



*Math. 103 - Processes of Mathematical Thought  
Spring Semester, 1997*

**Instructor:** Prof. Mario Borelli

**Office** The instructor has two:

Room 302, Math. Bldg. Tel. 631-7334

Room 236, Security Bldg. Tel. 631-7514 (here most of the time)

**Course Prerequisites:** a working knowledge of High School algebra, curiosity about mathematics, **interest in the topics considered**. The course is designed strictly for the non specialist. Consequently, participation in class discussion, the asking of questions, the proffering of suggestions is required. What will NOT be tolerated is the passive attitude "here I am, teach me!", an attitude which especially affects upperclasspersons (*the last time I'll try to be politically correct.*) **LEARNING IS NOT A SPECTATOR SPORT!**

**Course Description.** Challenging situations often confront us which require thought before proceeding. This generally involves *an analysis of the situation, seeking to understand precisely all relevant factors involved, then a development of strategies dealing with the situation, and finally, whenever possible, the selection of one strategy which will resolve the situation to our satisfaction.* The words in italics accurately describe mathematical thought, and provide a blueprint for the conduct of the course.

Challenges, such as commercial games, consensus within diversity, the making of Christmas ornaments, governmental economic planning, wallpaper design, the theory of chaos etc., will be introduced. In most instances, the computer will be used for simulation and experimentation. With the guidance of the instructor, those strategies, techniques and technical results which may be relevant to the desired solution will be introduced. Finally that strategy or strategies, if there be any, which "solve the challenge to our satisfaction" will be applied and shown to work.

For most students learning is enhanced by the exchange and discussion of ideas. Therefore I intend to require that students organize themselves in "**teams**" of exactly four members each. The word "team", in this class, therefore means a group of either four students (only one team will be allowed to have less than four members) To keep the organization orderly, on next Monday, January 20 **each student will return to me the "Team Organization Form" attached herewith, with all items appropriately filled.**

**Homework.** Various reports on each team's findings will constitute the **homework**, which **will receive the same grade for each member of the team.** At the end of the study of each topic, each team will write a paper on the "solution" of each challenge **Homework is collected every Monday class.**

**Exams:** There will be three class exams, and the final examination. The schedule of the class exams is:

|                    |                |                 |
|--------------------|----------------|-----------------|
| Wedn., February 26 | Fri., March 21 | Wedn., April 23 |
|--------------------|----------------|-----------------|

The final examination will be held at the regularly scheduled time and day.

The instructor reserves his right to give unannounced quizzes.

**Attendance.** Attendance will be taken at every class session. University regulations give the instructor authority to exact a grade penalty if a student accumulates three or more unexcused absences. (*This means you have to learn to get up on time.*)

Since it's no fun to get up early in the morning and slush all the way to DeBartolo only to find out that the class has been cancelled, here are two classes which I know I will have to cancel due to the fact that I will be out of town on those days. There may be more which I may have to announce later. In any event, all missed classes will be made up at a later date as evening sessions, **The cancelled classes so far are:**

**Monday, March 24**  
**Wednesday, March 26**

**The Honor Code.** In the homework the instructor allows, and indeed encourages, cooperation and sharing of learning, both among an individual team's members and among different teams. The instructor requires only that credit be given in the homework to those team members or other teams which have contributed ideas or help. Treat the homework as a professional effort. Class quizzes and exams will be conducted under the University's Honor Code, so that in these latter works a student's efforts must be strictly his/her own. Attendance will also be taken on the Honor Code. (*This means you cannot sign in for somebody else.*)

|                 |                     |            |
|-----------------|---------------------|------------|
| <b>Grading:</b> | Class Participation | 5%         |
|                 | Homework            | 25%        |
|                 | Exams and Quizzes   | 40%        |
|                 | Final Exam          | <u>30%</u> |
|                 | TOTAL               | 100%       |

**Letter Grades.** The instructor will not know until the end of the semester which numerical scores correspond to which letter grades, so please don't ask him. Two facts are certain: the course will not be graded on a curve and if your scores amount to 50% or more of the total, you will pass the course (*maybe with a D, but definitely pass.*)

**Office Hours:** Monday, Wednesday 9:30 - 10:30 - Rm 302, Mathematics Bldg.  
(*or by appointment, at any time mutually convenient. The instructor will be available most days in Room 236, Security Building. The secretary's name there is Mary, call her at 1-7514 and make an appointment.*)



**MATH. 103 - PROCESSES OF MATHEMATICAL THOUGHT**

**SPRING 1997**

**TEAM ORGANIZATION FORM**

**RETURN THIS FORM ON MONDAY, JANUARY 20**

Prof. Borelli,

I belong to a team which consists of **myself** and (print full names, first and last)

---

---

---

MY NAME IS \_\_\_\_\_