

Corso di "Analisi Matematica 1"
A.A. 2008/2009. Prof. M. Bramanti

A few words to foreign students

If you have recently arrived in Italy from another country and do not know Italian language very well, you are encouraged to contact personally the teacher to discuss your problems (in English, if you prefer).

However, here are some basic suggestions. If you find them obvious, this is good! My experience says that at least for someone these facts are not so obvious.

In general, if you want to succeed in your studies, you have to accept the idea that *you must make a great effort*, probably greater than that your Italian mates will make. In particular:

You must improve as soon as possible your understanding of spoken and written Italian, as well as your ability in speaking and writing in Italian; also for this reason (but not only for this) stay as long as possible in the University, attending to lessons and studying among your Italian mates.

Plan your vacancies and / or your flights back to your country in advance, according to the scheduled lessons and exams in the University: do not miss parts of the courses (or some exams) "because you were at home".

Do not ask for textbooks written in English, but learn Italian language, also in the technical, engineering field you want to study.

Pay attention to all the "rules" of University: do not miss an exam just because you did not sign in before a fixed date, for instance.

Realize if you need some preliminary training on some subjects (particularly in "elementary mathematics"); if this is the case, work hard also in this field, and make this job *immediately*.

Ask all your questions, and ask them to the right person (or office).

Decide to attack *today* any problem you have: postponing problem solving will make your problems harder.

Attached you will find an English version of the Notices for the course.

Notices for the Course "Analisi Matematica 1"

Ingegneria Elettronica. 2008/2009. Prof. M. Bramanti

Web page. The following web page:

http://www1.mate.polimi.it/~bramanti/corsi/avvisi_elet.htm

(also reachable from www.mate.polimi.it) is the place where you will find normally any information on the course: up-to-date notices, teaching material (downloadable pdf files). In case of doubt, trust this web page instead of any notice board in Politecnico.

Concise program of the course. Real and complex numbers. Real functions of one real variable: limits, continuity, differential calculus with applications, integral calculus; sequences and series. It is available in the web (see above) a detail (but not definitive) version of the program.

Adopted textbook: M. Bramanti, C.D. Pagani, S. Salsa: Analisi matematica 1. Ed. Zanichelli, Bologna, 2008. This book also contains exercises.

Adopted workbook: M. Bramanti: Esercizi di Calcolo infinitesimale e algebra lineare. Ed. Progetto Leonardo. Second edition, 2005. This book contains further exercises (with respect to the textbook), carried out in detail. These exercises are taken from the written exams of the last years, so they constitute a good training for the written part of the exam.

Support text: M. Bramanti: PreCalculus. Ed. Progetto Leonardo, Bologna, 1999. This is a book about the background of the course (elementary mathematics) and the first arguments dealt in the course, treated more gradually than in the textbook. It is particularly useful for students who feel "weak" in mathematics.

Background. A "prerequisite" is an argument which:

1) it is necessary to know, in order to understand the course; 2) is not taught in the course; 3) is required in the exam.

The course of "Analisi Matematica 1" has *a lot of prerequisites*: actually, one can say that all the elementary mathematics which a student has studied at school is useful here, and this is one of reasons why this course is often found difficult by the students.

Briefly, a minimal syllabus of prerequisites is the following:

Algebra: algebraic calculus; polynomials and their operations; n-th root of a number; powers with fractional exponents and their properties absolute value and its property; solution of algebraic equations and inequalities (first and second degree equations -and inequalities-, equations with absolute values, fractional equations, irrational equations...).

Logarithms and their properties; equations and inequalities involving logarithms and exponentials.

Trigonometry: basic concepts, elementary trigonometric functions, basic trigonometric identities, geometric applications of trigonometry, trigonometric equations and inequalities.

Analytical geometry: Cartesian coordinates in the plane, equation of the straight line, of the circumference, rudiments about the conics; geometrical meaning of equations and systems of equations in two variables.

Elementary functions: to know the graphics of straight lines, parabolas, power functions, exponentials, logarithms, elementary trigonometric functions.

Students attending the prescribed course for those who have "O.F.A." (negative result in the math test) have a good opportunity to review these subjects. However, *all* the students (even those who got a good score in the test) are advised to make an extra-effort, in the first weeks of the courses, to review and consolidate their mathematical background.

The reference for background mathematics is the above quoted book:

M. Bramanti: PreCalculus. Referring to this book, the arguments of Chapters 1-9, 12, 13 (with the exception of the paragraphs marked with a *) can be considered "prerequisites".

Timetable of this course (lessons+recitations):

monday, h. 11.15-13.15, lesson or recitations, room F12

tuesday, h. 8.15-10.15, lesson, room F12

thursday, h. 10.15-12.15, recitations, room F01

friday, h. 13.15-15.15, lesson, room B42.

Any suppression of lessons will be communicated by the teacher. Recitations are held by Prof. Alberto Bosisio.

Computer lab. This course *does not* have computer lab hours. However, an optional minicourse designed to teach the software "MATLAB" is offered to all the students. MATLAB is a software which will be useful for several courses, and this activity is not specifically related to the course of "Analisi 1". The minicourse will consist in 4 two-hour lessons, which will take place in the following dates:

October 24; November 7, 21, 28; h. 16.30-18.30, room B43.

To attend the course, interested students have to sign in, within September 28, by "Poliself" or "WebPoliSelf" (choose "evento generico" under the course "Analisi Matematica 1"). A maximum number of students is fixed, so it is important to sign in soon. Please, *sign in only if you know that you will be able to attend all the four lessons*. Further information at: http://www.inginf.polimi.it/servizi/tutorato.php?id_nav=2950.

Office hours of the teacher. I am usually available for students on Friday, 12.15-13.15 and 16.30-17.30. My office is located at "Dipartimento di Matematica" (building "La Nave", via Bonardi 9), 4th floor, phone 4567. Students are invited to arrive *at* 12.15 or 16.30. If nobody appears within 15 minutes, I feel free to go away. You can also contact me at the lessons.

Course and exams schedule. The course is held from September 15 to January 23, with Christmas Holidays from December 24 to January 6. During the week November 17-21 there will be no lessons, but an intermediate written examination ("prova in itinere"), about: real and complex numbers, elementary functions and their graphs, limits, derivatives, function study and plotting. The second "prova in itinere" will be held in the period January 26 - February 13, about: differential calculus, integral calculus, series. These arguments will be made more precise later.

Examination rules. The exam consists in a **written part** (exercises) and an **oral part** (questions about definitions, examples, statements and proofs of theorems). Exams are held on February, July and September. Students with "OFA MAT" (=bad score in the math part of the test) cannot take the exam. To take the exam is necessary to sign in at "Poliself", within the deadline. Who passes the written part of the exam is admitted to the oral part, which can modify the score of the written part. During the course two "prove in itinere" will be held: who passes both, passes the written part of the exam, and is admitted to the oral part. Other details about examination rules are explained in the web page.

Any variation to the above notices, and any further communication will be published on the web page of this course.

Final important notice for foreign students. These notices have been written in English to help foreign students, who could have some difficulties with Italian language, to understand precisely and from the very beginning of the course, some basic important facts about this course. The teacher is also available to discuss your problems in English, in his office hours. However, remember that:

this course is held in Italian;

all teaching material is in Italian;

you will be required to take the exam in Italian.

Therefore, *you must learn quickly both spoken and written Italian.*