

**New Course Request**

**Indiana University**

Indianapolis Campus

Check Appropriate Boxes: Undergraduate credit  Graduate credit  Professional credit

1. School/Division Science / Mathematical Sciences 2. Academic Subject Code MATH  
3. Course Number 266 (must be cleared with University Enrollment Services) 4. Instructor \_\_\_\_\_  
5. Course Title Ordinary Differential Equations

Recommended Abbreviation (Optional) \_\_\_\_\_  
(Limited to 32 Characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2008  
7. Credit Hours: Fixed at 3 or Variable from \_\_\_\_\_ to \_\_\_\_\_  
8. Is this course to be graded S-F (only)? Yes \_\_\_\_\_ No X  
9. Is variable title approval being requested? Yes \_\_\_\_\_ No X

10. Course description (not to exceed 50 words) for Bulletin publication: P: 166 and 171 (minimum grade of C in each). Fall, Spring, Summer. First order equations, second and n'th order linear equations, series solutions, solution by Laplace transform, systems of linear equations.

11. Lecture Contact Hours: Fixed at 3 or Variable from \_\_\_\_\_ to \_\_\_\_\_  
12. Non-Lecture Contact Hours: Fixed at 0 or Variable from \_\_\_\_\_ to \_\_\_\_\_  
13. Estimated enrollment: 100 of which 0 percent are expected to be graduate students.

14. Frequency of scheduling: Every Sem Will this course be required for majors? Yes  
15. Justification for new course: New course partially replaces MATH 262; change in credit hours 4 to 3.

16. Are the necessary reading materials currently available in the appropriate library? Yes.  
17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: Bertie Boulton Date 2/12/08  
Department Chairman/Division Director

Approved by: Cecilia P. Proven Date 3/7/08  
Dean

\_\_\_\_\_  
Date \_\_\_\_\_  
Dean of Graduate School (when required)

\_\_\_\_\_  
Date \_\_\_\_\_  
Chancellor/Vice-President

\_\_\_\_\_  
Date \_\_\_\_\_  
University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

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MATH 266  
ORDINARY DIFFERENTIAL EQUATIONS  
*Elementary Differential Equations, Eighth edition*  
by William E. Boyce and Richard C. DiPrima  
John Wiley & Sons, Inc., 2005

Course Syllabus

*Prerequisites:* Math 166 and 171 with a minimum grade of C in each.

*Course Description:* We will cover topics selected from Chapters 1 through 7 of the text. However, we will cover the topics in a different order than the book. Topics include first- and second-order differential equations, applications, first-order systems, power series solutions, the method of Laplace transform. The topics covered have important applications in science and engineering.

1. FIRST-ORDER EQUATIONS

- Integrating Factor and First-Order Linear Equations
- Separable Equations, Homogeneous Equations
- Exact Equations
- Some Basic Theory, Integral Curves, Orthogonal Trajectories
- Applications to Mixture and Population Growth Problems

2. HIGHER-ORDER LINEAR EQUATIONS

- Reduction of Order; Complementary Solutions
- Particular Solutions, Method of Undetermined Coefficients
- Forms of Particular Solutions & Annihilator Operator
- -Particular Solutions, Method of Variation of Parameters
- Application to Oscillating Systems

3. FIRST-ORDER LINEAR SYSTEMS

- Eigenvalues & Eigenvectors, Homogeneous Solutions
- Solutions of Nonhomogeneous Systems

4. SERIES SOLUTIONS

- Series Solutions near Ordinary Points
  - Regular Singular Points; the Cauchy-Euler Equation
  - Frobenius Solutions near Regular Singular Points (Case I)
  - Frobenius Solutions (Case II & III)
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## 5. THE LAPLACE TRANSFORM

- Transforms of Step and Periodic Functions, Derivatives, etc.
- Transform of Convolution Integrals, Initial-Value Problems
- Initial-Value Problems, Transform of the Dirac Delta Function

**PURDUE UNIVERSITY**  
REQUEST FOR ADDITION, EXPIRATION,  
OR REVISION OF AN UNDERGRADUATE COURSE  
(100-400 LEVEL)

Print Form

DEPARTMENT Mathematical Sciences

EFFECTIVE SESSION Fall 2008

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

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

<b>PROPOSED:</b>	<b>EXISTING:</b>	<b>TERMS OFFERED</b> Check All That Apply:
Subject Abbreviation _____	Subject Abbreviation MATH _____	<input checked="" type="checkbox"/> Summer <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring
Course Number _____	Course Number 266 _____	<b>CAMPUS(ES) INVOLVED</b>
Long Title Ordinary Differential Equations _____		<input type="checkbox"/> Calumet <input type="checkbox"/> N. Central
Short Title _____		<input type="checkbox"/> Cont Ed <input type="checkbox"/> Tech Statewide
Abbreviated title will be entered by the Office of the Registrar if omitted. (22 CHARACTERS ONLY)		<input checked="" type="checkbox"/> Ft. Wayne <input type="checkbox"/> W. Lafayette
		<input checked="" type="checkbox"/> Indianapolis

<b>CREDIT TYPE</b>	<b>COURSE ATTRIBUTES: Check All That Apply</b>
1. Fixed Credit: Cr. Hrs. <input type="text" value="3"/>	1. Pass/Not Pass Only <input type="checkbox"/>
2. Variable Credit Range: Minimum Cr. Hrs. <input type="text"/> (Check One) To <input type="checkbox"/> Or <input type="checkbox"/> Maximum Cr. Hrs. <input type="text"/>	2. Satisfactory/Unsatisfactory Only <input type="checkbox"/>
3. Equivalent Credit: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	3. Repeatable <input type="checkbox"/>
4. Thesis Credit: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Repeatable Credit: <input type="text"/>
	4. Credit by Examination <input type="checkbox"/>
	5. Designator Required <input type="checkbox"/>
	6. Special Fees <input type="checkbox"/>
	7. Registration Approval Type Department <input type="checkbox"/> Instructor <input type="checkbox"/>
	8. Variable Title <input type="checkbox"/>
	9. Remedial <input type="checkbox"/>
	10. Honors <input type="checkbox"/>
	11. Full Time Privilege <input type="checkbox"/>
	12. Off Campus Experience <input type="checkbox"/>

Instructional Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated	Delivery Method (Asyn. Or Syn.)	Delivery Medium (Audio, Internet, Live, Text-Based, Video)	Cross-Listed Courses
Lecture	80	2	16	100	Syn	Live	
Recitation							
Presentation							
Laboratory							
Lab Prep							
Studio							
Distance							
Clinic							
Experiential							
Research							
Ind. Study							
Pract/Observ							

**COURSE DESCRIPTION (INCLUDE REQUISITES):**  
P: 166 and 171 (minimum grade of C in each). First order equations, second and n'th order linear equations, series solutions, solution by Laplace transform, systems of linear equations.

Calumet Department Head _____ Date _____	Calumet School Dean _____ Date _____
Fort Wayne Department Head _____ Date _____	Fort Wayne School Dean _____ Date _____
Indianapolis Department Head <i>Keith Bogren 2/12/08</i> _____ Date _____	Indianapolis School Dean <i>Carol M. Davis 3/7/08</i> _____ Date _____
North Central Department Head _____ Date _____	North Central Chancellor _____ Date _____
West Lafayette Department Head _____ Date _____	West Lafayette College/School Dean _____ Date _____
	West Lafayette Registrar _____ Date _____