Department of Mathematics
Pomona College

Course Outline
Math 101. Introduction to Analysis Fall 2012

Time and Place:	MWF 10:00 am - 10:50 am, Millikan 218
Instructor:	Dr. Adolfo J. Rumbos
Office:	Andrew 259
Phone/e-mail:	ext. 18713 / arumbos@pomona.edu
Office Hours:	MWF 8:45 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, which 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	Sep 5	Introduction to mathematical reasoning
F	Sep 7	Ways of proving mathematical statements
M	Sep 10	Propositional logic
W	Sep 12	The natural numbers and the principle of induction
F	Sep 14	Divisibility
M	Sep 17	The real numbers system. Numbers: rational and irrational
W	Sep 19	Properties of real numbers
F	Sep 21	Properties of real numbers (continued)
M	Sep 24	Properties of real numbers (continued)
W	Sep 26	Order in the set of real numbers
F	Sep 28	Order in the set of real numbers (continued)
M	Oct 1	Completeness
W	Oct 3	Consequences of completeness
F	Oct 5	Consequences of completeness (continued)
M	Oct 8	Topology of the real line
W	Oct 10	Review
F	Oct 12	**Exam 1**
M	Oct 15	Sequences of real numbers
W	Oct 17	Convergence
F	Oct 19	Monotone sequences
M	Oct 22	*Fall Recess*
W	Oct 24	Bounded sequences
F	Oct 26	Cauchy sequences and convergence
M	Oct 29	Continuous functions
W	Oct 31	Properties of continuous functions
F	Nov 2	Properties of continuous functions (continued)
M	Nov 5	The intermediate value theorem
W	Nov 7	The extremal value theorem
F	Nov 9	The extremal value theorem (continued)
M	Nov 12	Problems
W	Nov 14	Review
F	Nov 16	**Exam 2**

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Date		**Topic**
M	Nov 19	Special Topic
W	Nov 21	Special Topic
F	Nov 23	*Thanksgiving Recess*
M	Nov 26	Special Topic
W	Nov 28	Special Topic
F	Nov 30	Special Topic
M	Dec 3	Special Topic
W	Dec 5	Special Topic
F	Dec 7	Special Topic
M	Dec 10	Special Topic
W	Dec 12	Special Topic