

UC 11323 11S

CBM003 ADD/CHANGE FORM

APPROVED APR 20 2011

Undergraduate Council
 New Course Course Change
 Core Category: WI-ID Effective Fall 2011

81

or

Graduate/Professional Studies Council
 New Course Course Change
 Effective Fall 2011

1. Department: Math College: NSM
 2. Faculty Contact Person: Virginia L. Hollyer Telephone: x33463 Email: charles@math.uh.edu

3. Course Information on New/Revised course:
 • Instructional Area / Course Number / Long Course Title:
MATH / 3311 / Functions and Modeling
 • Instructional Area / Course Number / Short Course Title (30 characters max.)
MATH / 3311 / FUNCTIONS AND MODELING
 • SCH: 3.00 Level: JR CIP Code: 27.0101.1002 Lect Hrs: 3 Lab Hrs: 0

RECEIVED APR 04 2011

4. Justification for adding/changing course: To meet instructional needs of students
 5. Was the proposed/revised course previously offered as a special topics course? Yes No
 If Yes, please complete:

- Instructional Area / Course Number / Long Course Title:
 ___ / ___ / ___
 • Course ID: _____ Effective Date (currently active row): _____

6. Authorized Degree Program(s): B.S. Math
 • Does this course affect major/minor requirements in the College/Department? Yes No
 • Does this course affect major/minor requirements in other Colleges/Departments? Yes No
 • Can the course be repeated for credit? Yes No (if yes, include in course description)

7. Grade Option: Letter (A, B, C ...) Instruction Type: lecture ONLY (Note: Lect/Lab info. must match item 3, above.)

8. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title
MATH / 3311 / Functions and Modeling

- Course ID: 46192 Effective Date (currently active row): 8242009

9. Proposed Catalog Description: (If there are no prerequisites, type in "none".)
 Cr: 3. (3-0). Prerequisites: Math 1432 and CUIN 1101. Description (30 words max.): Ideas and activities that reinforce interrelationships among topics in mathematics, especially as taught in secondary education. Recurrent themes will be the use of transformations, data analysis methods, and technology.

10. Dean's Signature: _____ Date: 4 April '11
 Print/Type Name: IAN EVANS

U N I V E R S I T Y *of* H O U S T O N
CORE CURRICULUM REQUEST FOR COURSES NEW TO THE CORE

Originating Department/College: NSM

Person making request: Leigh Hollyer Telephone: 33500

E-mail: dog@uh.edu

Dean's signature: _____ Date: _____

I. General Information:

Course number and title: Math 3311 - Functions and Modeling

Catalog description must be included on completed CBM 003 form and attached to this document.

Category of Core for which course is being proposed (mark only one):

- Communication
- Mathematics
- Mathematics/Reasoning (IDO)
- American History
- Government
- Humanities
- Visual/Performing Arts Critical
- Visual/Performing Arts Experiential
- Natural Sciences
- Social/Behavioral Sciences
- Writing in the Disciplines (IDO)

II. Objectives and Evaluation (respond on one or more separate sheets):

Call ext. 3-0919 for a copy of "Guidelines for Requesting and Evaluating Core Courses" or visit the website at www.uh.edu/academics/corecurriculum

- A. How does the proposed course meet the appropriate Exemplary Educational Objectives (see **Guidelines**). Attach a syllabus and supporting materials for the objectives the syllabus does not make clear.
- B. Specify the processes and procedures for evaluating course effectiveness in regard to its goals.
- C. Delineate how these evaluation results will be used to improve the course.

SVP. Effective 8/23/10. Replaces all previous forms, which may no longer be used.

Essay #1

Due Tuesday September 28 at the beginning of class
The last day for consultation is Friday September 24.

Topic: What is a function?

Some ideas you might consider

- Write the definition of a function in your own words.
- What does a function look like? Is it always a graph?
- What are the attributes of a function?
- What are some tips for discovering if a relationship is a function or not?
- What is (and is not) a function from the viewpoint of a variety of disciplines (anthropology, English, physics)? How are these different from but related to the functions we looked at in class?
- Include multiple representations of functions (e.g. graphic, symbolic, words, mappings, etc.) and discuss which attributes are best shown in each representation.
- Include a bibliography if needed; it does not count in your word count, though.

Physical description:

This will be a 700 word descriptive essay that is typed (12 point) and double spaced with margins not larger than 1 inch per side. The Proof of Attendance form from The Writing Center must be attached at the back of the essay.

Grading Rubric: on separate handout

10% your grade

Essay #2

Due Tuesday, October 19 at the beginning of class
Last day for consultation is Friday, October 14

Topic: Devise a visual, verbal, and algebraic way of connecting the following three concepts.

1. The Euclidean distance formula
2. The Standard Equation of a Circle centered at (h, k)
3. The Pythagorean Theorem

Some ideas you might consider:

- Think of at least 2 related mathematical or real life topics that can be extended from these three topics.
- Historically, what came first?
- Are there graphical and symbolic connections you can illustrate?
- How were these topics introduced and taught to you? Can you think of a more interesting or compelling approach? What did you learn from this topic?

Physical Description:

This will be a 700 word descriptive essay that is typed (12 point) and double spaced with margins not larger than 1 inch per side. The Proof of Attendance form from The Writing Center must be attached at the back of the essay.

Grading Rubric: on separate sheet

10% of your grade

Essay #3

Due Tuesday, November 16 at the beginning of class.
Last day for consultation is Friday, November 12.

Topic: Eccentricity of a hyperbola

Investigate the geometric significance of the eccentricity of a hyperbola by completing the three steps that follow. Then write a report telling what you have done, what patterns you have observed, and what relationship you have found between the eccentricity and the shape of the hyperbola.

A. Use the definition of eccentricity*, e , to show, for the hyperbola

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1, \quad \text{that } e = \sqrt{1 + (b/a)^2}.$$

* $e = c/a$ where c is the distance from the center to a focus.

I want to see how you go from the definition ($e = c/a$) to the formula with the square root in neat precisely written steps...almost a proof. How are a , b , c , and eccentricity related? How does the eccentricity show up in the graph or predict the graph?

B. Compute and report the eccentricity for each of the following five hyperbolas with a calculator:

$$(0.0201)x^2 - y^2 = 0.0201$$

$$3x^2 - y^2 = 3$$

$$8x^2 - y^2 = 8$$

$$15x^2 - y^2 = 15$$

$$99x^2 - y^2 = 99$$

Discuss the utility of these choices for illustration. Why NOT just any 5 hyperbolas? How does it help you understand eccentricity to use these specific ones? What is the relationship between eccentricity and shape?

C. Use graphing software to show Quadrant I for each of these 5 on the same set of axes. Insert this picture in your essay with a cogent caption.

Essay #3 continued

Physical Description:

This will be a 700 word descriptive essay that is typed (12 point) and double spaced with margins not larger than 1 inch per side. The Proof of Attendance form from The Writing Center must be attached at the back of the essay.

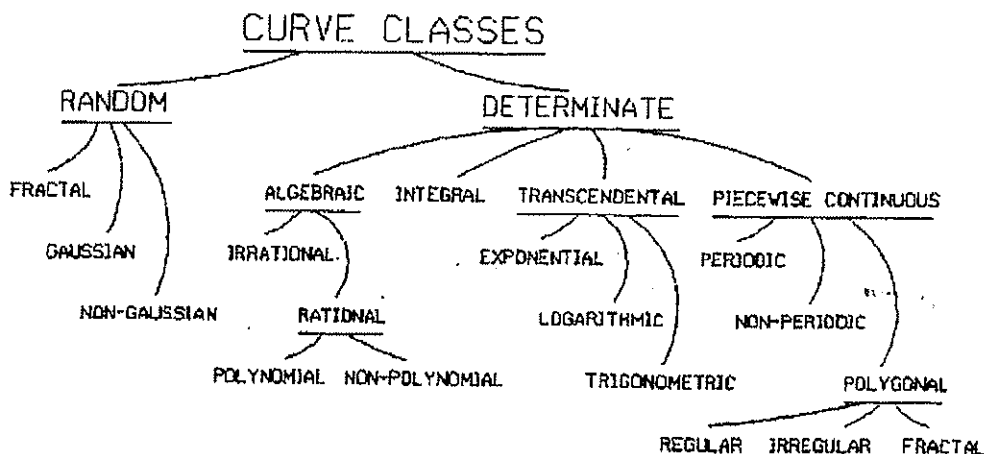
Grading Rubric: on separate sheet

10% of your grade

Term paper:

Due at the day and time of the final in 651 PGH – my mailbox or my office (617 PGH) or emailed in as a single PDF.

Topic: Discuss the following outline of curves and how the topics of our class fit into it.



Some ideas you might consider:

- What is a curve? Are all functions curves? Are all curves functions?
- What is the organizing principle of this outline? How did we organize our information about functions? Compare and contrast these organizing principles.
- What do the words “algebraic”, “determinate”, and “transcendental” mean? Did we study any of these? How do you know?

Physical description:

This will be a 1500 word term paper. It will be typed (12 point) and double spaced with margins not wider than 1 inch. The bibliography is not counted in the paper length.

Grading Rubric: separate handout

This paper is 15% of your grade in this class.

Rubrics - DRAFT

Topic Development and Task Responsiveness (4 points):

- 0 Does not address the assigned topic. The writer's plan cannot be inferred from the essay's progress. Lacks a clear purpose statement. Organizational structure breaks down in places. Summarizes basic facts without analysis. Does not fulfill the purpose of the essay.
- 2 Demonstrates reasonably clear thinking and analysis; includes a broad range of representations. Uses conventional and coherent logic. Includes little of the context, the Big Picture.
- 4 Evidence of planning, well executed. No logical flaws. Appropriate use of vocabulary. Clear logical organization. Thoughtful use of transitions in the development of the topic. Recognizes complexity of the context and alternating views of the topics.

Critical Thinking (4 points):

- 0 Adopts shallow arguments and makes generalizations without support. Engages in bias or strictly personal reasoning. Has abrupt or illogical transitions. Poor organization. Is difficult to read and understand.
- 2 Evidence of planning, poor execution. Shows the writer's enthusiasm, but doesn't draw the reader in. Repeats much information from class without adding in the student's analysis.
- 4 Uses insightful thinking in analysis and synthesis in the The intentional use of language enhances the arguments. Holds the reader's attention. Establishes the importance of the topic in the larger context. Includes analysis, synthesis, and evaluation. Demonstrates a clear understanding of concepts and purpose.

Conventions, Mechanics, and Readability (4 points):

- 0 Inappropriate word choices, poor grammar, spelling errors. Exhibits limited control over the range of writing conventions. Poor word choices; errors in word usage.
- 2 Exhibits some control over conventions, mundane word choices but nothing actually wrong with the choices. Competent on the details of the presentation.
- 4 Exemplary use of conventions, careful word choices, publication ready. Holds the reader's interest throughout.

Confirmation of appointment kept at The Writing Center (3 points).

Morales, Jeanette F

From: Evans, Ian [IEEvans@Central.UH.EDU]
Sent: Monday, April 04, 2011 1:52 PM
To: jmorales@uh.edu
Cc: Peters, Charles; Bott, Simon G; Dupre, William R; Donna Stokes; Shah, Shishir; Rapp, Larry; Ogletree, Monique L; Melissa Lowrey
Subject: Math WID request
Attachments: MATH WID Proposal.pdf

Dear Jeanette: I have attached the request from the Math Department for two Math courses that they want designated as WID courses. The NSM Curriculum Committee unanimously supports this request. Please let me know if you have any questions.

Ian