

Calculus [MAT-1005] [MAT-1005-1]

Faculty Name

Manish Kanojia [manish.kanojia_tf@ashoka.edu.in] ,Niwas Chadha [niwas.chadha_ugta@ashoka.edu.in] ,Shivam Sahu [shivam.sahu_tf@ashoka.edu.in] ,TSSRK Rao [t.rao@ashoka.edu.in] ;

Office timing

By online appointment on Wednesdays and Fridays

Overview

This program aims to teach a first course in Calculus by a combination of mathematical rigour, hands on experience at solving problems, and numerous applications to practical problems from various fields, including epidemiology, finance and geometry.

Learning Outcomes

Students will appreciate learning several fundamental concepts and techniques of basic Calculus with attention to formal conceptual learning and will gain ample experience at applying theoretical concepts to practical problems from day to day life.

Requirements (Reading List and other materials)

We will follow

Essentials Calculus, Early transcendentals by James Stewart

Prerequisites (If Any)

Some knowledge of mathematical concepts from +2 level is desirable, this includes geometry, basic algebra (quadratic equations) and trigonometry.

Grading Rubric

Submission of assignments and in class tests will be online.

Attendance Policy

Live online interaction is very essential in order to follow the course material supplied or to read and understand from the prescribed book.

All students are strongly advised to attend all online classes without fail.

Calculus [MAT-1005] [MAT-1005-2]

Faculty Name

Aayush Soni [aayush.soni_ugta@ashoka.edu.in] ,Gaurav Bhatnagar [gaurav.bhatnagar@ashoka.edu.in] ,Manish Kanojia [manish.kanojia_tf@ashoka.edu.in] ,Ojas Dhiman [ojas.dhiman_tf@ashoka.edu.in] ;

Overview

The Calculus is a major achievement of humanity without which none of the developments in modern science, technology would have been possible. The course is likely to be a second look at the subject, and about building the intuition, knowledge and skills required for studying mathematics and other mathematical subjects.

Learning Outcomes

The Syllabus is as follows:

Number systems. Sequences and series. Functions of a real variable. Graphs of functions. Limits and continuity. Differentiation. Mean value theorem. L'Hospital rule. Maclaurin and Taylor series. Curve tracing. Riemann integral. Definite and indefinite integrals. Fundamental theorem of calculus. Applications of differential and integral calculus in areas such as optimisation and mechanics.

Requirements (Reading List and other materials)

Textbook:

1. Stewart: Essential Calculus - Early Transcendentals , 2 edition, Brooks/Cole, a part of Cengage Learning (2013)
[Edition printed for India, Nepal, Pakistan, Bangladesh, Sri Lanka]

We may require the use of commonly available free or online software, such as graphing calculators and symbolic algebra packages.

Some further books may be suggested for reference depending on the need later.

Prerequisites (If Any)

We assume that students have already done mathematics in their 11-12 th grade in school.