UC 11324 11S

APPROVED APR 20 2011

CBM003 ADD/CHANGE FORM

81

☒ Undergraduate Council	or	Graduate/Professional Studies Council
☒ New Course ☐ Course Change		☐ New Course ☐ Course Change
Core Category: WI-ID Effective Fall 2011		Effective Fall 2011

1. Department: Math College: NSM
2. Faculty Contact Person: Virginia L. Hollyer Telephone: 743-3500 Email: dog@math.uh.edu
3. Course Information on New/Revised course:
   - Instructional Area / Course Number / Long Course Title: MATH / 3379 / Introduction to Higher Geometry

   RECEIVED APR 04 2011
   - Instructional Area / Course Number / Short Course Title (30 characters max.) MATH 3379 / Intro Higher Geometry
   - SCH: 3.00 Level: JR CIP Code: 27.0101.0001 Lect Hrs: 3 Lab Hrs: 0
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
   ____ / ____ / ____
   - Course ID: 31156 Effective Date (currently active row): 8271979
9. Proposed Catalog Description: (If there are no prerequisites, type in "none".)
   Cr: 3. (3-0). Prerequisites: Math 1432 . Description (30 words max.): Synthetic and algebraic geometry; harmonic division; cross ratio; groups of projective transfomations.
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 3379 – Introduction to Higher Geometry

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
__X__ 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.

Writing Assignments – Math 3379

Physical description of Papers 1, 2, and 3:

Each 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. The attendance form counts 3 points out of 15 for the grade.

Physical description of the Term Paper:

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. Attendance at the Writing Center seminar will be graded as part of the paper; it is worth 3 points out of 15.

Paper 1

Topic: **Constructible Numbers**

Some questions that need to be answered in the paper:

What are constructible numbers and why do we care about them?
What are some properties and attributes of constructible numbers?
Where do they fit in a set diagram of the real numbers?
Give examples of numbers that are constructible and are not constructible. Discuss what distinguishes them. Discuss how transcendental numbers fit into a discussion of constructible numbers.
What are constructible numbers used for?
When were they discovered and by whom?
Can you think of different ways of presenting information about constructible numbers? Pictures, tables, graphs? Something in addition to words?

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.

Bibliography:

Be sure to cite sources in an approved style. Google: "MLA citation" for a refresher on these issues.

10% your grade comes from this paper.

Rubrics - Paper 1

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. Addresses most of the questions in the paper project outline perfunctorily.

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. Answers all of the questions in the project outline fully and in detail

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.

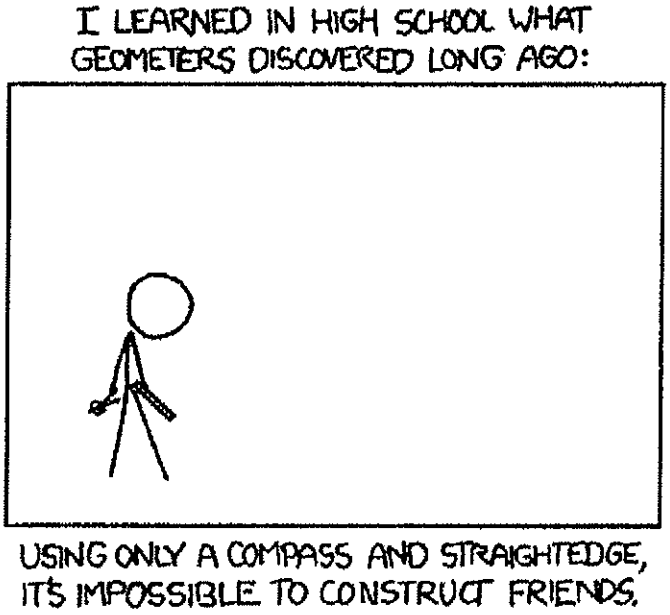
2 Evidence of planning but modest execution. Repeats much information from class without adding in enough of the student's analysis or furthering the connections needed. Uses sources without demonstrating complete understanding of what the source meant. Shows the writer's enthusiasm, but doesn't draw the reader in.

4 Uses insightful thinking in analysis and synthesis. 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.

Receipt from Writing Center: 3 points



Paper 2

Topic:

Explicate the proof of Theorem 3.2.4 or 3.2.5 on page 105 in the text. Your choice. Come up with your own title.

Suggestions:

Show all the details that are needed from both geometry and logic for the proof to be valid, to "work". Answer the question "why" that is 2/3 of the way through the proof.

Discuss the type of proof represented by this argument. Discuss it's appropriateness for the material. Discuss the logical argument and how the pieces of it fit together. What information is needed to understand the proof? Analyze the structure of the proof.

What does the theorem give us in our quest to understand Hyperbolic Geometry? Where does the theorem fit into the Big Picture of comprehending what is being discussed?

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.

Bibliography:

Be sure to cite sources in an approved style. Google: "MLA citation" for a refresher on these issues.

10% your grade comes from this paper.

Rubrics - Paper 2

Topic Development and Task Responsiveness (4 points):

1 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 discussion of the proof's structure and logic. Uses conventional and coherent logic. Includes little of the context, the place for this in Hyperbolic Geometry. Addresses most of the questions in the paper project outline perfunctorily.

4 Evidence of planning, well executed. Discusses the structure and logic of the proof in a plausible manner. 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 topic of the proof. Answers all of the questions in the project outline fully and in detail

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 but modest execution. Repeats much information from class or the book without adding in enough of the student's analysis or furthering the connections needed. Uses the usual sources without demonstrating complete understanding of what the source meant. Shows the writer's enthusiasm, but doesn't draw the reader in.

4 Uses insightful thinking in analysis and synthesis. The intentional use of language enhances the arguments. Holds the reader's attention. Uses unusual or different sources in addition to the usual references. Establishes the importance of the topic in the larger context. Includes analysis, synthesis, and evaluation. Demonstrates a clear understanding of concepts and purpose of the essay.

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. Has factual errors. Shows little or no knowledge of the vocabulary from quoted passages...doesn't explore the quoted material adequately

2 Exhibits some control over conventions, mundane word choices but nothing actually wrong with the choices. Competent on the details of the presentation. A reasonable approach to providing definitions

4 Exemplary use of conventions, careful word choices, publication ready. Holds the reader's interest throughout. Good, solid definition work; convinces the reader the author understands the material.

Receipt from Writing Center: 3 points

Paper 3

Using a calculator or a spreadsheet program find the first 10 iterates of the mapping:

$$z \to z^2$$

using the following points as z_0:

A. $.5 - .1i$
B. $1 + 0i$
C. $0 + i$
D. $\sqrt{2} + i\sqrt{2}$
E. $2 + i$

What does this add to what you know of Mandlebrot Sets? [This is problem 1 Section 5.5, by the way.] Try to build a nice verbal context for the patterns and the activity so that a reader knows how this activity fits into learning about Mandlebrot Sets.

Why are these initial points very nice from an experimental point of view – do your best imitation of Dr. Bott here…why do these help you see more than randomly chosen initial points?

Describe the pattern to the orbits that you see. Make a conjecture about why you are seeing the pattern. What evidence can you muster to support your conjecture? Is there something valuable about these particular starting points? What other points might you choose to start with?

What might someone who disagrees with you use as support that your conjecture is not correct. In the end, why do you think your conjecture is correct?

What might you do in further support of your conjecture?

10% of your grade comes from this paper.

Rubrics - Paper 3

Topic Development and Task Responsiveness (4 points):

2 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 discussion of the proof's structure and logic. Uses conventional and coherent logic. Includes little of the context, the place for this in Mandelbrot sets. Addresses most of the questions in the paper project outline perfunctorily.

5 Evidence of planning, well executed. Discusses the structure and logic of the proof in a plausible manner. 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 topic of the proof. Answers all of the questions in the project outline fully and in detail

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Receipt from Writing Center: 3 points

Term Paper:

Answer the question: What is geometry?

Ideas to consider:

What did ancient geometers think? What do more modern geometers think? Compare and contrast the development of geometry briefly from Euclid to Thomas (the author of our book).

Can you make a visual organizer or two for this question? A Venn diagram? A tree diagram? An outline? How would you organize the topic if you were going to teach a course like ours and you had to write your own notes and NOT use a published book? What did our author do to blend geometrical history and geometry topics?

How do you distinguish geometry from analysis or algebra? Where is there overlap in the topics? Is there a way to distinguish geometry from other math topics that is clean and cutting, or are there interstitial topics that flow from geometry to other topics readily?

This term paper is 20% of your grade. It should be

Rubrics - Term Paper

Topic Development and Task Responsiveness (4 points):

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Attendance at Writing Center seminar: 3 points

If there is an increased work load due to the course being designated WID, I plan to ask for some grading relief by hiring consultants from The Writing Center.

I plan to grade 3 or 4 examples personally. Then I'll discuss the grading scheme and hand out a brief outline of the math content and considerations. If I have 3 graders and I stay available for consultations with the graders, I think we can have fairly consistent grading. I'd plan on 2 hours for a class of 50.

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