Agenda Item #11-80
Effective Fall 2011

Eastern Illinois University
Revised Course Proposal
PHY 1052G, Adventures in Physics

Please check one: ☐ New course ☒ Revised course

PART I: CATALOG DESCRIPTION

1. **Course prefix and number, such as ART 1000:** PHY 1052G
2. **Title (may not exceed 30 characters, including spaces):** "Adventures in Physics"
3. **Long title, if any (may not exceed 100 characters, including spaces):**
4. **Class hours per week, lab hours per week, and credit [e.g., (3-0-3)]:** 3-0-3
5. **Term(s) to be offered:** ☒ Fall ☒ Spring ☐ Summer ☐ On demand
6. **Initial term of offering:** ☒ Fall ☐ Spring ☐ Summer **Year:** 2011
7. **Course description (not to exceed four lines):** An introduction to the universal laws of nature, their governance of phenomena in everyday life, and their application to inventions in our technological society.
8. **Registration restrictions:**
   a. **Identify any equivalent courses** (e.g., cross-listed course, non-honors version of an honors course).
   b. **Prerequisite(s),** including required test scores, courses, grades in courses, and technical skills. Indicate whether any prerequisite course(s) MAY be taken concurrently with the proposed/revised course.
      None
   c. **Who can waive the prerequisite(s)?**
      ☐ No one ☐ Chair ☐ Instructor ☐ Advisor ☐ Other (Please specify)
   d. **Co-requisites** (course(s) which MUST be taken concurrently with this one): PHY 1053G
   e. **Repeat status:** ☒ Course may not be repeated.
      ☐ Course may be repeated to a maximum of hours or times.
   f. **Degree, college, major(s), level, or class** to which registration in the course is restricted, if any:
      Online sections are available to off-campus students only.
   g. **Degree, college, major(s), level, or class** to be excluded from the course, if any:
9. **Special course attributes** [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive] General Education – Physical Science - Scientific Awareness; the course is writing-active.
10. **Grading methods** (check all that apply): ☒ Standard letter ☐ C/NC ☐ Audit ☐ ABC/NC ("Standard letter"—i.e., ABCDF--is assumed to be the default grading method unless the course description indicates otherwise.)
11. **Instructional delivery method:** ☒ lecture ☐ lab ☐ lecture/lab combined ☐ independent study/research ☐ internship ☐ performance ☐ practicum or clinical ☐ study abroad ☒ other

PART TWO: ASSURANCE OF STUDENT LEARNING

1.List the student learning objectives of this course:
In successfully completing this course, students will:

1. Use scientific terminology appropriately, which will make them a more informed electorate. (citizenship)
2. Discuss the physical principles underlying modern technology. (critical thinking, citizenship)
3. Identify and explain fundamental physics concepts. (writing, critical thinking)
4. Demonstrate use of scientific methods and technology. (critical thinking, citizenship)
5. Show ability to communicate some of the concepts of classical and modern physics.
6. Communicate a scientific understanding of many aspects of the physical universe, mainly relating to motion, energy, waves, sound, and light.
7. Apply problem solving techniques and solve numerical problems in physics and other areas of science.

The students will also be introduced to specific scientific principles such as those related to Newton's Laws, momentum, energy, gravity, states of matter, temperature, waves, electricity and magnetism, properties of light.

a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:

- **EIU graduates will write and speak effectively. 3.**
- **EIU graduates will think critically. 2,3,4,6,7.**
- **EIU graduates will function as responsible citizens. 1,2,4.**

The course will show students how to apply physical laws to specific problems. Acquired problem solving skills will enable students to think critically. Accompanying PHY 1053G lab will provide students with practical hands on skills.

b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:

- **Depth of content knowledge**
- **Effective critical thinking and problem solving**
- **Effective oral and written communication**
- **Advanced scholarship through research or creative activity**

2. Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives:

Learning Objectives	Homework assignments	Tests	Final Exam
Use scientific terminology appropriately, which will make them a more informed electorate.	X	X	X
Discuss the physical principles underlying modern technology.	X	X	X
Identify and explain	X	X	X

fundamental physics concepts. (writing, critical thinking)			
Demonstrate use of scientific methods and technology	X	X	X
Show ability to communicate some of the concepts of classical and modern physics.	X	X	X
Communicate a scientific understanding of many aspects of the physical universe, mainly relating to motion, energy, waves, sound, and light.	X	X	X
Apply problem solving techniques and solve numerical problems in physics and other areas of science.	X	X	X

3. Explain how the instructor will determine students' grades for the course:

The following grading scale will apply: 86-100% = A; 70-85% = B; 60-69% = C; 50-59% = D; 49% or less = F.

Homework assignments 40 %

Tests 40 %

Final Exam 20%.

4. For technology-delivered and other nontraditional-delivered courses/sections, address the following:

a. **Describe how the format/technology will be used to support and assess students' achievement of the specified learning objectives:** The course student assessment has been based on homework assignments, tests, disscusions and a final exam.

b. The students have been encouraged to actively engage into WebCT discussions. The course syllabus is attached.

c. **Describe how the integrity of student work will be assured:** Assignments can be accessed at certain dates and must be finished within precise time intervals (90, 120, or 150 minutes). The same assignments may present different problems to different students since some numerical questions were generated with different data sets and are offered to students on a random basis. The syllabus clearly cites academic integrity expectations.

d. **Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.):**
The course may be WebCT based. The material will be organized in two week long modules

accompanied by power point notes, supplementary web links, and assignments. Instructor-student communication will be based on e-mail, telephone, and Skype or Elluminate contacts if necessary. The course announcements will be posted at the specifically designed "Information" link. A WebCT discussion board will be available to discuss any course curriculum topic. On campus (or close to campus) students will be more than welcome to visit the instructor in his office.

5. **For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit. N/A**

6. **If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified. (See Appendix *.)** Course has been writing-active. The course will have essay questions in the exams. Short writing will also be required in problem sets and discussion questions.

PART III: OUTLINE OF THE COURSE

Provide a week-by-week outline of the course's content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content "units" are sufficiently equivalent to the traditional on-campus semester hour units of time described above.

This course in technology delivery will cover the same material as the current on campus version of the course. The following is a list of the chapters in the textbook that will be covered as well as the assignments that are made for each chapter. The assignments are problem sets and discussion questions. The course will be delivered in the usual 15 week semester.

Weeks 1 and 2: Part 1: Mechanics. (Newton's laws of motion, linear motion)
Weeks 3 and 4: Part 1: Mechanics (rotational motion…)
Week 5 and 6: Part 1: Mechanics (gravity and projectile motion)
Weeks 7 and 8: Parts 2: Properties of matter (the atomic nature of matter, solids…)
Weeks 9 and 10: Part 3: Heat (heat expansion, heat transfer, thermodynamics…)
Weeks 11 and 12: Part 4: Wave motion and Sound (vibrations and waves, sound…)
Weeks 13 and 14: Part 5: Electricity and Magnetism (electrostatics, electrical current, magnetism…)
Week 15: Part 6: Light (properties of light, reflection and refraction, light waves, light quanta…)

PART IV: PURPOSE AND NEED

1. **Explain the department's rationale for developing and proposing the course.**

   a. **If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment.** Scientific Awareness – Physical Sciences Segment. This course will help to give the students an understanding of the nature and methods of science and its reliability and its limitations. The material in this course should help to demystify science and technology for the students.

b. **If the course or some sections of the course may be technology delivered, explain why.** A section of this course will be technology delivered in order to broaden the appeal to non-traditional students and off campus students.

2. **Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions.** Lab section of course is a co-requisite. Online sections are available to off-campus students only as those are the intended students.
3. **If the course is similar to an existing course or courses, justify its development and offering.**

   a. **If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal.**
   b. **Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.** This course is already in the catalog. This proposal is to make this course available for on-line delivery.

4. **Impact on Program(s):**

   a. **For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective.** Not required for a major or minor.
   b. **For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective.**

   If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted.

PART V: IMPLEMENTATION

1. **Faculty member(s) to whom the course may be assigned:** All Physics faculty with OCDI certification may be assigned to this course. Currently this list includes only N. Ilic.

   If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.

2. **Additional costs to students:** No.

   Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President's Council.)

3. **Text and supplementary materials to be used (Include publication dates):**

PAUL G. HEWITT: "CONCEPTUAL PHYSICS", 10TH EDITION, Pearson, 2009.

PART VI: COMMUNITY COLLEGE TRANSFER

If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.

A community college course may be judged equivalent to this course.

PART VII: APPROVALS

Date approved by the department or school: 04/11/2011.

Date approved by the college curriculum committee: 4/15/2011

Date approved by the Honors Council *(if this is an honors course):*

Date approved by CAA: 4/28/2011

*In **writing-active courses**, frequent, brief writing activities and assignments are required. Such activities -- some of which are to be graded – might include five-minute in-class writing assignments, journal keeping, lab reports, essay examinations, short papers, longer papers, or a variety of other writing-to-learn activities of the instructor's invention. Writing assignments and activities in writing-active courses are designed primarily to assist students in mastering course content, secondarily to strengthen students' writing skills. In **writing-intensive courses**, several writing assignments and writing activities are required. These assignments and activities, which are to be spread over the course of the semester, serve the dual purpose of strengthening writing skills and deepening understanding of course content. At least one writing assignment is to be revised by the student after it has been read and commented on by the instructor. In writing-intensive courses, students' writing should constitute no less than 35% of the final course grade. In **writing-centered courses** (English 1001G, English 1002G, and their honors equivalents), students learn the principles and the process of writing in all of its stages, from inception to completion. The quality of students' writing is the principal determinant of the course grade. The minimum writing requirement is 20 pages (5,000 words).