

AMBEDKAR UNIVERSITY DELHI
School of Undergraduate Studies

LIST OF MATHEMATICS COURSES
WINTER SEMESTER 2012-2013

1. II Semester

Course Title: M01: Introduction to Mathematical Thinking (M01)

Course Coordinator: Dr Balchand Prajapati (balchand@aud.ac.in)

Pre-Requisites: Mathematics up to XII grade level (students without XII grade mathematics who wish to take the course will need to take a special diagnostic test)

Description

This is a compulsory course for Mathematics Honours students and is open to all students satisfying the pre-requisites. The aim of the course is to introduce students to reading, writing and thinking about mathematics via proofs involving natural numbers and integers, via aspects of linear algebra and real analysis.

2. II Semester

Course Title: M02: Quantitative Methods (QM)

Course Coordinator: Ms Divya Bhambri (divya@aud.ac.in)

Pre-Requisites: Mathematics up to X grade level

Description

This is an optional discipline/ foundation course open to all students. This course will provide a set of quantitative tools that will be of use to the student irrespective of the discipline they pursue. The topics

included will enhance quantitative and analytical skills. The topics for the course have been chosen keeping in mind the requirements for quantitative skills in social sciences and humanities. The topics covered include functions and graphs, linear equations and matrices, data analysis of bivariate data.

3. IV Semester

Course Title: M07: Algebra II

Course Coordinator: Dr Saroj Bala Malik (saroj.malik@gmail.com, geetha@aud.ac.in)

Pre-Requisites: Successful completion of M03 (Algebra I).

Description:

This is a compulsory course for students of Mathematics Honours and is open to all students satisfying the pre-requisites. This continues the exploration of abstract algebra and covers topics in Group theory, Ring Theory and Linear Algebra. The topics covered in Group Theory include cyclic groups, symmetric groups, normal subgroups and quotient groups, homomorphisms. Topics in Ring Theory involve ideal, factor rings and quotient fields. The portion on linear algebra explores dimension and basis of vector spaces, rank, linear equations, and linear transformations.

4. IV Semester

Course Title: M08: Analysis II

Course Coordinator: Dr Pranay Goswami (pranay@aud.ac.in)

Pre-Requisites: Successful completion of M04 (Analysis I).

Description:

This is a compulsory course for students of Mathematics Honours and is open to all students satisfying the pre-requisites. This course involves a more rigorous study of some of the calculus topics covered in M04 (Analysis I). It gives an introduction to important mathematical techniques and results that form the foundation for further study of analysis. The topics covered here include a detailed study of real numbers, the notion of bounds, sequences and series, limits and continuity, differentiation.

5. IV Semester

Course Title: M09: Probability and Statistics

Course Coordinator: Professor Geetha Venkataraman (geetha@aud.ac.in)

Pre-Requisites Successful completion of XII grade mathematics

Description:

This is a compulsory course for students of Mathematics Honours and is open to all students satisfying the pre-requisites. The course reviews elements of classical probability and moves towards investigating discrete and continuous random variables, particularly from the view-point of modelling real life phenomena. Limit theorems of probability are studied to link the distribution of random variables to applications in data analysis. Descriptive statistics, sampling distributions, estimation, hypothesis testing and correlation and regression are also covered. There will be lab classes to support the theory classes.