Course Information
Prerequisites and/or Co-requisites: First-time, first-year student status
Class Meeting Day(s), Time and Room Location: M, Th 2:00-3:00 pm, A108
College Web Address: www.ramapo.edu
College Closings/Special Announcements Phone No.: (201) 236-2902

Instructor Information
Instructor's Name, Title: Lawrence D’Antonio
Office Location & Phone No.: G228, x7714
Office Hours: Mon, Thurs. 10:30-11:30, 5:30-6:00
E-mail and web page address: ldant@ramapo.edu, http://phobos.ramapo.edu/~ldant
School Office Location: G326
School Office Phone No.: x7797

Course Description
In this course we will explore the historical-cultural role of mathematics in human society. This course will not focus on mathematics as a skill set, but instead look at what mathematics can tell us about who we are. Mathematics is pervasive; it is the one universal language of the human species. At the end of the course the student will hopefully have learned various ways in which mathematics is magical and significant.

Consider the ways in which mathematics is exemplified in our culture. For example, we will discuss the Declaration of Independence, painting (in its use of perspective), music from Bach to the contemporary experimental music of math rock, and poetry (in its use of concentrated language). Mathematics is the foundation of science, so the course will consider the impact of mathematics through its presence in science. For example, DNA, which has come to define us as biological organisms, is a type of language which mathematicians and biologists are working to decode.

We will also critically examine the limits of mathematics. Heidegger asked, “Is everything computable?” Namely, can the entire universe be reduced to mathematical equations?

The course will involve student-led discussions of articles, texts, poems, architecture, music, and works of art that reflect mathematical ways of thinking. The universal, interdisciplinary nature of mathematics will be emphasized in group projects. The class will occasionally meet jointly with the other HNRS 101 section, "Modern Diplomacy: Alienation and Alien Nations."

Course Objectives
The primary goal of this course is to understand how mathematics is woven through human culture. At the end of the course students should be able to look at works of art, music, literature, and philosophy and recognize the use of mathematics in these works. Students are also expected to develop a critical attitude towards mathematics in terms of its capabilities and limits.

Peer Facilitators
Danielle Mazza, dmazza1@ramapo.edu

As an added resource for first-year students, each section of First-Year Seminar (FYS) will have a peer facilitator. These upper-level students will attend FYS classes and assist the instructor with the academic topics covered in this seminar. They will serve as discussion leaders on issues that pertain to your personal and social development. Peers will also facilitate weekly discussions on the class readings. Your peer facilitator will be your mentor and will be available to you to provide guidance on navigating the different personal and social hurdles that you may encounter in your first year at Ramapo.
First-Year Academic Advising
Each First-Year Seminar course is assigned a professional Academic Advisor from the Center for Academic Advising and First-Year Experience (CAAFYE) who serves as your Academic Advisor during your first year. This advisor will attend your First-Year Seminar class for a group advisement session to review general academic advising policies and procedures. They will also be available to answer any general questions regarding college policies/practices. Students are encouraged to schedule individual appointments with their CAAFYE Advisor for assistance with course selection and the development of a personal academic plan. Prior to individual advising sessions, your peer facilitator will instruct you on printing your recommended academic four-year plan, major requirements, and degree evaluation. In October, all first-year students will be required to attend the annual Majors Fair, where representatives are available from each major to assist students in learning more about the academic programs at Ramapo. If you have any questions regarding Academic Advisement please call CAAFYE at (201) 684-7441 or via email at: caafye@ramapo.edu

Texts, Readings, Materials


Course Requirements

**Classroom Participation** – Students are expected to be active participants in the course. This includes being prepared for each class, taking part in class discussions, and being respectful of the opinions of others.

**Writing Assignments** – There will be a term paper, and a paper on the summer reading. Students are expected to conduct research as needed, give proper citations to all works used, and to properly quote sources.

The summer reading topic will be related to the class discussion. The paper will be 3-5 pages long, single-spaced.

The topic of the term paper will be selected by the student. The topic should relate mathematics to an issue discussed in the course (the history of mathematics, mathematics and science, mathematics and art, mathematics and poetry, mathematics and film). The paper will be 8-10 pages long, single-spaced.

For both papers students will hand in a preliminary draft. The draft will be returned with comments and a final draft, incorporating revisions, will be handed in.

**Homework** – There are eight modules in the course (listed below) and five homework assignments distributed over this material. The top four homework grades will be averaged together.

**Course Modules**
1. History of Mathematics
2. What is Mathematics?
3. The Beauty of Mathematics
4. Mathematics and Art  
5. Mathematics and Music  
6. Mathematics and Poetry  
7. Mathematics and Science  
8. Mathematics and Society

**Team Research Projects** The class will divide up into groups of 2 or 3 students. Each group will select a century in history (but not the 21st century). They will create a web site devoted to that century, including the history, culture, science and mathematics of that century. A multimedia creation (using music and art) is encouraged.

**Presentations** The groups from the group project will each make a 15 minute presentation in class. The presentations will take place in week 15.

**Mid-Term** There will be a mid-term on Thursday, October 21.

**General Education Program Course**

This course fulfills the First-Year Seminar category of the general education curriculum at Ramapo College. Common to all First-Year Seminar (FYS) courses, you will develop critical thinking skills that are basic to college level study, regardless of your area of interest. You will be reading, writing, and participating in thoughtful group discussions with the aim of developing the skills of a scholar. You will learn to support your arguments using a foundation of knowledge and facts rather than simply using personal opinions and experiences.

This class will fulfill the interdisciplinary studies First-Year Seminar category. This course will focus on the connections between mathematics and science, art, and music.

**Weekly Class Schedule**

**Week 1, September 2**  
Topic: Introduction to the course.

Monday, September 6: No class, Labor Day

**Week 2, September 9**  
Discussion of Kidder book.

**Week 3, September 13, 16**  
Monday, Sept. 13 – Discussion on “What is mathematics?”,  
Reading assignment: Court paper. **Topic of summer reading paper due.**  
Thursday, Sept. 16 – No class, I will be away at a conference

**Week 4, September 20, 23**  
Monday, Sept. 20, Philosophy of mathematics. Reading assignment: Plato's *Meno*. **HW 1 assigned.**

**Wednesday, September 22th 2010**  
Opening Convocation, 1:00-2:30, Bradley Center Arena, attendance is mandatory.

Thursday, Sept. 23, Babylonian and Egyptian mathematics. Reading assignment: Suzuki, Chapter 1, Buck article.
Week 5, September 27, 30  
Monday, Sept. 27, Greek mathematics, Reading assignment, Suzuki, Chapter 2, Gleason article. **HW 1 Due**

Thursday, Sept. 30, Indian/Chinese mathematics, Reading assignment, Suzuki, Chapter 3. **First draft of paper on summer reading due.**

Week 6, October 4,7  
Monday, Oct. 4, Islamic mathematics, Reading assignment, Suzuki, Chapter 4. **HW 2 assigned.**

Thursday, Oct. 7 – No class, I will be away at a conference

Week 7, October 11, 14  
Monday, Oct. 11, Beauty of mathematics, the Art Gallery Theorem, Reading assignment, Pickover article. **Final draft of summer reading paper due.**

Thursday, Oct. 14, Continuing discussion of beauty of mathematics. Reading assignment, Saiber article. **HW 2 Due**

Week 8, October 18, 21  
Monday, Oct. 18, Math and art, Reading assignment, Franke article and MacTutor site.

Thursday, Oct. 21, **Mid-term**

Week 9, October 25, 28  
Monday, Oct. 25, Academic advising session.

Thursday, Oct. 28, Islamic art and architecture. Reading assignments, Islamic web sites. **HW 3 assigned. Research paper topic due.**

Week 10, November 1, 4  
Monday, Nov. 1, Renaissance mathematics. Reading assignment, Suzuki, Chapter 6, Allen article.

Thursday, Nov. 4, 17th century mathematics. Reading assignment, Suzuki, Chapter 7, Descartes and Newton entries on MacTutor and Stanford Encyclopedia of Philosophy. **Team Research topic due.**

Week 11, November 8, 11  
Monday, Nov. 8, The Enlightenment. Reading assignment, Suzuki, Chapter 8, Ansart article. **HW 3 Due. HW 4 assigned.**

Thursday, Nov. 11, Math and music, Reading assignment, Warrack and Crocker articles. Listening assignment, Rameau, Bach, Chopin.

Week 12, November 15, 18  
Monday, Nov. 15 Math and modern music. Reading assignment, Butchers. Listening assignment, Stockhausen, Xenakakis, Mathrock. **HW 4 Due**

Thursday, Nov. 18 Math and poetry, Reading assignment, distributed poetry collection.
Week 13, November 22  
Math and science. Reading assignment, Wigner article, **HW 5 assigned.**

Thursday, November 25, No class, Thanksgiving

Week 14, November 29, December 1  
Monday, Nov. 29, Math and science continued. Reading assignment, bioinformatics (Dewey and Hunter articles), astrology (Bok article). **First draft of research paper due.**

Thursday, Dec. 1, Math and society. Reading assignment, Goodman and Ettlinger articles.

Week 15, December 6, 9  
Monday, Dec. 6, **Team Research Project and Presentations Due**

Thursday, Dec. 9, Presentations and Math and society continued. Reading assignment, Zuckert article.

Week 16, December 13  
Final class. A look back at the question, What is Mathematics? **HW 5 Due.**

Thursday, December 16  
**Final draft of research paper due.**

**Important Dates**
- First Day of Classes: September 1\textsuperscript{st}
- Last day for Schedule Adjustments: September 13\textsuperscript{th}
- Last day to withdraw with 100\% tuition refund: September 13\textsuperscript{th}
- Last day to withdraw with 50\% tuition and/or housing refund: September 27\textsuperscript{th}
- Last day to withdraw from courses with “W” grade: October 27\textsuperscript{th}
- Thanksgiving Recess: Nov 24\textsuperscript{th} - 27\textsuperscript{th}
- Reading Day: December 14\textsuperscript{th}
- Final Exam Week: December 15\textsuperscript{th} – 21\textsuperscript{st}
- Final Exam Snow Make-Up Day: December 22\textsuperscript{nd}

**Grading Policy**

Grades are based on the following criteria:
- Paper on summer reading 15\%
- Team Research Project/Presentation 20\%
- Research Paper 20\%
- Homework Average 15\%
- Mid-Term 15\%
- Class Participation 15\%

Assignments that are handed in late receive a 10\% penalty, regardless of how late they are.

Here is the grading scale that will be used in this course. The instructor reserves the right to curve grades (but don’t count on it).

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>92.0-100.0</td>
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<tr>
<td>A-</td>
<td>90.0-91.9</td>
</tr>
<tr>
<td>B+</td>
<td>88.0-89.9</td>
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<tr>
<td>C+</td>
<td>78.0-79.9</td>
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<tr>
<td>C</td>
<td>72.0-77.9</td>
</tr>
<tr>
<td>C-</td>
<td>70.0-71.9</td>
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</tbody>
</table>
Attendance Policy – Attendance is mandatory. For each unexcused absence, your course average will be lowered by 3%. More than five unexcused absences will result in an F for the course grade. If you come to class after roll call you will be marked as being late. Every three times you come late will count as an unexcused absence. The instructor is the final arbiter of whether or not an absence is excused.

NOTE: Cell phones must be turned off before coming to class!!!

Experiential Component
This course will include a minimum of five (5) hours of unmonitored appropriate experience outside of the classroom. Students will be given several assignments to look at art on the Internet that is representative of mathematical ideas and to listen to music that illustrates mathematical patterns.

Electronic Forms of Communication
In accordance with College policy, I will use your Ramapo College email address (@ramapo.edu) to communicate with you about all course-related matters.

Students with Disabilities
If you need course adaptation or accommodations because of a documented disability, please make an appointment during my office hours.

Please note: Students must be registered with the Office of Specialized Services (OSS) to receive accommodations. As you develop or revise your course syllabus, consider ways to make your course material accessible to students with disabilities. For additional information, contact the Office of Specialized Services (OSS) at x7514 or E-mail at oss@ramapo.edu.

Policy on Academic Integrity
Students are expected to read and understand Ramapo College’s academic integrity policy, which can be found in the Ramapo College Catalog. Members of the Ramapo College community are expected to be honest and forthright in their academic endeavors. Students who violate this policy will be referred to the Office of the Provost.

Policy
All members of the Ramapo community are expected to be honest and forthright in their academic endeavors. Since violations of academic integrity erode community confidence and undermine the pursuit of truth and knowledge at the College, academic dishonesty must be avoided.

Procedures
The Office of the Provost/Vice President for Academic Affairs has the responsibility for the oversight and enforcement of the academic integrity policy and for making the policy an institutional priority. The Office of the Provost/Vice President for Academic Affairs is also responsible for publishing the policy and for educating both faculty and students about the policy.

Faculty members play a crucial role in the academic integrity policy. They are responsible for educating their students about the importance of academic integrity and for communicating to students their expectations with respect to academic integrity in course work.

Students have the responsibility to understand the College academic integrity policy and to comply with the policy in all their academic work.

Criteria
There are four broad forms of academic dishonesty:
1. **Cheating**

Cheating is an act of deception by which a student misrepresents his or her mastery of material on a test or other academic exercise. Examples of cheating include, but are not limited to:

- copying from another student's work;
- allowing another student to copy his/her work;
- using unauthorized materials such as a textbook, notebook or electronic devices during an examination;
- using specifically prepared materials such as notes written on clothing or other unauthorized notes, formula lists, etc., during an examination;
- collaborating with another person during an examination by giving or receiving information without authority;
- taking a test for another person or asking or allowing another to take the student’s own test.

2. **Plagiarism**

Plagiarism occurs when a person represents someone else's words, ideas, phrases, sentences, or data as one's own work. When a student submits work that includes such material, the source of that information must be acknowledged through complete, accurate, and specific footnote references; additionally, verbatim statements must be acknowledged through quotation marks.

To avoid a charge of plagiarism, a student should be sure to include an acknowledgment of indebtedness:

- whenever he or she quotes another person's words directly;
- whenever he or she uses another person's ideas, opinions, or theories, even if they have been completely paraphrased in one's own words;
- whenever he or she allows another individual to contribute to the work in some significant fashion (for instance, through editing, or sharing of ideas);
- whenever he or she uses facts, statistics, or other illustrative material taken from a source, unless the information is common knowledge.

Examples of standard citation formats can be found on the [Library Website: Citation Manuals and Style Guides](#).

3. **Academic Misconduct**

Academic Misconduct includes the alteration of grades, involvement in the acquisition or distribution of unadministered tests, and the unauthorized submission of student work in more than one class. Examples of academic misconduct include, but are not limited to:

- changing, altering, falsifying, or being the accessory to the changing, altering, or falsifying of a grade report or form or other academic record, or entering any computer system, College office or building for that purpose;
- stealing, buying, selling, giving way, or otherwise obtaining all or part of any unadministered test or entering any computer system, College office or building, for the purpose of obtaining an unadministered test;
- submitting written work (in whole or in significant part) to fulfill the requirements of more than one course without the explicit permission of both instructors;
- disregarding policies governing the use of human subjects or animals in research;
- sabotaging another student’s work through actions designed to prevent the student from successfully completing an assignment;
- knowingly facilitating a violation of the Academic Integrity Policy by another person.
4. Fabrication

Fabrication refers to the deliberate use of invented information or the falsification of research or other findings with the intent to deceive. Examples of fabrication include, but are not limited to:

- citation of information not taken from the source indicated;
- listing of sources in a “works cited” that were not used in that project;
- altering, stealing and/or falsifying research data used in research reports, theses, or dissertations;
- submission as one's own of any academic work prepared in whole or in part by others, including the use of another’s identity;
- falsifying information or signatures on registration, withdrawal, or other academic forms and records.

More on academic integrity can be found here: http://www.ramapo.edu/catalog_10_11/academic-policies.html