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SEP 3 2015

OFFICE OF THE
SENATE COUNCIL**1. General Information**

1a. Submitted by the College of: ARTS & SCIENCES

Date Submitted: 1/16/2015

1b. Department/Division: Mathematics

1c. Contact Person

Name: Serge Ochanine

Email: serge.ochanine@uky.edu

Phone: 859 257-8837

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

1d. Requested Effective Date: Semester following approval

1e. Should this course be a UK Core Course? No

2. Designation and Description of Proposed Course

2a. Will this course also be offered through Distance Learning?: No

2b. Prefix and Number: MA 391

2c. Full Title: Mathematics: Composition and Communication

2d. Transcript Title: Math: Composition and Communication

2e. Cross-listing:

2f. Meeting Patterns

LECTURE: 3

2g. Grading System: Letter (A, B, C, etc.)

2h. Number of credit hours: 3

2i. Is this course repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester?

2j. Course Description for Bulletin: Undergraduate topics course. The mathematical content will be selected at the discretion of the instructor. The course satisfies the Graduation Composition and Communication Requirement for mathematics majors.

2k. Prerequisites, if any: The student must satisfy each of the following 5 conditions: (1) MA 213 (2) one of MA 261 or MA 214 (3) MA 322 (4) one of MA 321, MA 351, MA 361, or MA 471G (5) at least 30 completed credit hours

2l. Supplementary Teaching Component:

3. Will this course taught off campus? No

If YES, enter the off campus address:

4. Frequency of Course Offering: Spring,

Will the course be offered every year?: Yes

If No, explain:

5. Are facilities and personnel necessary for the proposed new course available?: Yes

If No, explain:

6. What enrollment (per section per semester) may reasonably be expected?: 25

7. Anticipated Student Demand

Will this course serve students primarily within the degree program?: Yes

Will it be of interest to a significant number of students outside the degree pgm?: Yes

If Yes, explain: STEM Ed students may be taking this course as part of their GCCR requirement.

8. Check the category most applicable to this course: Not Yet Found in Many (or Any) Other Universities ,

If No, explain:

9. Course Relationship to Program(s).

a. Is this course part of a proposed new program?: No

If YES, name the proposed new program:

b. Will this course be a new requirement for ANY program?: Yes

If YES, list affected programs: Mathematics BA and BS

10. Information to be Placed on Syllabus.

a. Is the course 400G or 500?: No

b. The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from 10.a above) are attached: Yes

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6. How do course requirements ensure that students make appropriate use of learning resources?

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10. Does the syllabus contain all the required components? NO

11. I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|LEEP|D B Leep|MA 391 NEW Dept Review|20140407

SIGNATURE|RHANSON|Roxanna D Hanson|MA 391 NEW College Review|20140417

SIGNATURE|LEEP|D B Leep|MA 391 NEW Dept Review|20140407

SIGNATURE|RHANSON|Roxanna D Hanson|MA 391 NEW College Review|20140429

SIGNATURE|JMETT2|Joanie Ett-Mims|MA 391 NEW Undergrad Council Review|20141210

SIGNATURE|JEL224|Janie S Ellis|MA 391 NEW Senate Council Review|20150113

SIGNATURE|RBROWN|Russell M Brown|MA 391 NEW Approval Returned to Dept|20150120

SIGNATURE|JEL224|Janie S Ellis|MA 391 NEW Senate Council Review|20150619

SIGNATURE|RBROWN|Russell M Brown|MA 391 NEW Approval Returned to Dept|20150902

MA 391 001
Mathematics: Composition and Communication (sr)

SAMPLE TOPIC: Mathematical, Historical, and Cultural Aspects of Hilbert's Problems

Instructor: TBA
Office Address: TBA
Email: TBA
Office Phone: TBA
Office Hours/Location: TBA
Course Location/Time/Day: TBA

Course Description:

BULLETIN DESCRIPTION: This is an undergraduate topics course in mathematics. The mathematical content of this course will be selected at the discretion of the instructor. This course satisfies the Graduation Composition and Communication Requirement for mathematics majors.

SAMPLE SPECIAL TOPIC INFORMATION: This course is centered around an exploration of mathematical, historical, and cultural aspects of Hilbert's 23 problems proposed at the beginning of the 20th century. These problems were a source of inspiration for many major developments in 20th century mathematics. Also, the mathematicians involved in working on these problems were affected by and involved in the global social and political events of the past 100 years. Thus, Hilbert's problems serve as a window into both the development of modern mathematics and the roots of our contemporary political and social climate.

Prerequisites:

MA 213
one of MA 261 or MA 214
MA 322
one of MA 321, MA 351, MA 361, or MA 471

Student Learning Outcomes:

After completing this course, the student will be able to:

1. communicate in the discipline of mathematics through writing
2. communicate in the discipline of mathematics either orally or through the creation of a visual artifact
3. effectively use information resources in the discipline of mathematics

Course goals or objectives:

Students in this course will achieve the student learning outcomes listed above by engaging in the exploration of various mathematical, historical, and cultural ideas.

Required Materials:

SAMPLE SPECIAL TOPIC MATERIALS:

- 1) *The Honors Class*, by Ben Yandell
- 2) *The Hilbert Challenge*, by Jeremy Gray
- 3) "Periodicity, Quasiperiodicity, and Bieberbach's Theorem on Crystallographic Groups," A. Vince, *The American Mathematical Monthly*, Vol 104, No 1, Jan 1997, pp 27-35
- 4) "An Elementary Problem Equivalent to the Riemann Hypothesis," Jeffrey C. Lagarias, *The American Mathematical Monthly*, Vol 109, No 6, Jun-July 2002, pp 534-543

Description of Course Activities and Assignments

Homework contributing 30% to the course grade
Written course project contributing 35% to the course grade.
Visual communication assignment contributing 30% to the course grade.
Attendance/participation contributing 5% to the course grade.

Summary Description of Course Assignments

Attendance/Participation

* Attendance and participation will be taken daily. Sleeping in class, arriving more than 7 minutes late, or leaving more than 7 minutes early will result in no credit received for that class period. In the case of excused absences, students will be given credit for attendance/participation on that class day. The 5% attendance and participation grade will be calculated based on the number of days that students are in attendance subject to these three criteria.

Homework

* Each homework assignment will be worth 20 points. There will be twelve homework assignments. Three of these will be 2-3 page reflective essays, and nine of these will consist of problem sets. Some portions of the homework must be typed. No late work due to unexcused absences will be accepted. Late work due to excused absences must be submitted within two weeks following the excused absence. You should work with other students and share your ideas as part of our course community. However, you should not let your collaboration devolve into letting someone else do all the "hard parts" and then copying their answers.

Policy on group work on student collaboration (homework assignments only)

- * Don't talk to anyone about the problems until you have made a genuine effort to solve them yourself.
- * You must write up the solutions on your own.
- * You may not search the internet for solutions to problems. We will use our creativity, course texts, and peer collaboration as our tools for investigating these problems.

Course Project

* You will choose a topic for and complete a written project during the course of the semester. This will be a written project of length (without references) 15 pages with 1 inch margins, 12 point Times New Roman font, double spaced. The main requirement is that your project must involve a "great idea" of modern mathematics and provide a well-supported argument justifying this choice of topic. All projects are expected to be well-written, free from grammatical errors, and have excellent mathematical depth and style. A grading rubric will be provided early in the semester.

* You should direct a portion of your project toward a general university audience and articulate clearly which sections are aimed toward experts. The course textbooks are good models for this type of exposition.

* You will turn in a first version of your project for peer review; the first version must be a complete project that you will revise substantially to create your final version.

* Course project deadlines may be extended by up to 10 days due to excused absences, with a deadline delay set at the discretion of the instructor.

Poster Presentation

* You will create a visual artifact in the form of a poster presentation.

* The purpose of this poster presentation is to communicate clearly and concisely the core of the argument contained in your course project.

* You will turn in a draft version of your poster for peer review.

* Poster presentation deadlines may be extended by up to 10 days due to excused absences, with a deadline delay set at the discretion of the instructor.

Information Literacy Assignment

* You will turn in a course project proposal that will serve as an information literacy assignment. In preparing your proposal, you will use standard resources such as JSTOR, MathSciNet, and other databases to find relevant sources. You will also be introduced to well-known mathematical publications at the undergraduate level such as The American Mathematical Monthly, Math Horizons, Math Intelligencer, and Mathematics Magazine.

Course Grading

Grading scale:

90-100% = A

80-89% = B

70-79% = C

60-69% = D

below 60% = E

Note that in order to receive GCCR credit for this course, a C average must be received on the course project and course poster.

Final Exam Period Information

The final exam period will be used for a course poster display session and for the last class discussion. Time and date TBA.

Mid-term Grade

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>)

Course Policies:

Submission of Assignments:

No late work will be accepted unless arranged prior to the deadline. Students will be notified of submission instructions in advance for each assignment.

Attendance and Classroom Behavior Policy.

Attendance will be taken daily. Students are expected to be engaged participants during class. Students are expected to behave in a civil and respectful manner at all times.

Excused Absences:

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an

excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Academic Integrity:

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability:

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257- 2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Tentative Course Schedule

Week 1

a) Introduction to course

Week 2

- a) Readings from Yandell, Introduction, and Gray, Ch 1 and Ch 3
- b) 2-page critical essay regarding reading

Week 3

- a) Readings from Yandell, "In The Original" and Gray, Ch 3
- b) Homework regarding Dehn Invariants and Polyhedra
- c) Course project proposal due – Information Literacy Assignment

Week 4

- a) Readings from Yandell, "Set Theory, Anyone?" and Gray, Ch 4
- b) Homework regarding countable vs uncountable sets, existence of infinitely many infinite cardinalities

Week 5

- a) Readings from Yandell, "I Am Lying (Mathematics is Consistent)" and Gray, Ch 4
- b) 3-page critical essay on cultural impact of Nazi party on German mathematics

Week 6

- a) No readings, no homework, focus on completion of course project
- b) First version of course project due

Week 7

- a) Readings from Yandell, "Can't We Do This with a Computer?" and Gray, Ch 4
- b) Homework regarding transfinite numbers

Week 8

- a) Readings from Yandell, "First, State the Tune" and Gray, Ch 4
- b) Homework regarding Riemann Zeta Function and connections to number theory

Week 9

- a) Readings from Yandell, "The Inordinate Allure of Prime Numbers" and the article by Lagarias
- b) Homework regarding logarithmic integrals and error estimates for $\pi(x)$

Week 10

- a) Readings from Yandell, "How Many Kinds of Crystals are There, and Does the Grocer Know How to Stack Oranges?" and Gray, Ch 4
- b) 3-page critical essay regarding Bieberbach and Nazi sympathizers

Week 11

- a) Readings from article on Crystallographic Groups by Vince
- b) Homework regarding crystallographic groups

Week 12

- a) Readings from Yandell, "How Famous Can a Function Theorist Be?" and Gray, Ch 3
- b) Homework regarding hyperbolic geometry

Week 13

- a) Readings from Gray, Ch 3
- b) Homework regarding hyperbolic geometry

c) First version of poster presentation due

Week 14

a) No readings, no homework, focus on final version of course project

b) Final version of course project due

Week 15

a) Readings from Yandell, "Schools Amid Turbulence" and Gray, Ch 6

b) Homework regarding differential equations

Week 16 – Final Period

a) Final version of poster presentation due

New Course Form

<https://myuk.uky.edu/sap/bc/soap/rfc?services=>

Open in full window to print or save

Generate PDF

Attachments:

Browse...

Upload File

	ID	Attachment
Delete	3344	GCCR MA 391 syllabus-rubric.pdf
Delete	3849	GCCR MA 391 syllabus_FINAL_Oct2014Revisions.docx

First 1 Last

(*denotes required fields)

1. General Information

- a. * Submitted by the College of: Submission Date:
- b. * Department/Division:
- c.
- * Contact Person Name: Email: Phone:
- * Responsible Faculty ID (if different from Contact): Email: Phone:
- d. * Requested Effective Date: Semester following approval OR Specific Term/Year ¹
- e.
- Should this course be a UK Core Course? Yes No
- If YES, check the areas that apply:
- Inquiry - Arts & Creativity Composition & Communications - II
- Inquiry - Humanities Quantitative Foundations
- Inquiry - Nat/Math/Phys Sci Statistical Inferential Reasoning
- Inquiry - Social Sciences U.S. Citizenship, Community, Diversity
- Composition & Communications - I Global Dynamics

2. Designation and Description of Proposed Course.

- a. * Will this course also be offered through Distance Learning? Yes ⁴ No
- b. * Prefix and Number:
- c. * Full Title:
- d. Transcript Title (if full title is more than 40 characters):
- e. To be Cross-Listed ² with (Prefix and Number):
- f. * Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours³ for each meeting pattern type.
- | | | | |
|--|--|---------------------------------|---------------------------------|
| <input type="text" value="3"/> Lecture | <input type="text"/> Laboratory ¹ | <input type="text"/> Recitation | <input type="text"/> Discussion |
| <input type="text"/> Indep. Study | <input type="text"/> Clinical | <input type="text"/> Colloquium | <input type="text"/> Practicum |
| <input type="text"/> Research | <input type="text"/> Residency | <input type="text"/> Seminar | <input type="text"/> Studio |
| <input type="text"/> Other | If Other, Please explain: | | |
- g. * Identify a grading system:
- Letter (A, B, C, etc.)
- Pass/Fail
- Medicine Numeric Grade (Non-medical students will receive a letter grade)
- Graduate School Grade Scale
- h. * Number of credits:
- i. * Is this course repeatable for additional credit? Yes No
- If YES: Maximum number of credit hours:
- If YES: Will this course allow multiple registrations during the same semester? Yes No

j. * Course Description for Bulletin:

Undergraduate topics course. The mathematical content will be selected at the discretion of the instructor. The course satisfies the Graduation Composition and Communication Requirement for mathematics majors.

k. Prerequisites, if any:

The student must satisfy each of the following 5 conditions:

- (1) MA 213
- (2) one of MA 261 or MA 214
- (3) MA 322
- (4) one of MA 321, MA 351, MA 361, or MA 471G
- (5) at least 30 completed credit hours

l. Supplementary teaching component, if any: Community-Based Experience Service Learning Both3. * Will this course be taught off campus? Yes No

If YES, enter the off campus address: _____

4. Frequency of Course Offering.

a. * Course will be offered (check all that apply): Fall Spring Summer Winter

b. * Will the course be offered every year? Yes No

If No, explain: _____

5. * Are facilities and personnel necessary for the proposed new course available? Yes No

If No, explain: _____

6. * What enrollment (per section per semester) may reasonably be expected? 25

7. Anticipated Student Demand.

a. * Will this course serve students primarily within the degree program? Yes No

b. * Will it be of interest to a significant number of students outside the degree program? Yes No

If YES, explain: _____

STEM Ed students may be taking this course as part of their GCCR requirement.

8. * Check the category most applicable to this course:

- Traditional – Offered in Corresponding Departments at Universities Elsewhere
 Relatively New – Now Being Widely Established
 Not Yet Found in Many (or Any) Other Universities

9. Course Relationship to Program(s).

a. * Is this course part of a proposed new program? Yes No

If YES, name the proposed new program: _____

b. * Will this course be a new requirement⁵ for ANY program? Yes No

If YES⁵, list affected programs: _____

Mathematics BA and BS

10. Information to be Placed on Syllabus.

a. * Is the course 400G or 500? Yes No

If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in 10.b. You must include: (i) Identify additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See SR

b. * The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable above) are attached.

⁵ Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.
⁶ The chair of the cross-listing department must sign off on the Signature Routing Log.

Grading Rubric for Mathematical Writing

You will receive a score of 0 through 10 for each of the five criteria.

1. WRITING STYLE

Score: _____

A 10 paper is eloquent and effective, with varied sentence structures, good rhythm, fluid transitions, and a distinct voice. A 7 paper is coherent and appropriate, but uneventful and uninspiring. A 2 paper often contains sentences that are not comprehensible and alienating to the reader.

2. ARRANGEMENT AND DEVELOPMENT

Score: _____

A 10 paper guides the reader through the text with organizational clarity and ingenuity, providing the reader with the information that is needed at each moment. A 7 paper does not go out of its way to help readers, but is reasonably well structured and logically sound. A 2 paper is skimpy or bloated, with haphazard organization, regular disregard for logic, and little consideration for the reader.

3. EDITING AND CONVENTIONS

Score: _____

A 10 paper demonstrates maturity with regard to grammar, syntax, word choice, and attribution of sources. A 7 paper is reasonably well edited but features a small number of distracting errors in phrasing, punctuation, citation, etc. A 2 paper has regular or repeated problems with these features that impedes reader comprehension.

4. MATHEMATICAL DEPTH

Score: _____

A 10 paper demonstrates a sure grasp of mathematics, providing insightful connections from the material to other areas of mathematics and science and/or arguing effectively for the value of the material in play. A 7 paper responds appropriately to the assignment, but does not effectively communicate the worth of the material. A 2 paper exhibits mathematical errors that prevent understanding by the reader.

5. MATHEMATICAL STYLE

Score: _____

A 10 paper illustrates the mathematics under discussion with clear proofs, illuminating examples, or a combination thereof, and stimulates the intellect. A 7 paper contains adequate mathematical content, but provides too many or too few details in proofs and/or unenlightening examples. A 2 paper is often incomprehensible, even if mathematically correct.

Poster Grading Rubric

There are three grading criteria, each of which will be scored between 0 and 10.

1. EFFECTIVELY AND COHERENTLY CONVEYS THE FOCUS/THESIS OF PROJECT

Score: _____

A 10 poster is eloquent, effective, and easy to understand, clearly articulating the focus of your project. A 7 poster is coherent and appropriate, but uneventful and uninspiring. A 2 poster does not convey the core purpose of the project and is alienating to the viewer.

2. CREATIVITY AND QUALITY OF PRESENTATION

Score: _____

A 10 poster demonstrates creativity and quality with regard to organization and presentation of material. A 7 poster presents the material reasonably but is hard to read and boring. A 2 poster has problems with readability and comprehension.

3. MATHEMATICAL CONTENT

Score: _____

A 10 poster demonstrates a sure grasp of mathematics, providing insightful connections from the material to other areas of mathematics and science and/or arguing effectively for the value of the material in play. A 7 poster conveys some of the mathematics involved, but does not effectively communicate the worth of the material. A 2 poster exhibits mathematical errors that prevent understanding by the reader.

4. INSTRUCTOR COMMENTS