

09-11d.

LSC Use Only No: LSC Action-Date: UWUCC USE Only, No. UWUCC Action-Date: Senate Action Date:  
 08-74d. App-11/17/09 App 1/26/10

**Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee**

Contact Person Stanley Sobolewski	Email Address sobolews@iup.edu
Proposing Department/Unit Physics	Phone 7-4590 or 7-2370

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

<b>1. Course Proposals (check all that apply)</b> <input type="checkbox"/> New Course <input type="checkbox"/> Course Prefix Change <input type="checkbox"/> Course Deletion <input type="checkbox"/> Course Revision <input type="checkbox"/> Course Number and/or Title Change <input checked="" type="checkbox"/> Catalog Description Change		
<u>PHYS 131, 132, 231, 331, 342, 345, 350</u>		
<u>Current Course prefix, number and full title</u>	<u>Proposed course prefix, number and full title, if changing</u>	
<b>2. Additional Course Designations: check if appropriate</b> <input type="checkbox"/> This course is also proposed as a Liberal Studies Course. <input type="checkbox"/> Other: (e.g., Women's Studies, Pan-African) <input type="checkbox"/> This course is also proposed as an Honors College Course.		
<b>3. Program Proposals</b> <input type="checkbox"/> New Degree Program <input type="checkbox"/> Program Title Change <input type="checkbox"/> Other <input type="checkbox"/> New Minor Program <input type="checkbox"/> New Track <input type="checkbox"/> Catalog Description Change <input type="checkbox"/> Program Revision		
<u>Current program name</u>	<u>Proposed program name, if changing</u>	
<b>4. Approvals</b>		
Department Curriculum Committee Chair(s)	<i>S. Sobolewski</i>	Date 9/8/08
Department Chair(s)	<i>[Signature]</i>	9/8/08
College Curriculum Committee Chair	<i>[Signature]</i>	09/29/08
College Dean	<i>[Signature]</i>	4/20/09
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate: (include title)		
UWUCC Co-Chairs		

Received  
 FEB 23 2009  
 Liberal Studies

## II. Description of Curriculum Change

Current Catalog Description	Proposed Catalog Description
<p><b>PHYS 131 Physics I-C Lecture</b> 3c-0l-3cr <b>Prerequisite:</b> MATH 121, 123, or 127, at least concurrently A calculus-based course in general college physics; topics covered are similar to those covered in Physics 111 but are treated in more depth through the use of calculus.</p>	<p><b>PHYS 131 Physics I-C Lecture</b> 3c-0l-3cr <b>Corequisite or Prerequisite:</b> MATH 125 A calculus-based course in general college physics; topics covered are similar to those covered in Physics 111 but are treated in more depth through the use of calculus.</p>
<p><b>PHYS 132 Physics II-C Lecture</b> 3c-0l-3cr <b>Prerequisite:</b> MATH 122, 124, or 128, at least concurrently A continuation of Physics I-C; topics covered are similar to those covered in Physics II but are treated in more depth through the use of the calculus.</p>	<p><b>PHYS 132 Physics II-C Lecture</b> 3c-0l-3cr <b>Prerequisite:</b> PHYS 131 <b>Corequisite</b> MATH 126 A continuation of Physics I-C; topics covered are similar to those covered in Physics II but are treated in more depth through the use of the calculus.</p>
<p><b>PHYS 231 Electronics</b> 3c-3l-4cr <b>Prerequisites:</b> MATH 122, 124, or 128; PHYS 112 or 132 Circuit theory, transients, transistor circuits, frequency response, input and output impedance, feedback and electronic noise. Operational amplifiers and digital electronics.</p>	<p><b>PHYS 231 Electronics</b> 3c-3l-4cr <b>Prerequisites:</b> MATH 126; PHYS 112 or PHYS 116 or PHYS 132 Circuit theory, transients, transistor circuits, frequency response, input and output impedance, feedback and electronic noise. Operational amplifiers and digital electronics.</p>
<p><b>PHYS 331 Modern Physics</b> 3c-0l-3cr <b>Prerequisite:</b> PHYS 112 or 116 or 132; MATH 122 or 124 The history of modern physics is covered. Particle and wave properties of matter are explored using the ideas of quantum mechanics. Systems examined using the ideas of quantum and classical mechanics are atomic structure, solid state, and nuclear physics. The special theory of relativity will also be covered. Some of the problems are solved using computers.</p>	<p><b>PHYS 331 Modern Physics</b> 3c-0l-3cr <b>Prerequisites:</b> MATH 126 and PHYS 132 The history of modern physics is covered. Particle and wave properties of matter are explored using the ideas of quantum mechanics. Systems examined using the ideas of quantum and classical mechanics are atomic structure, solid state, and nuclear physics. The special theory of relativity will also be covered. Some of the problems are solved using computers.</p>
<p><b>PHYS 342 Thermal and Statistical Physics</b> 3c-0l-3cr <b>Prerequisites:</b> MATH 122, 124, or 128; PHYS 112 or 132 Thermometry, laws of thermodynamics, low-temperature physics, entropy, properties of ideal gas, and an introduction to statistical mechanics.</p>	<p><b>PHYS 342 Thermal and Statistical Physics</b> 3c-0l-3cr <b>Prerequisites:</b> MATH 225 and PHYS 132 Thermometry, laws of thermodynamics, low-temperature physics, entropy, properties of ideal gas, and an introduction to statistical mechanics.</p>
<p><b>PHYS 345 Optics</b> 3c-0l-3cr <b>Prerequisites:</b> MATH 122, 124, or 128; PHYS 112 or 132  Geometrical optics and physical optics; including interference, diffraction, and polarization. Quantum optics is introduced. (Offered as PHYS 242 prior to 2005-06)</p>	<p><b>PHYS 345 Optics</b> 3c-0l-3cr <b>Prerequisites:</b> MATH 126; PHYS 112 or PHYS 116 or PHYS 132  Geometrical optics and physical optics; including interference, diffraction, and polarization. Quantum optics is introduced. (Offered as PHYS 242 prior to 2005-06)</p>
<p><b>PHYS 350 Intermediate Experimental Physics I</b> 0c-6l-3cr <b>Prerequisites:</b> PHYS 331; PHYS 242 or EOPT 120 Performs required fundamental experiments in areas of mechanics, optics, modern physics, and heat. Speaking before other classmates and faculty and competence in writing scientific papers and reports is emphasized. Effectiveness in the collection of data is important. Computers will often be utilized to perform data taking and analysis.</p>	<p><b>PHYS 350 Intermediate Experimental Physics I</b> 0c-6l-3cr <b>Prerequisites:</b> PHYS 331; PHYS 345 or EOPT 120 Performs required fundamental experiments in areas of mechanics, optics, modern physics, and heat. Speaking before other classmates and faculty and competence in writing scientific papers and reports is emphasized. Effectiveness in the collection of data is important. Computers will often be utilized to perform data taking and analysis.</p>

### **Summary of the Proposed Revisions**

The Mathematics Department has implemented a new calculus sequence MATH 125, 126, 225 to replace the calculus sequence MATH 123, 124. Calculus is a foundational course and hence a prerequisite for many of our courses. This means we need to change the prerequisites on many of our courses. In the transition years, overrides will be given for students who meet the old prerequisites.

MATH 121, 122, 127 and 128 have been dropped as a pre-requisite for all of the physics courses offered.

### **Rationale for the Revisions**

The course syllabus for MATH 121 and 122 does not cover appropriate material for the physics courses in our programs, so it has been removed as a prerequisite for all of the classes.

MATH 127 and 128 are no longer offered.

PHYS 242 Optics was renumbered to PHYS 350 Optics in 2005