

### 13 Processes of Mathematical Thought, Spring 1995

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

superclasspersons (the last time I'll try to be politically correct.) LEARNING

is NOT

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

the 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 asking

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

resolve 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 Bartolo 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 (lose

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 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.)

Grading: Class Participation 5% (100 points)

Homework 25% (100 points)

Exams and Quizzes 40% (150 points)

Final Exam 30% (150 points)

TOTAL 100% (500 points)

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 me.

No 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, it is 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 here is Mary, call her at 1-7514 and make an appointment.)