Course Syllabus
MA205 History of Mathematics
Rivier College
Fall 2005

Tuesdays 6:30 – 9:00 PM

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Brief Course Description
The goal of this course is to explore the history of mathematics and to acquire understanding of mathematics as a living body of knowledge growing and developing through the centuries. We will look at mathematics as a vital part of human perception of the world and an amazing tool for exploring reality. We will do some mathematics from various cultural epochs and see how mathematical science of every culture can give us insight into the corresponding state of human mentality.

Required Course Textbook

Course Objectives
- To study the development of mathematics in the cultural context.
- To participate in doing mathematics from other epochs and countries.
- To develop mathematical thinking.
- To develop ability to write and talk clearly and informatively about mathematical ideas and methods.
- To acquire understanding of mathematics as a growing and developing body of human knowledge rather than a fixed system.

Learning Strategies
All new material will be introduced in class first. We will discuss it and work through a few problems and exercises. Your active involvement is crucial: you are encouraged to participate in the discussion and contribute ideas.

The next stage will be your work at home with your class notes and the textbook. Please read both your notes and the assigned textbook material making sure you
understand everything, study all the examples, and then do the assigned problems. If something is unclear, formulate it as a question for the next class. Group work is a wonderful tool to use at this stage.

At the beginning of each class, we will discuss the assignment from the previous class meeting and address all concerns and uncertainties. Please do not leave anything unclear: we can only move forward successfully if we have no hazy areas left behind. All questions are always welcome: before, during, or after the class.

Course Requirements

- Students are expected to attend all classes, to be on time for classes, and to come prepared. Please do the assigned reading and formulate questions to raise in class. During classes we will discuss the readings, solve selected problems, and formulate questions for further investigation.
- There will be a short written quiz at every class meeting.
- We will have a mid-term exam on October 25. It will be a written test given in class.
- You will be asked to complete a project of some form during the semester. Your presentation of this project will be the final examination in this course (December 13 or, for some students, another day of that week). The nature of the project is largely up to you; however, it should be quite distinct from other forms of work in this course. Please let me know your choice of a project by October 18. Here are a few ideas (feel free to invent something else):
  - A presentation of the historical development of an interesting and important mathematical concept or approach to a class of problems.
  - A written lesson on how to use a piece of history in the secondary classroom (e.g. solutions to cubic equations, the concept of infinity, methods of calculating volume, etc.).
  - An annotated bibliography on a particular topic.

Grading Method

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes</td>
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<tr>
<td>Mid-term exam</td>
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<td>Final project</td>
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Classroom Policies

- Students are expected to attend all classes and to be on time. In case of an illness or an emergency that will require missing a class, please contact me – if at all possible, before the class. We will have to make sure no material is missed.
- Your questions are always welcome. I will be available in the classroom for an hour after each class to address any unclear topics as necessary. You can also contact me by phone or e-mail. Please do not hesitate to get in touch with me whenever you need some help.
• If, at any point, you have concerns about the course or your personal progress – please talk with me immediately, after the class or via e-mail. We can certainly deal successfully with all such problems – if we do it promptly, before they have a chance to become “chronic”. If you don’t say anything – I will assume you are happy with the course and your progress.

Tentative Course Outline

Early number systems and symbols. Number recording of the Egyptians, Greeks, and Babylonians.

Mathematics in early civilizations.


The first awakening: Fibonacci. The Fibonacci sequence; Fibonacci and the Pythagorean problem.

Europe in the fourteenth and fifteenth centuries: the Renaissance of mathematics. The battle of the scholars. Cardan and Tartaglia.

The dawn of modern mathematics. Descartes, Newton, Leibniz.


The revival of number theory. Fermat, Euler, Gauss.


Creation and paradoxes of set theory. Cantor and Kronecker.

Some twentieth-century developments.