University of Wisconsin-Whitewater

Curriculum Proposal Form #3

## New Course

**Effective Term:**

**Subject Area - Course Number:** **PHYSICS 290 Cross-listing:** **N/A**

(See Note #1 below)

**Course Title:** (Limited to 65 characters)  PHYSICS RECITATIONS I

**25-Character Abbreviation:** PHYSICS RECITATIONS I

**Sponsor(s):** Abdelkrim Boukahil

**Department(s):** Physics

**College(s):**

# **Consultation took place**: NA Yes (list departments and attach consultation sheet)

Departments:

**Programs Affected:** **Physics**

**Is paperwork complete for those programs?** (Use "Form 2" for Catalog & Academic Report updates)

NA  Yes  will be at future meeting

**Prerequisites:** Co-req: MATH 253 or consent of instructor

**Grade Basis:**  Conventional Letter  S/NC or Pass/Fail

**Course will be offered:**  Part of Load  Above Load

On Campus  Off Campus - Location

**College:**  **Dept/Area(s):** Physics

**Instructor:** Abdelkrim Boukahil

*Note: If the course is dual-listed, instructor must be a member of Grad Faculty.*

**Check if the Course is to Meet Any of the Following:**

Technological Literacy Requirement  Writing Requirement

Diversity  General Education Option:

Note: For the Gen Ed option, the proposal should address how this course relates to specific core courses, meets the goals of General Education in providing breadth, and incorporates scholarship in the appropriate field relating to women and gender.

**Credit/Contact Hours:** (per semester)

Total lab hours: 0 Total lecture hours: 16

Number of credits: 1 Total contact hours: 16

**Can course be taken more than once for credit? (Repeatability)**

No  Yes If "Yes", answer the following questions:

No of times in major:       No of credits in major:

No of times in degree:       No of credits in degree:

Proposal Information: ([***Procedures for form #3***](http://acadaff.uww.edu/UCC/Curriculum_Handbook_09/Procedures_form3.docx))

**Course justification:**

At risk students find it helpful to have an additional class session devoted to understanding Physics problems and methods for solving those problems. Students in the introductory physics course PHYSCS 180 who perform poorly on a diagnostic test given at the beginning of the semester are strongly encouraged to take this course in order to improve their understanding of how to approach problems and how to translate their mathematics knowledge into terms used in physics classes. The greatest single obstacle in teaching physics is the wide range of Mathematical background and computational proficiency of the students. The skills in simple differentiation and integration provided by the usual calculus courses are seldom sufficient for solving problems in Physics. In these two one-credit courses we address the problems of inadequate Mathematical background and how to relate mathematics knowledge for use in physics courses. Mathematics is the language of physics and we emphasize the techniques that have proved to be useful in analyzing problems in Physics.

**Relationship to program assessment objectives:**

This course will give the students experience in solving real life problems using familiar concepts and techniques. A student who completed this course will certainly have acquired an in-depth view of the world of applied sciences.

**Budgetary impact:**

This course will be part of the Physics faculty regular load.

**Course description:** (50 word limit)

**PHYSCS 290 PHYSICS RECITATIONS I 1u**

Topics include , limits, increments and infinitesimals and their applications to physical problems, differentiation and differentials in physics, integration as anti-differentiation and integration of higher derivatives (application to kinematics in one dimension), vector and coordinate frames: application to kinematics in two and three dimensions , definite integrals and the integral as an area: application to mechanical energy and work. One-hour lecture per week.

Co-req: Math 253 or consent of instructor.

**If dual listed, list graduate level requirements for the following:**

1. **Content** (e.g., What are additional presentation/project requirements?)

2. **Intensity** (e.g., How are the processes and standards of evaluation different for graduates and undergraduates? )

3. **Self-Directed** (e.g., How are research expectations differ for graduates and undergraduates?)

**Course objectives and tentative course syllabus:**

**Bibliography:** (Key or essential references only. Normally the bibliography should be no more than one or two pages in length.)

**1. Mathematical Methods for Scientists and Engineers, L. P. Smith, Dover, 1961.**

**2. Mathematical Methods in Engineering and Physics, D. Johnson and J. Johnson,**

**Prentice Hall, 1982.**

**3. Mathematical Methods of Physics 2nd Ed., J. Mathews and R. Walker,**

**Benjamin/Cummings, 1970.**

**4. Mathematics of Classical and Quantum Physics, F. Byron Jr. and R. Fuuler, Dover,**

**1992.**

**5. Boundary and Eigenvalue Problems in Mathematical Physics, Hans Sagan, Dover, 1989.**

**6. Mathematical Physics, Butkov, Addison-Wesley, 1968.**

**Course Objectives and tentative course syllabus** with [mandatory information](http://www.uww.edu/acadaff/UCC/Mandatory_Info_Course_Syllabi.docx)(paste syllabus below):

**Syllabus**

**PHYSCS 290 Physics Recitations I**

**Fall 2011**

###### W: 1:10 – 2:00 PM, UH 141

## Instructor: A. Boukahil

**Office: Upham: 153**

**Telephone: 472-1080**

**Office hours: T & R: 1:00 – 3:00 PM**

**W: 12:00 – 1:00 PM**

**All other times, by appointment only.**

**E-mail:** [boukahia@uww.edu](mailto:boukahia@uww.edu)

**Course Description:**

Topics include , limits, increments and infinitesimals and their applications to physical problems, differentiation and differentials in physics, integration as anti-differentiation and integration of higher derivatives (application to kinematics in one dimension), vector and coordinate frames: application to kinematics in two and three dimensions , definite integrals and the integral as an area: application to mechanical energy and work. One-hour lecture per week.

Co-req: Math 253 or consent of instructor.

**No Textbook** is required for this course. Notes will be distributed in class.

**Attendance:**

Class attendance is expected. Students are **responsible** for assignments if they do miss any class period.

**Grading:**

The grade in this course will be distributed as follows:

• Homework assignments count **80%**. The problems will be assigned every week in class and will be due one week later. You are encouraged to start working on your homework assignment immediately. The work you submit for grading must be your own not someone else’s.

• A total of five (05) short quizzes will count **20%** of the total grade.

• There is no final Exam for this one credit course, but we will have a regular lecture on Wednesday Dec. (date) , 2011.

**This course is being offered Pass (S – satisfactory) / No Credit (NC)**

**Grades: (in %) > 70% S**

**< 70% NC**

**Tentative Schedule:**

**Weeks 1-2: The notion of limit in physics**

**Weeks 3-4: Differentiation and differentials in physics (kinematics in one dimension)**

**Weeks 5-6: Integration as anti-differentiation: application to physical problems**

**Weeks 7-8: Integration of higher derivatives (General Equations of Motion)**

**Weeks 9-10: Vectors and coordinate frames (Principles of Dynamics)**

**Weeks 11-12: Definite integrals (Mechanical Energy and Work)**

##### UWW Policies

**Special needs statement:** Students with special needs should contact the instructor to make appropriate arrangements.

The University of Wisconsin-Whitewater is dedicated to a safe, supportive and non-discriminatory learning environment. It is the responsibility of all undergraduate and graduate students to familiarize themselves with University policies regarding [Special Accomodations](http://www.uww.edu/Bulletin/Legal/legal6.html#Disability), [Misconduct](http://www.uww.edu/bulletin/Legal/index.html#Misconduct), [Religious Beliefs Accomodation](http://www.uww.edu/bulletin/Legal/legal5.html), [Discrimination](http://www.uww.edu/bulletin/Legal/legal6.html) and [Absence for University Sponsored Events](http://www.uww.edu/bulletin/Legal/index.html#Absence). (For details please refer to the Undergraduate and Graduate Timetables; the [Rights and Responsibilities](http://www.uww.edu/bulletin/Legal/index.html#Rights) section of the [Undergraduate Bulletin](http://www.uww.edu/bulletin/introub.html); the [Academic Requirements and Policies](http://www.uww.edu/gradstudies/policies.htm%20#requirements) and the [Facilities and Services](http://www.uww.edu/gradstudies/policies.htm%20#services) sections of the [Graduate Bulletin](http://www.uww.edu/gradstudies/bulletin.htm); and the [Student Academic Disciplinary Procedures](http://www.uww.edu/stdhdbk/uwsystem.html#BM14) [UWS Chapter 14]; and the [Student Nonacademic Disciplinary Procedures](http://www.uww.edu/stdhdbk/uwsystem.html#BM17) [UWS Chapter 17].)