# Class Schedule - Fall 2005

## Physics

**PHYS 199  Undergraduate Open Seminar**  credit: 1 TO 5 hours.

(PHYS 199) Approved for both letter and S/U grading. May be repeated.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>10145</td>
<td>Independent Study</td>
<td></td>
<td>ARRANGED</td>
<td></td>
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</tbody>
</table>

Instructor Approval Required

INDEPENDENT STUDY. To register for independent study under PHYS 199, use the PHYS 199 CRN (available from the departmental undergraduate records office) specific to the instructor with whom you have arranged to work. (You cannot register under the general CRN 10145.)

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<tr>
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<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>34865</td>
<td>Laboratory-Discussion</td>
<td>BCS</td>
<td>04:00 PM - 05:20 PM</td>
<td>W</td>
<td>257 - Loomis Laboratory</td>
<td>Hubler, A</td>
</tr>
</tbody>
</table>

Credit Hours: 1 hours

**Discovery course.**

BEHAVIOR OF COMPLEX SYSTEMS: CHAOS, FRACTALS AND ARTIFICIAL LIFE. The behavior of complicated systems with many parts will be explored with hands-on computer simulations and lab experiments. Students will experiment with lightning, turbulence, explosions, and human rhythms as well as use simple computer models to imitate their irregular and symmetric patterns and dynamics. Students will develop an intuition as to why isolated complex systems prefer harmony and symmetry, whereas competing complex systems prefer chaos. Discussions will include applications of this within business, engineering and social sciences. PHYS 199 BCS is part of the first year Discovery Program; enrollment is restricted to freshmen. Students should enroll in only one Discovery Course. Students who enroll in more than one Discovery course may be dropped from the additional Discovery courses. For a listing of these courses and for course descriptions, see http://www.provost.uiuc.edu/students/discovery. THE FIRST MEETING OF PHYS 199 BCS IS ON AUGUST 31.

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<tr>
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<th>Location</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>34870</td>
<td>Lecture-Discussion</td>
<td>HM</td>
<td>04:00 PM - 05:50 PM</td>
<td>M</td>
<td>257 - Loomis Laboratory</td>
<td>Pitts, K</td>
</tr>
</tbody>
</table>

Credit Hours: 1 hours

HONORS SEMINAR: TOPICS IN MECHANICS. PREREQUISITES: CONCURRENT REGISTRATION IN PHYS 211 AND CONSENT OF INSTRUCTOR. PHYS 199HM CAN BE USED TO SATISFY THE HONORS COMPONENT OF PHYS 211. PHYS 199HM is the honors supplement to PHYS 211 and is intended for those students intending to major in physics or who have a strong interest in the subject. Areas to be addressed include rotational and central force motion, non-inertial frames, non-linear systems and post-Newtonian mechanics. The use of simple visualization tools such as Mathematica and Excel will be encouraged. THE FIRST MEETING OF PHYS 199HM IS WEDNESDAY (SCHEDULED AS A MONDAY) AUGUST 24.

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<tr>
<th>CRN</th>
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<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>34876</td>
<td>Lecture-Discussion</td>
<td>HO</td>
<td>01:00 PM - 02:50 PM</td>
<td>M</td>
<td>139 - Loomis Laboratory</td>
<td>Makins, N</td>
</tr>
</tbody>
</table>

Credit Hours: 1 hours

HONORS SEMINAR: TOPICS IN ELECTRICITY AND MAGNETISM. PREREQUISITES: PHYS 211, CONCURRENT REGISTRATION IN PHYS 212, AND CONSENT OF INSTRUCTOR. PHYS 199HO CAN BE USED TO SATISFY THE HONORS COMPONENT OF PHYS 212. Students investigate special topics in electricity and magnetism. Through weekly meetings (similar in format to the discussion sections of Physics 211 and 212), students will derive for themselves some of the surprising features of our post-classical physical world. For example, the need for special relativity, the existence of magnetic fields, and the origin of electromagnetic radiation are consequences of simple observations such as the constancy of the speed of light. Other topics will include the nature of Gauss’ law and Maxwell’s equations, potentials and superposition, amplifiers, analog computers, and the role of quantum mechanics in electrodynamics. PHYS 199HO is intended for students who have been comfortable with the level of difficulty of PHYS 211, and whose math skills are fairly strong. It allows students to confront in greater depth some of the most interesting intellectual issues in classical electrodynamics. The course will use calculus as a problem-solving tool. THE FIRST MEETING OF PHYS 199HO IS WEDNESDAY (SCHEDULED AS A MONDAY) AUGUST 24.
<table>
<thead>
<tr>
<th>CRN</th>
<th>Course Details</th>
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| 34885 | **Lecture-Discussion**  
**HT**  
03:00 PM - 04:50 PM  
M  
279 - Loomis Laboratory  
Wolfe, J  

**Credit Hours: 1 hours**  
**HONORS SEMINAR: TOPICS IN HEAT, THERMODYNAMICS, AND MODERN PHYSICS. PREREQUISITES: PHYS 211 AND PHYS 212 AND CONCURRENT REGISTRATION IN PHYS 214 AND PHYS 213 AND CONSENT OF INSTRUCTOR. PHYS 199HT CAN BE USED TO SATISFY THE HONORS COMPONENT OF PHYS 214 AND PHYS 213. PHYS 199HT is the honors supplement to PHYS 214/213 and is intended for those students either planning to major/minor in physics or having a strong interest in the subject. Areas to be covered during PHYS 214 include particle scattering, photon quantum states, simple approximation methods (e.g., variational methods), particle exchange, and quantum statistics. Areas to be covered during PHYS 213 include diffusion and heat conduction, the Maxwell-Boltzmann distribution and the ideal gas, the Planck distribution and radiation, free energy and the chemical potential, and quantum gases. THE FIRST MEETING OF PHYS 199HT IS WEDNESDAY (SCHEDULED AS A MONDAY) AUGUST 24.** |

| 42458 | **Discussion/Recitation**  
**MA**  
01:00 PM - 02:50 PM  
R  
132 - Loomis Laboratory  
Scott, M  

**Credit Hours: 1 hours**  
**PHYS 199MA (or MB) is for students enrolled in FA05 PHYS 212 who took SP05 PHYCS 199M.** |

| 42459 | **Discussion/Recitation**  
**MB**  
03:00 PM - 04:50 PM  
R  
132 - Loomis Laboratory  
Scott, M  

**Credit Hours: 1 hours**  
**PHYS 199MB (or MA) is for students enrolled in FA05 PHYS 212 who took SP05 PHYCS 199M.** |