**PURDUE UNIVERSITY**  
**REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE**  
**(10000-40000 LEVEL)**

**DEPARTMENT** Physics  
**EFFECTIVE SESSION** Spring 2011

**INSTRUCTIONS:** Please check the items below which describe the purpose of this request.

- [ ] 1. New course with supporting documents  
- [X] 2. Add existing course offered at another campus  
- [ ] 3. Expiration of a course  
- [ ] 4. Change in course number  
- [ ] 5. Change in course title  
- [ ] 6. Change in course credit type  
- [ ] 7. Change in course attributes (department head signature only)  
- [ ] 8. Change in instructional hours  
- [ ] 9. Change in course description  
- [ ] 10. Change in course requisites  
- [ ] 11. Change in semesters offered (department head signature only)  
- [ ] 12. Transfer from one department to another

**PROPOSED:**

- **Subject Abbreviation:** PHYS  
- **Course Number:** 30500  
- **Long Title:** Intermediate Mathematics Physics  
- **Short Title:** Mathematics Physics

**EXISTING:**

- **Subject Abbreviation:** PHYS  
- **Course Number:** 30500  
- **Long Title:** Intermediate Mathematics Physics  
- **Short Title:** Mathematics Physics

**TERMS OFFERED:** Check All That Apply:  
- [X] Summer  
- [X] Fall  
- [X] Spring

**CAMPUS(ES) INVOLVED:**

- [ ] Calumet  
- [ ] Cont Ed  
- [ ] N. Central  
- [ ] Tech Statewide  
- [X] Ft. Wayne  
- [X] W. Lafayette  
- [ ] Indianapolis

**ABBREVIATED TITLE WILL BE ENTERED BY THE OFFICE OF THE REGISTRAR IF OMITTED. (90 CHARACTERS ONLY):**

**CREDIT TYPE**

- 1 Fixed Credit: Cr. Hrs. 3
- 2 Variable Credit Range: Minimum Cr. Hrs. (Check One) To Or No
- Maximum Cr. Hrs.

**Credit Type:**

- 1. Pass/Not Pass Only
- 2. Satisfactory/Unsatisfactory Only
- 3. Repeatable
- 4. Credit by Examination
- 5. Special Fees

**COURSE ATTRIBUTES:** Check All That Apply

- 6. Registration Approval Type
- 7. Variable Title
- 8. Department
- 9. Honors
- 10. Full Time Privilege
- 11. Off Campus Experience

**COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):**

An introduction and review of the mathematical techniques and procedures used in intermediate and advanced physics courses. Applications involving vector calculus, linear algebra, complex analysis, Fourier series and transforms, and second-order linear differential equations will be discussed. The course provides additional mathematical preparation for PHYS 31000, 31100, 32200, 33000, 24200, and 51300.

P. PHYS 25100

**COURSE LEARNING OUTCOMES:**

Students will be able to use the various techniques to solve intermediate to advanced physics problems.

**Cross-Listed Courses:**

- [ ]

**INSTRUCTIONS FOR SIGNATURES:**

- Catanel Department Head
- Catanel School Dean
- Calumet Department Head
- Catanel School Dean
- Body People Department Head
- Body People School Dean
- Indianapolis Department Head
- Indianapolis School Dean
- North Central Faculty Senate Chair
- Vice Chancellor for Academic Affairs
- West Lafayette Department Head
- West Lafayette College/School Dean
- West Lafayette Registrar

**OFFICE OF THE REGISTRAR**
Physics 30500
General Information (Tentative)

Instructor: Timothy T. Grove, KT 127B, 481-6157, grovet@ipfw.edu

Web page: http://users.ipfw.edu/grovet/


Optional Text: Schaum’s Outlines: Mathematical Handbook of Formulas and Tables

Lectures: MTWR 9:00-10:45 am, KT 128

Office Hours:
I maintain an open door policy and spend a great amount of time in KT-127B, but I reserve the right to close my door when I am busy. I also accept appointments. If you make an appointment with me, please be there.

Grading System:
Homework 25%
In class participation and work 40%
Exam I (Thursday 5/24/2012) 10%
Exam II (Thursday 6/7/2012) 10%
Final Exam (Thursday 6/22/2012) 15%

General Rules on Late assignments and absenteeism
All homework assignments are due on the indicated dates (no later than 4:00pm). No homework assignment will be accepted the next day.

If you miss an exam without notifying me on the day of the exam, it is at my discretion whether you will get a make-up. You will need an extremely good excuse.

Highest Possible Grade Breakdowns
A A final cumulative score of 93% and above
A- A final cumulative score between 90% and 92.9%
B+ A final cumulative score between 87% and 89.9%
B A final cumulative score between 83% and 86.9%
B- A final cumulative score between 80% and 82.9%
C+ A final cumulative score between 77% and 79.9%
C A final cumulative score between 73% and 76.9%
C- A final cumulative score between 70% and 72.9%
D+ A final cumulative score between 67% and 69.9%
D A final cumulative score between 63% and 66.9%
D- A final cumulative score between 60% and 62.9%
Topics

1. Review of Taylor and Maclaurin series
2. Review of complex numbers to the level where students could apply any mathematical operation to complex numbers (for example, finding the inverse sine of two)
3. Solving physical examples which include first order, separable differential equations
4. Solving physical examples which include first order, linear differential equations
5. Solving physical examples which include second order, linear, constant coefficient differential equations. Homogeneous and non-homogeneous examples.
6. How to get the second solution to a second order linear differential equation when one only has one of the solutions (reduction of order).
7. How to approach physical examples that have second order, linear differential equations when one cannot guess a solution (variation of parameters)
8. Solving physical examples which include second order, linear differential equations that use series solutions (Method of Frobenius)