LSC Use Only Proposal No:	UWUCC Use Only Proposal No: ~~D-27~~ ~~B-13~~ 14-52
LSC Action-Date: AP - 10/4/12	UWUCC Action-Date: App-9/30/14 Senate Action Date: App 11/4/14

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) **Stan Sobolewski**	Email Address **sobolews@iup.edu**
Proposing Department/Unit **Physics**	Phone **7-4590 or 7-2370**

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

1. Course Proposals (check all that apply)

____ New Course ____ Course Prefix Change ____ Course Deletion

__X__ Course Revision ____ Course Number and/or Title Change __X__ Catalog Description Change

Current course prefix, number and full title: PHYS 142 Physics II-C Lab

Proposed course prefix, number and full title, if changing:

2. Liberal Studies Course Designations, as appropriate

__X__ This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

____ Learning Skills __X__ Knowledge Area ____ Global and Multicultural Awareness ____ Writing Intensive (include W cover sheet)

____ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

____ Global Citizenship ____ Information Literacy ____ Oral Communication

____ Quantitative Reasoning ____ Scientific Literacy ____ Technological Literacy

3. Other Designations, as appropriate

____ Honors College Course ____ Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

____ Catalog Description Change ____ Program Revision ____ Program Title Change ____ New Track

____ New Degree Program ____ New Minor Program ____ Liberal Studies Requirement Changes ____ Other

Current program name:

Proposed program name, if changing:

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		4/23/2012
Department Chairperson(s)		4/23/2012
College Curriculum Committee Chair		4/23/12
College Dean		4/23/12
Director of Liberal Studies (as needed)		9/25/14
Director of Honors College (as needed)		
Provost (as needed)		
Additional signature (with title) as appropriate		
UWUCC Co-Chairs	Gail S Sechrist	9/30/14

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COURSE SYLLABUS

I. CATALOG DESCRIPTION

PHYS 142 Physics II Laboratory-C 0c-3l-1cr

Corequisite: · PHYS 132

Physics laboratory at the level of Physics II; exercises in mechanics, wave motion, and sound.

II. COURSE OBJECTIVES

Students will demonstrate laboratory techniques such as graphing, error analysis, and other measuring techniques. The laboratory will demonstrate to students the role of direct observation in physics and to distinguish between inferences based on theory and the outcomes of experiments. Students will also use methods for estimating and dealing with experimental uncertainties, including simple ideas in probability theory and the distinctions between random and systematic errors.

EUSLO 1 *Informed Learners,* EUSLO 2 *Empowered Learners and* EUSLO 3 *Responsible Learners*

Rationale: Based upon the activities presented in the lab class, students will interpret, analyze, and use numerical and graphical data. Students will also need to correctly record data as observed and not back calculate or make up values, keeping the leaner responsible.

III. COURSE OUTLINE

Laboratory exercises (one experiment each week)
1. Introduction to the course
2. Intro to D.C. circuits
3. Null method of measurement
4. Electrical measurements
5. The oscilloscope and its applications
6. Exponential functions and servo systems
7. Capacitors, Inductors
8. Non-linear circuit elements
9. RCL circuits
10. Intro to nuclear counting
11. Linear amplification
12. Measurement of radioactivity
13. Spectroscopic analysis of atomic emission spectra
14. Optical phenomena

IV. EVALUATION METHODS

The final grade for the course will be determined as follows:

50% laboratory reports
40% weekly quizzes or pre-lab questions
10% student interest and engagement

V. GRADING SCALE

Score			Grade
100 %	to	90%	A
89%	to	80%	B
79%	to	70%	C
69%	to	60%	D
Less than		60%	F

VI. ATTENDANCE POLICY

Students are expected to attend all labs. Individual faculty members assigned to this course will determine the specific attendance requirements for this course. In certain situations, such as illness, personal emergency or active military duty, students will be excused for missing class if a written excuse or other proof of absence is provided to the instructor. Individual faculty members will determine how the assignments or other work will be made up in the event of an excused absence. Course attendance policy will be consistent with the Undergraduate Attendance Policy in the IUP Undergraduate Catalog.

VII . REQUIRED TEXTBOOKS, SUPPLEMENTAL BOOKS AND READINGS

Laboratory manual written by several members of the Physics Department.

Supplement to the lab manual provided for this course which is calculus based sections.

VIII. SPECIAL RESOURCE REQUIREMENTS

Some instructors might require one packet of linear graph paper.

IX . BIBLIOGRAPHY

Bueche, F., Hecht E., **Schaum's Outline of College Physics**, 11th Edition 2011, McGraw-Hill;
Giancoli, D., **Physics for Scientists and Engineers with Modern Physics,** 4th edition, 2008, Addison-Wesley
Knight, R., **Physics for Scientists & Engineers with Modern Physics**, 3rd Edition, 2013, Addison-Wesley
Serway, R., **Physics for Scientists & Engineers** 9th Edition, 2009, Brooks Cole
Wolfson, R., **Essential University Physics**, 2nd Edition, 2012 Addison-Wesley
Young, H., **College Physics,** 9th edition May 6, 2012, Addison Wesley
Young, H., Freedman, R., **University Physics with Modern Physics**, 11th Edition 2011, Addison Wesley

Summary of Proposed Revisions

There has been no significant revision in the objectives or content of this class. This course revision is being submitted in accordance with the new Liberal Studies Objectives.

Justification for the Revision

It is required by the University Senate.

Liberal Studies Course Approval General Information
On a separate sheet of paper, please answer these questions

(Do not include this sheet or copies of the questions in your proposal; submit only the answers)

1) All sections use the same text book and lab manual. There is a Physics Department Faculty Lab committee meeting once per week where the current laboratory is discussed. All faculty who are assigned to sections of this course attend the meeting.

2) This is an introductory course in physics for science majors. The bulk of the course content is on the concepts of physics and problem solving. This lab class also requires the lecture class. These issues will be covered in the lecture class.

3) Since this class is a skill based laboratory course, there will be no outside reading.

4) This class is the introductory course for Physics, Chemistry, and Pre-Engineering majors.

Sample Assessment
Scoring rubric - each correct answer is worth one point, for a total of eight points

CAPACITORS IN AC CIRCUITS

1. What is meant by the reactance of a capacitor ? How does it differ from the resistance of a resistor?

2. How are the voltage (rms) across the capacitor and the resistor related to the voltage across their series combination?

3. What is the phase relation between the voltage across the capacitor, V_C, and the voltage across the resistor, V_R, in an RC circuit?

4. In the circuit below, the rms voltage, V, of the AC Supply Voltage is 30.0 V and its frequency, f, is 500 Hz. Calculate:

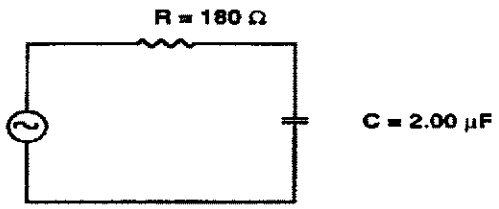
   a) The capacitive reactance X_C. (Ans: $X_C = 159\ \Omega$)

   b) The circuit impedance Z. (Ans: $Z = 240\ \Omega$)

   c) The rms current in the circuit I. (Ans: $I_{rms} = 0.125$ A)

   d) The voltage across the resistor, V_R. (Ans: $V_R = 22.5$ V)

   e) The voltage across the capacitor V_C. (Ans: $V_C = 19.9$ V)



OLD COURSE SYLLABUS

CATALOG DESCRIPTION

PHYS 122 / PHYS 142 Physics I Laboratory — 1 credit
3 lab hours
0c-1l-1cr

Corequisite: ·PHYS 112 / PHYS 132

Physics laboratory at the level of Physics I; exercises in mechanics, wave motion, and sound.

II. COURSE OBJECTIVES

Basic training in laboratory techniques such as graphing, error analysis, etc.

III. COURSE OUTLINE
Laboratory exercises (one experiment each week)
1. Intro to D.C. circuits
2. Null method of measurement
3. Electrical measurements
4. The oscilloscope and its applications
5. Exponential functions and servo systems
6. Capacitors, Inductors
7. Non-linear circuit elements
8. RCL circuits
9. Intro to nuclear counting
10. Linear amplification
11. Measurement of radioactivity
12. Spectroscopic analysis of atomic emission spectra
13. Optical phenomena

IV. EVALUATION METHODS
The final grade for the course will be determined as follows:

50% laboratory reports
40% weekly quizzes or pre-lab questions
Quizzes will be at a level appropriate for a calculus based presentation

10% subjective evaluation

V. REQUIRED TEXTBOOKS, SUPPLEMENTAL BOOKS AND READINGS
Laboratory manual written by several members of the Physics Department.

Supplement to the lab manual provided for this course which is calculus based sections.

VI. SPECIAL RESOURCE REQUIREMENTS One packet of linear graph paper.