

**MATHEMATICS 1130 D2**  
**Fall Semester 1994-95**

**TITLE:** ELEMENTARY CALCULUS I

**SCHEDULE:** Class: Tuesday Thursday 11:00 am - 12:20 pm J203  
Seminar: Tuesday 3:00 pm - 4:50 pm J203  
Wednesday 3:00 pm - 4:50 pm J203

**INSTRUCTOR:** Dr. Subhash Karnik  
Office: J206  
Extension: 2093

**TEXT:** i) C. H. Edwards, Jr and David E. Penny;  
Single Variable Calculus with Analytic Geometry  
-Fourth Edition  
ii) C. H. Edwards, Jr and David E. Penny;  
Student Solutions Manual to accompany (i)

**MARKING:** Final Examination 35%  
Term test 1 15%  
Term test 2 20%  
Quizzes 20%  
Assignments 10%

**SCHEDULE OF EXAMINATIONS:**

Term test 1 : Thursday, October 20, 1994 (Tentative)

Term test 2 : Thursday, November 24, 1994 (Tentative)

Final Examination : As will be scheduled by Registrar's  
Office in December 1994.

Quizzes, term tests and the final examination must be  
written at scheduled times.

**Attendance:** In case of instances of unavoidable absence it is student's responsibility to keep track of material covered in the missed classes and also of any announcements made. Attendance record will be maintained.

**Lateness:** In order to avoid disruption, students are requested not to be late for classes.

**Calculators:** Calculators are not allowed in quizzes, term tests and examinations.

**Food and drink:** LARGE meals are not allowed during the class time. A sandwich for survival will not be frowned at.

**Quizzes:** Generally, quizzes will be administered on Fridays for MWF class and on Thursday for T,R class. This schedule may be changed sometimes if found necessary by the instructor. The instructor will let the class know of any such change at appropriate time. Each quiz will be on the current topic usually covered by the Seminar Problem Set for the week.

**Assignments:** There will be 3 or 4 major assignments. These assignments will be harder than seminar and quizzes and geared towards getting the student ready for term tests and final examination. Assignment Problem Set will be made available to students at appropriate time. Sometimes, a quiz would be set based on the assignment questions. The instructor will advise the class in advance when such a quiz is set. In case such an assignment quiz is administered, students are not required to hand in that particular assignment. Marks for such an assignment quiz will form a part of total assignment marks.

Assignments should be legible and neatly done. Carelessly and shabbily written assignments risk a penalty of upto 10% of the total mark. If an assignment submitted is in extra-ordinarily bad shape, the instructor may refuse to accept it. Assignments have to be submitted on time. Late assignments will not be accepted.

**Seminars:** Seminars are in essence problem solving sessions and as such are a very important part of the course. The instructor is present in the seminar to help students on Seminar Problem Sets and on material covered in classes. Students can also receive help on their assignments during the seminar time. Each instructor conducts seminars differently. Sometimes quizzes are administered in the seminar time. An attendance record is maintained.

Experience of many years indicates that students who attend seminars, take the seminars seriously and complete the allotted practice usually do well in the course.

**Homework:** From time to time some home-work will be suggested from the text-book as different topics are covered. This home-work is for practice only and need not be handed in.

**Notes:** Take appropriate notes in the class placing a special mark or a symbol by the side of a concept or a problem that is important or difficult to understand or remember. It helps students immensely to go over the day's notes at home preferably the same day when the matter is fresh in their mind. Going over the notes passively like a novel does not do much good for the learning process. Work out some or all of the problems worked out in the class when going over the class notes. Then attempt home-work questions.

If you miss a class, it is important that you keep track of material covered in the class. One way to do this is to get class-notes from a peer who takes notes with care. Write the notes rather than xerox them. Kinesthetics of writing helps comprehension and retention. Xeroxing of notes should be resorted to only when one has run into time-management problems due to circumstances beyond one's control.

**Time management:** It is a good idea to apportion time for your courses in your study schedule. Definitely reserve some time for fun and re-creation activities. You need some relaxation for effective studying. After making a good study schedule, one must follow it. If a time-management problem develops during the term, re-arrange the available time wisely and then once again follow the revised plan knowing that this is the best one can do to get out of trouble. If one makes a reasonably workable time schedule and follows it, there will be most likely no occasion to re-arrange time in panic. Using a planning diary for daily activities also helps.

**Quizzes and Exam Preparation:** Remember that Mathematics is a sequential subject. Weakness in earlier chapters is definitely going to hinder comprehension and mastery of later material. One cannot accumulate Mathematics work and expect to do well by putting in a lot of concentrated effort just before exam. Mathematics has to be learnt in sequence and master it in sequence while proceeding at a reasonable pace.

It is beneficial to go over difficult questions in Seminar Problem Set of the week and also class notes the day (night) before the quiz day. Special notations placed at important and difficult details in your notes will facilitate preparation for quizzes and exams. The review of notes, seminar sets, assignments and home-work should also involve selected problem solving.

**Finally:** Everything is learnt by doing it and Mathematics is no exception to this rule. "Just do it" would be a good way to learn anything and definitely Mathematics.

GOOD LUCK.

## MATHEMATICS 1130/1140

4.

ELEMENTARY CALCULUS I	3 - 2	MA1130
	3 - 1.5	MA1140

### Prerequisite

Students with Math 30 and Math 31 background take MA 1140 while students with Math 30 only background take MA 1130.

This course is listed among the requirements in honours programs in almost all Science subjects. It is a requirement for many specialization programs in Science subjects including Mathematics, Physics, Geology, Computing Science and Chemistry. It is a requirement in the Agriculture, Forestry, Pre-veterinary and Pre-medicine programs. It is also required in the secondary Education program ( Mathematics Specialization ), and in the Business Administration and Commerce program.

### Course Contents

- Review of inequalities, lines and functions
- Limits, limit theorems, continuity ( includes trigonometric limits )
- The definition of the derivative, rules for finding derivatives
- Differentials, trigonometric differentiation
- Implicit differentiation, higher derivatives
- Applications of the derivative, maxima and minima, rates, curve sketching
- Rolle's Theorem and the Mean Value Theorem for derivatives
- Antiderivatives, area under the curve, definition of definite integral
- The fundamental Theorem of Calculus, calculations of simple integrals, method of substitution
- Numerical integration, trigonometric integration
- Application of the definite integral to area