 18: relativity consideration of EM waves</td>
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<td></td>
<td>W</td>
<td>Thanksgiving break</td>
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<tr>
<td>12/3</td>
<td>M</td>
<td>Advanced topics: optics and lasers</td>
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<tr>
<td></td>
<td>W</td>
<td>Optics and lasers II</td>
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<tr>
<td>12/12</td>
<td>W</td>
<td>Final Exam on Thursday at 4 pm to 6 pm.</td>
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</tbody>
</table>

Gang Wang, KT-125