

**Application for a New Course v9**

|                                            |          |
|--------------------------------------------|----------|
| <b>Course ID</b> <i>Subject and Number</i> | MATH 463 |
| <b>Date APPROVED</b>                       |          |
| <b>Date DENIED</b>                         |          |

**I. Systems and Catalog Information** Complete each item.

|     |                                                      |                                |
|-----|------------------------------------------------------|--------------------------------|
| 1   | Course Developer                                     | Dr. John Ehrke                 |
| 2   | Course Teacher                                       | Dr. John Ehrke                 |
| 3   | Course Title                                         | Partial Differential Equations |
| 4   | Course Abbreviation (if title is over 30 characters) | PDE                            |
| 5   | College                                              | Arts and Sciences              |
| 6   | Department                                           | Mathematics                    |
| 7   | Number of Credit Hours                               | 3                              |
| 8   | Is the course Fixed Credit or Variable Credit?       | Fixed                          |
| 9   | Is the course repeatable?                            | No                             |
| 10  | Maximum number of times course may be repeated       | n/a                            |
| 11  | Maximum number of hours credit                       | 3                              |
| 12  | Explanation for variable credit                      | n/a                            |
| 13a | Course contact hours - LEC                           | 3                              |
| 13b | Course contact hours - Lab                           | n/a                            |
| 13c | Course contact hours - Practicum                     | n/a                            |
| 13d | Course contact hours - Seminar                       | n/a                            |

|     |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                     |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13e | Course contact hours - Studio                                                                                                                                      | n/a                                                                                                                                                                                                                                                                                                                 |
| 13f | Course contact hours - Online                                                                                                                                      | n/a                                                                                                                                                                                                                                                                                                                 |
| 13g | Course contact hours - Colloquium                                                                                                                                  | n/a                                                                                                                                                                                                                                                                                                                 |
| 13h | Course contact hours – Field Experience                                                                                                                            | n/a                                                                                                                                                                                                                                                                                                                 |
| 13j | Course contact hours - Internship                                                                                                                                  | n/a                                                                                                                                                                                                                                                                                                                 |
| 13k | Course contact hours - Research                                                                                                                                    | n/a                                                                                                                                                                                                                                                                                                                 |
| 13m | Course contact hours - Workshop                                                                                                                                    | n/a                                                                                                                                                                                                                                                                                                                 |
| 13n | Course contact hours – Other (specify)                                                                                                                             | n/a                                                                                                                                                                                                                                                                                                                 |
| 14  | Instructor Workload                                                                                                                                                | 3                                                                                                                                                                                                                                                                                                                   |
| 15  | Grade Mode (check all appropriate):                                                                                                                                | <input checked="" type="checkbox"/> Standard Credit/No Credit (undergrad only)                                                                                                                                                                                                                                      |
| 16  | Maximum Enrollment                                                                                                                                                 | 30                                                                                                                                                                                                                                                                                                                  |
| 17  | <b>Catalog Description</b><br>(50 words or less)                                                                                                                   | Features analytical and computational tools of partial differential equations (PDEs) that arise as basic models of flows, diffusions, and vibrations. Analytic techniques include separation of variables, eigenfunction expansions, Fourier transform methods, and Greens functions. Prerequisites: MATH 286, 361. |
| 18  | List any prerequisites (course/s, test scores, class standing, major, etc.)                                                                                        | MATH 286, MATH 361                                                                                                                                                                                                                                                                                                  |
| 19  | List any co-requisites                                                                                                                                             | None                                                                                                                                                                                                                                                                                                                |
| 20  | If the course is cross listed, specify the Course ID(s) MUST have signature in Section V off all Department Chairs                                                 | None                                                                                                                                                                                                                                                                                                                |
| 21  | Does this course have any special student costs? Yes/No<br><i>Attach a <u>completed</u> "Request to Add or Change Course Fees" form. Describe in section IV-F.</i> | None                                                                                                                                                                                                                                                                                                                |
| 22  | How often will it be offered? <b>Fall</b>                                                                                                                          | Not offered                                                                                                                                                                                                                                                                                                         |
| 23a | How often will it be offered? <b>Spring</b>                                                                                                                        | Once                                                                                                                                                                                                                                                                                                                |

|     |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                        |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23b | How often will it be offered? <b>Summer</b>                                                                                                                                                                   | Not offered                                                                                                                                                                                                                                            |
| 23c | How often will it be offered? <b>Fall</b>                                                                                                                                                                     | Not offered                                                                                                                                                                                                                                            |
| 24  | Frequency?                                                                                                                                                                                                    | Spring, once per year                                                                                                                                                                                                                                  |
| 25  | First semester this course will be offered<br><i>New courses may not be taught under their approved course ID until they appear in the catalog, therefore, no earlier than the coming fall.</i>               | Spring 2014                                                                                                                                                                                                                                            |
| 26  | List course/s that should be deleted, include the last semester for course/s being deleted<br><i>A course cannot be deleted when it is a requirement in a degree plan in any department.</i>                  | None                                                                                                                                                                                                                                                   |
| 27  | Is this course required for a degree/s?<br>Yes/No<br><i>If "Yes," attach a revised degree plan(s) reflecting the placement of the new course.</i>                                                             | No                                                                                                                                                                                                                                                     |
| 28  | Has this course been offered as a Special Topics course? Yes/No<br><i>If "Yes," specify the Course ID and enrollment for each term it was taught.</i>                                                         | Yes<br>MATH 440<br>Spring 2012, Enrollment: 15<br>Spring 2013, Enrollment: TBD ~12                                                                                                                                                                     |
| 29  | List any courses in which content overlaps the proposed course.<br>(Course ID and Name)<br><i>Attach statement from instructor/dept chair of existing course justifying the new offering in Section IV-D.</i> | The material in this course overlaps with material from PHYS 385. At present the Department of Engineering and Physics no longer teaches PHYS 385 and uses MATH 440: Partial Differential Equations as a degree plan substitution for PHYS 385 credit. |

## II. Curriculum

|   |                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>Degree Plan</b> Explanation of how this course affects degree requirements.                                    | This course does not affect degree requirements in mathematics, but gives mathematics majors another complete sequence MATH 361-MATH 463 to enhance the depth of instruction for students interested in applied mathematics. This course does effect degree requirements for the Department of Physics and Engineering, but only through substitution of MATH 463 for PHYS 385 in their degree plans. In both cases, the course provides a rigorous sequence of mathematics appropriate for encouraging the development of undergraduate researchers in these areas. |
| 2 | <b>Justification</b> State the justification for adding this course to the current curriculum. Represent the need | This course has come about as a result of a joint effort by both the department of mathematics and department of engineering and physics to streamline the mathematical instruction for students in applied mathematics, physics and engineering degrees.                                                                                                                                                                                                                                                                                                            |

## III. Course Design

### 1. Audiences and Course Goal

|   |                                                                |                                                                                                                                                                                                                                                                                                                                                                                   |
|---|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Describe the intended audience, including prerequisite skills. | This course is designed for students' seeking degrees in Physics, Engineering and Applied Mathematics who need exposure to the mathematical models that arise as applications of partial differential equations. Students should be well practiced in the techniques of vector calculus and ordinary differential equations. Both of these courses are required as prerequisites. |
| 2 | State the overarching course goal(s) in performance terms.     | Students develop the essential skills related to developing and solving physical models in an applied mathematical setting. Student perspectives of learning are divided equally among four principle types of technique: analytic, numeric, geometric, and qualitative.                                                                                                          |

### 2. Competencies and Measurements

|   | Competency                                                                                                                                                                         | Measurement                                                       |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1 | Students model higher dimensional problems using appropriate terminology and notation.                                                                                             | Homework, Maple Modeling Assignments                              |
| 2 | Students apply a variety of analytical techniques to solve a wide variety of physical models.                                                                                      | Homework, Maple Modeling Assignments, Reading Quizzes             |
| 3 | Students apply a variety of qualitative techniques to obtain information about solutions to a wide variety of physical models.                                                     | Homework, Research Paper                                          |
| 4 | Students engage with models from a variety of disciplines, including, but not limited to, business, economics, physics, engineering, biological sciences, and applied mathematics. | Homework, Reading Quizzes, Maple Modeling Project, Research Paper |
| 5 | Students develop well-articulated, analytic solutions in context with responses about the corresponding physical intuition.                                                        | Homework, Research Paper                                          |

### 3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings.

*Required Text:*

*Partial Differential Equations with Fourier Series and Boundary Value Problems*, Asmar, Nakhle H. 2/e Pearson Prentice Hall, 2005. ISBN: 0-13-148096-0

*Supplementary Texts (not required):*

Haberman, Richard, *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems*, Prentice Hall, 5th edition, 2013. ISBN 0-321-79705-1.

Strauss, Walter A., *Partial Differential Equations: An Introduction*, John Wiley & Sons, 2nd edition, 2008. ISBN 978-0470-05456-7.

2. For **combined undergraduate/graduate** courses, make two lists:
  - a. full publication information; label **Undergraduate**.
  - b. full publication information; label **Graduate**. Indicate number of pages required.

## IV. Supporting Documentation

*Supporting documents must accompany proposal prior to preliminary approval by chair and dean.*

|    |                                                                                                                                                                                                                                                                                                                                         |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | <b>Library</b> — Submit new course application and syllabus to the Director of the Library. Consult with the director and establish a deadline for completion of the library report. <b>Attach</b> the signed copy of the library director's report.                                                                                    |
| 2  | <b>Instructional Design</b> — The application and syllabus must be reviewed by the Adams Center. <b>Attach</b> a copy of the Adams Center Review Letter.                                                                                                                                                                                |
| 3  | <b>Degree Plan</b> — The Director of Curriculum must review the impact of the course. <b>Attach</b> degree plan signed by the Director of Curriculum.                                                                                                                                                                                   |
| 4  | <b>Content Overlap</b> — Include one document for each course you listed in Section I-I. <b>Attach</b> statement from instructor/dept chair of existing course justifying the new offering.                                                                                                                                             |
| 5  | <b>Departmental Resources</b> — List the resources that support the course and are available only through the department, if applicable. <b>Attach</b> the list of the holdings and the location/s.                                                                                                                                     |
| 6  | <b>Resources</b> — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). <b>Attach</b> a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.                   |
| 7  | <b>Expenses</b> — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). <b>Attach</b> a complete list of all items, the estimated cost of each and the source of the funds. |
| 8  | <b>Justification</b> — <b>Attach</b> all documents referred to in Section II-2                                                                                                                                                                                                                                                          |
| 9  | Syllabus — <b>Attach</b> the syllabus for the course based upon the anticipated first-semester offering.                                                                                                                                                                                                                                |
| 10 | Provide documentation for all additional attachments here                                                                                                                                                                                                                                                                               |

## **V. Preliminary Approvals**

All supporting documentation has been assembled and attached to this application. I believe this course is ready to be presented to appropriate councils. We have a plan to fund this new course.

### **Primary Department**

M. K. W. B. S.  
Department Chair  
2/12/13  
Date

G. J. A. H.  
Dean of the College  
2/12/13  
Date

### **Cross-listing Department** *Add more lines if multiple departments are cross listing.*

\_\_\_\_\_  
Department Chair  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Dean of the College  
\_\_\_\_\_  
Date

### **Cross-listing Department** *Add more lines if multiple departments are cross-listing*

\_\_\_\_\_  
Department Chair  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Dean of the College  
\_\_\_\_\_  
Date

**VI. Approvals** *Place all approvals on one page.*

A. Course ID: MATH 463

Course Title: Partial Differential Equations

**1. College Academic Council Action:** (for all courses)

Note: Insert additional lines for College Academic Council action for each college involved in cross-listed courses.

Approved ☒ Denied ☐ J. Hunt 2-8-13  
College Dean or Director Date

Approved ☐ Denied ☐ \_\_\_\_\_  
College Dean or Director Date

**2. Graduate Council Action:** (for graduate level courses)

Approved ☐ Denied ☐ \_\_\_\_\_  
Dean of Graduate School Date

**3. University Undergraduate Academic Council Action:**

*For undergraduate level courses only*

Approved ☐ Denied ☐ \_\_\_\_\_  
Associate Provost Date

**4. University General Education Council Action:** (when applicable)

Approved ☐ Denied ☐ \_\_\_\_\_  
Provost or designee Date

**5. University Budget Committee Action:** (when applicable)

*When applicable – see New Course Application Instructions*

Approved ☐ Denied ☐ \_\_\_\_\_  
Chair, University Budget Committee Date

**6. Academic Provost Action:** (for all courses)

Approved ☐ Denied ☐ \_\_\_\_\_  
Provost Date

**7. President of the University Action:** (for all courses)

Approved ☐ Denied ☐ \_\_\_\_\_  
President Date

**Attach notes, comments, or conditions from appropriate councils:**

# MATHEMATICS (BS)

| BS: MATHEMATICS DEGREE PLAN (MATH)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| UNIVERSITY REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |
| Please see the University Requirements section of this catalog.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
| MAJOR REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |
| <b>Mathematics</b><br>MATH 185 Calculus I (3) <sup>1</sup><br>MATH 186 Calculus II 3<br>MATH 187 Calculus Computer Lab 1<br>MATH 227 Discrete Mathematics 3<br>MATH 286 Calculus III 3<br>MATH 325 Linear Algebra 3<br>MATH 351 Abstract Algebra I 3<br>MATH 377 Statistical Methods I 3<br>MATH 381 Analysis I 3<br>MATH 397 Mathematics Seminar 2<br>MATH 497 Mathematics Capstone (writing-intensive course) 2<br>Choose one: 3<br>MATH 453 Abstract Algebra II<br>MATH 478 Mathematical Statistics<br>MATH 483 Analysis II |    |
| <div> <b>Advanced Mathematics Selections</b><br/> Advanced mathematics selections<br/> (excluding 309, 311, 410 and 412) </div>                                                                                                                                                                                                                                                                                                                                                                                                | 9  |
| <b>TOTAL</b><br><sup>1</sup> Hours (in parentheses) may also fulfill university requirements and are not included in total major hours                                                                                                                                                                                                                                                                                                                                                                                         | 38 |

MATH 463 would fit in this category.

# Abilene Christian University

Spring 2013



## MATH 440.01: Partial Differential Equations

MWF 10:00 - 10:50

Foster Science Building 239

Email: [john.ehrke@acu.edu](mailto:john.ehrke@acu.edu)

Phone: 325.674.2162

Course Blog: [blogs.acu.edu/1320\\_MATH44001](http://blogs.acu.edu/1320_MATH44001)

Dr. John Ehrke

Assistant Professor of Mathematics

Office: Foster Science Building 229

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**Required Texts:** The following text is required for this course and may be purchased in the campus bookstore, or ordered online at the student's discretion. Please bring this text everyday to class.

Asmar, Nakhle H., *Partial Differential Equations with Fourier Series and Boundary Value Problems*, Prentice Hall, 2nd edition, 2005. ISBN 0-13-148096-0.

**Supplementary Texts:** The following texts are great supplementary texts for this course and are frequently referenced by the instructor.

Haberman, Richard, *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems*, Prentice Hall, 5th edition, 2013. ISBN 0-321-79705-1.

Strauss, Walter A., *Partial Differential Equations: An Introduction*, John Wiley & Sons, 2nd edition, 2008. ISBN 978-0470-05456-7.

**Course Materials:** A graphing calculator is recommended for this course. Calculators will not be loaned out during class and cannot be exchanged between students during tests or quizzes. The TI-83, TI-84, or TI-89 calculators are the departmentally supported models. We will also make use of Maple® CAS this semester. Maple® is made available for student use in the departmental computer labs. Student editions of Maple® run about \$99 for those interested in purchasing their own versions.

**Course Description:** This course expands on the ideas of calculus and the techniques introduced in ordinary differential equations. The student successfully completing this course will be able to combine analytic, graphical, and numeric methods to solve problems that model a variety of physical phenomena. A tentative course description is included below:

**MATH 440 Partial Differential Equations (3-0-3)**, special topics, Features analytical and computational tools of linear partial differential equations (PDEs) applied to a variety of physical models including heat/diffusion, wave, and Poisson equations.

Analytic techniques include separation of variables, characteristics, transform methods, and Green's functions. Prerequisites: MATH 286, 361.

As a part of this course, students can expect to cover a wide variety of material with emphasis on analytic techniques and modeling. The four major areas of the course are outlined in the table below. Each group of topics depends on the previous for understanding and each group is associated with its own content exam. The chapters listed are from the required text, but not all material in a given chapter will be covered but the course strives to present a well-reasoned sequence of techniques and applications loosely based on the required text.

|                                  |                             |                                                                                                                                               |
|----------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Series Solutions, Fourier Series | Appendix A4-A6, Chapter 1-2 | Power series solutions of ODEs, Method of Frobenius, Bessel functions, Fourier series, convergence                                            |
| Basic PDEs and BVPs              | Chapter 3, Chapter 6        | Separation of Variables, orthogonal functions, 1D heat and wave equations, Sturm-Liouville problems, maximum principle                        |
| Higher Dimensional Models        | Chapter 3, 4, 5             | Steady state distributions, Laplace's equation, multidimensional eigenvalue problems, 2D-3D heat and wave equations, eigenfunction expansions |
| Transform perspective            | Chapter 7, 8, 12            | Fourier transform, Laplace transform, Green's functions                                                                                       |

**Lecture Format:** Students should expect most classes to revolve around a lecture format with the occasional reading quiz to begin class. Occasionally, we may have need to hold class in the computer lab when working on specific topics, but advance notice will be given for the change of venue.

**Mission Statement:** This course supports ACU's mission statement of preparing students for Christian service and leadership throughout the world by providing students a foundational understanding of the mathematical principles such as problem solving and decision making, as well as exposing students to the role of mathematics in a Christian worldview.

**Departmental Mission:** The mission of the Department of Mathematics is to educate students to be quantitative and analytical thinkers in preparation for Christian service and leadership throughout the world.

**Grading Components:** This course employs a point scale with standard percentages. The specific grading components and associated percentages are described below.

|          |        |        |        |        |
|----------|--------|--------|--------|--------|
| 90%-100% | 80-89% | 70-79% | 60-69% | 50-59% |
| A        | B      | C      | D      | F      |

**Exams (60%):** There will be four exams this semester given during class. Exam periods will be extended to provide up to two hours to complete a given exam. Each exam will closely resemble the homework (assigned and suggested) and lecture notes associated with each of the four areas laid out above. Each exam is graded out of 100 points and is worth 15% of your course grade. Practice exams will be made available online prior to each exam. The *tentative* exam dates are provided below, but expect these dates to change over the course of the semester.

|        |                                  |                    |
|--------|----------------------------------|--------------------|
| Exam 1 | Series Solutions, Fourier Series | Friday, February 8 |
| Exam 2 | Basic PDEs and BVPs              | Friday, March 8    |
| Exam 3 | Higher Dimensional Models        | Friday, April 12   |
| Exam 4 | Transform perspective            | Final Exam Time    |

All dates are subject to change as necessary. We will not sacrifice mathematical rigor to go faster than the normal pace of the material allows.

**Daily Work (30%):** Homework will be assigned regularly throughout the semester. Homework will normally be made available on the course blog up to one week before it is due. You will always have at least a weekend in which to complete the assignment. The daily grade component is worth 30% of your course grade. In addition, we will occasionally have reading quizzes that comprise about 10% of your daily work grade. **Homework will not be accepted late.**

Homework Sets (10 x 100 points)

Reading Quizzes (10 x 10 points)

Expect a new homework set to be due every other week, with approximately one reading quiz per week on non-test weeks.

**Research Paper (10%):** Shortly after exam 2 is completed and most of the basic techniques in the course have been covered, students will be assigned a research paper covering a topic of their choosing that is related to their study of partial differential equations. The paper length will vary for the topic chosen, but papers should adhere to a minimum of 5000 words or 10 double-spaced pages. A grading rubric and suggestions for topics of interest will be given out in class at the appropriate time. All papers must be completed using the LaTeX document preparation system. Students may find videos describing how to get started using LaTeX on the content blog.

**Course Competencies:** The course competencies, written in student performance terms, are detailed in the table below.

| Competency                                                                                                                                                                         | Measurement Instrument                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Students model higher dimensional problems using appropriate terminology and notation.                                                                                             | In class exams, including final exam.<br>Homework questions<br>Maple modeling projects                                |
| Students apply a variety of analytical techniques to solve a wide variety of physical models.                                                                                      | Emphasis on homework/exam questions to be done with the aid of a graphing calculator or Maple.<br><br>Reading Quizzes |
| Students apply a variety of qualitative techniques to obtain information about solutions to a wide variety of physical models                                                      | In class exams, including final exam.<br>Homework questions<br>Maple explorations specific to certain phenomenon.     |
| Students engage with models from a variety of disciplines, including, but not limited to, business, economics, physics, engineering, biological sciences, and applied mathematics. | Homework, Reading Quizzes<br>Maple Modeling Projects<br>Research Paper                                                |
| Students develop well-articulated, analytic solutions in context with responses about the corresponding physical intuition.                                                        | Homework<br>Research paper                                                                                            |

**Attendance Policy:** Your regular attendance is both necessary and expected. You are responsible for all material covered while absent and will be expected to take regularly scheduled exams and are responsible for turning in work on the assigned dates. Attendance will be recorded at the beginning of each class. If you come in after attendance is taken you will be counted absent. So make every effort to arrive in class on time, prepared for class. Only university-approved absences can exempt you from being counted absent. Per university policy, university approved absences must be cleared with the instructor one week in advance. Make your sponsors aware that failure to comply with this policy will affect your attendance record in this class. The following actions will be taken at different absence levels:

| Number of Absences | Consequences                                                                                                              |
|--------------------|---------------------------------------------------------------------------------------------------------------------------|
| 0-5                | No action taken                                                                                                           |
| 6-7                | Students will be emailed notifying them of their current number of absences and reminding them of the attendance policies |
| 12+                | Students with 12 absences will be dropped from the course.                                                                |

**Homework Policy:** Homework sets will be assigned periodically throughout the semester. You should form the habit of doing the relevant problems between successive lectures and not try to do the whole set the night before they are due. Solutions will be made available online. I encourage collaboration in this course, but I insist on honesty about it. If you do your homework in a group, be sure it works to your advantage rather than against you. **Good grades for homework you have not thought through will translate to poor grades on exams.** You must turn in your own write-ups of all problems, and, if you do collaborate or use outside resources, you should reference them on your solution sheet. Failure to do so constitutes an act of academic dishonesty.

**Make-up Policy:** After an exam has been graded and handed back in class, it will not be accepted for a grade under any circumstance. In the case of a university excused absence, it is the student's responsibility to make arrangements with the instructor regarding due dates. **Exams cannot be made up if missed except under extraordinary circumstances at the discretion of the instructor.** There will not be any work accepted for extra credit.

**Academic Integrity Policy:** The university policy regarding academic integrity is available online at <http://www.acu.edu/academics/provost/documents/academic-integrity-policy.pdf>. Students found guilty of an act of academic dishonesty will be subject to the following disciplinary actions in this course.

**First Occurrence:** A first violation will result in no credit for that particular assignment (even if it is an exam). No makeup will be allowed. The appropriate campus office(s) will be notified of the incident, and a notice of the incident will accompany your university records.

**Second Occurrence:** A second violation will result in your withdrawal from the course with a grade of F. The department will make a recommendation for suspension from the university.

**Electronic Devices Policy:** Please turn off all cell phones, beepers, pagers, alarms, .mp3 players, etc... unless such devices are being used for class purposes as indicated by your instructor. Headphones, listening to music, texting, and other uses of these devices not for class purposes are strictly prohibited during class. Frequent disruptions or failure to abide by this policy will be viewed as disruptive behavior and are subject to being dismissed from class and being counted absent. If the disruptions continue you will be dropped from the course.

**Disability Accommodations:** If you have a documented disability and wish to discuss academic accommodations, please feel free to contact me. The ACU Student Disability Services Office (a part of Alpha Academic Services) facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, you must be registered with Disability Services and you must complete a specific request for each class in which you need accommodations. Contact Disability Services at 674-2667 for further information or to set up an appointment.

**Office Hours:** Below is my schedule for Spring 2013. The times marked “Office Hours” represent the times I will make myself available to work with you on homework, understanding lectures, or for any other questions you might have. Please take advantage of these opportunities. If you find that none of these times work for you, feel free to email me at [john.ehrke@acu.edu](mailto:john.ehrke@acu.edu) or call me at 674-2162 to set up an alternate appointment. No appointment is needed if you attend regularly scheduled office hours. This schedule is posted on the front of my office door as well.

| Spring 2012   | Monday           | Tuesday      | Wednesday    | Thursday     | Friday   |
|---------------|------------------|--------------|--------------|--------------|----------|
| 8:00 – 8:30   |                  |              |              |              |          |
| 8:30 – 9:00   |                  |              |              |              |          |
| 9:00 – 9:30   | MATH 186         |              | MATH 186     |              | MATH 186 |
| 9:30 – 10:00  | MATH 186         | Office Hours | MATH 186     | Office Hours | MATH 186 |
| 10:00 – 10:30 | MATH 440         | Office Hours | MATH 440     | Office Hours | MATH 440 |
| 10:30 – 11:00 | MATH 440         | Office Hours | MATH 440     | Office Hours | MATH 440 |
| 11:00 – 11:30 | Lunch - Meetings |              |              |              |          |
| 11:30 – 12:00 |                  |              |              |              |          |
| 12:00 – 12:30 |                  |              |              |              |          |
| 12:30 – 1:00  |                  |              |              |              |          |
| 1:00 – 1:30   | Office Hours     |              | Office Hours |              |          |
| 1:30 – 2:00   | Office Hours     |              | Office Hours |              |          |
| 2:00 – 2:30   | MATH 397         |              | MATH 397     |              |          |
| 2:30 – 3:00   | MATH 397         |              | MATH 397     |              |          |
| 3:00 – 3:30   | Office Hours     |              | Office Hours |              |          |
| 3:30 – 4:00   | Office Hours     |              | Office Hours |              |          |

**Melinda Thompson**

November 5, 2012 4:22 PM

To: jee99a <jee99a@acu.edu>

Re: New Course App - MATH 463

Archives 

Hello, John - thanks for your email. Yes, I'm the person in the Adams Center who reviews new course or program proposals. What you've sent looks very thorough. I'm satisfied that you've got everything you need in the course application and syllabus to continue the approval process with academic councils.

The only item I would point out is a difference between the two titles which were listed as textbooks on the course application and the three textbooks (one required, two supplemental) which were listed in the syllabus from the last time this class was taught as a special topics course. I don't think this is a problem at all, but I just wanted to clarify that the books you have listed on the course app will be the ones you plan to use moving forward... or at least for the time being. I understand that textbook lists change regularly as faculty try to keep up to date on academic material.

If it would be helpful, we can set up a face-to-face meeting to talk in more detail about the course application process. This would only be needed if you have further questions. Otherwise, I'll put together a letter from the Adams Center stating that I've reviewed your course application and syllabus and found them both ready to move forward.

Blessings,  
Mindi

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**LIBRARY**

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**M E M O R A N D U M**

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**DATE:** November 14, 2012  
**TO:** Dr. John Ehrke  
**FROM:** Mark McCallon, Library Assistant Director  
**RE:** Course Application for MATH 463 – Partial Differential Equations

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After reviewing the course application, the library is able to support the proposed course. Please let the library know of any additional resources needed in support of the required research paper. Thank you for letting the library review the course application.