Department of Mathematics
Pomona College

Course Outline
Math 101. Introduction to Analysis Spring 2010

Time and Place:	MWF 10:00 am - 10:50 am, Millikan 213
Instructor:	Dr. Adolfo J. Rumbos
Office:	Andrew 259
Phone/e-mail:	ext. 18713 / arumbos@pomona.edu
Office Hours:	MWF 9:00 am - 9:45 am, or by appointment
Text:	*Introduction to Real Analysis* by Michael J. Schramm; Dover
Course Website	**http://pages.pomona.edu/~ajr04747/**
Prerequisite:	Linear Algebra

Course Description. The main goal of this course is to give a rigorous treatment to the study of continuity of real valued functions of a single real variable. This will require an in-depth study of the real numbers system and its properties since many important facts about continuous functions (eg., the intermediate-value theorem) would not be valid without some of those properties.

About two thirds of the class time will be spent on student presentations. The instructor will lecture or lead discussion the other third of the time. The content of the course is dictated by a series of assigned problems, most of which will involve the development of mathematical arguments, whose solutions will be presented by the students to the class. In addition, students will be required to give a formal presentation at the end of the semester on a special topic related to the course material (see attached list of special topics).

Assigned Readings and Problem Sets. Readings and problem sets will be assigned at every class meeting. Students are expected to do all the assigned reading and work on all the assigned problems, as they will be asked to present solutions to the class at a subsequent meeting. Each student will be required to keep a journal in which complete solutions of all problems presented in class are recorded. This journal is to be separate from notebooks in which the student takes notes during lectures and student presentations.

Grading Policy. Grades will be based on presentations and solutions to assigned problems, two 50-minute examinations, weekly assignments, and a formal presentation. The overall score will be computed as follows:

Problem solutions journal	15%
Homework assignments	20%
Problem solutions presentation	10%
Two examinations	40%
Formal presentation	15%

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Tentative Schedule of Topics, Presentations and Examinations

Date			Topic
W	Jan	20	Introduction to mathematical reasoning
F	Jan	22	Ways of proving mathematical statements
M	Jan	25	The real numbers system. Numbers: rational and irrational
W	Jan	27	Properties of real numbers
F	Jan	29	Properties of real numbers (continued)
M	Feb	1	Consequences of completeness
W	Feb	3	Sequences of real numbers
F	Feb	5	Convergence
M	Feb	8	Convergence (continued)
W	Feb	10	Real valued functions of a real variable
F	Feb	12	Limits and continuity
M	Feb	15	Continuity (continued)
W	Feb	17	Review
F	Feb	19	**Exam 1**
M	Feb	22	Functional limits
W	Feb	24	Properties of continuous functions
F	Feb	26	Properties of continuous functions (continued)
M	Mar	1	Properties of continuous functions (continued)
W	Mar	3	Topology of the real line
F	Mar	5	Connected sets and compact sets
M	Mar	8	The intermediate value theorem
W	Mar	10	The intermediate value theorem (continued)
F	Mar	12	Problems
M	Mar	15	*Spring Recess*
W	Mar	17	*Spring Recess*
F	Mar	19	*Spring Recess*
M	Mar	22	Continuous functions over compact sets
W	Mar	24	The extremal value theorem
F	Mar	26	*Cesar Chavez Day* (observed)
M	Mar	29	The extremal value theorem (continued)
W	Mar	31	Review
F	Apr	2	**Exam 2**
M	Apr	5	Special Topic
W	Apr	7	Special Topic
F	Apr	9	Special Topic

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Date			**Topic**
M	Apr	12	Special Topic
W	Apr	14	Special Topic
F	Apr	16	Special Topic
M	Apr	19	Special Topic
W	Apr	21	Special Topic
F	Apr	23	Special Topic
M	Apr	26	Special Topic
W	Apr	28	Special Topic
F	Apr	30	Special Topic
M	May	3	Special Topic
W	May	5	Special Topic