Course Title: Introduction to Mathematical Thinking (M01)

Semester: II

Course Coordinator: Balchand Prajapati (balchand@aud.ac.in)
Co-teacher- Saroj Bala Malik (saroj@aud.ac.in)

Discipline Course: Mathematics (Core)

This is a compulsory course for BA Honours Mathematics students and optional for all other Honours.

II Semester, 4 credits

This course has been designed with the aim of introducing Mathematics Honours students towards reading and writing Mathematics. A certain exposure to abstract mathematics is also an aim of the course.

This course is intended to be completed in 64 hours of direct classroom teaching including time for assessments.

For non-math major students opting for this course it is desirable that the student should have taken mathematics at XII board level. For students without mathematics at the XII board level, a special aptitude test will be administered to check if the student will be able to handle the course.

Assessments:

<table>
<thead>
<tr>
<th>Components</th>
<th>Weightage</th>
<th>Schedule</th>
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</thead>
<tbody>
<tr>
<td>1. One Class Test</td>
<td>10%</td>
<td>Second week of February</td>
</tr>
<tr>
<td>2. Mid Semester Test</td>
<td>25%</td>
<td>As per AUD timetable</td>
</tr>
<tr>
<td>3. Presentation</td>
<td>15%</td>
<td>First week of April</td>
</tr>
<tr>
<td>4. End Semester Test</td>
<td>35%</td>
<td>As per AUD timetable</td>
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<tr>
<td>5. Tutorial Assessment</td>
<td>15%</td>
<td>Throughout the semester</td>
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</table>
The three main modules taught are as below:

- Discrete Elements
- Linear Algebra
- Real Analysis

**Suggested references and texts:**


Quantitative Methods (M02)

OBJECTIVES:

This will be an optional foundation course offered to undergraduate students in the second semester. It will provide a set of quantitative tools that will be of use to the student irrespective of the discipline they pursue. This course will be a 4-credit course.

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.

It is envisaged that apart from lectures and tutorials, there will also be Excel labwork as and when required and appropriate for the course.

The prerequisite for the course will be school mathematics broadly of the Xth grade CBSE level.

Where ever possible real-life examples will be used to highlight applications. There will be presentation projects involving surveys and/or visualisation as part of the course.

MAIN MODULES:

1. Functions and graphs
2. Linear Equations and Matrices
3. Statistics

Each module will have approximately 12 hrs of direct teaching. (So there will be 36 hrs of direct teaching, 8 hrs of assessment, the remaining 20 hrs will involve tutorials, supervisions, discussions and lab work.)

Course Coordinator: Dr. Kranti Kumar (kranti@aud.ac.in)

Course Team: Dr. Kramti Kumar, Dr. Ramneek Khasa (ramneek@aud.ac.in)

ASSESSMENT DETAILS WITH WEIGHTS:

1. Class test 10%  (First week of February)
2. Lab Work assessments 15%  (Throughout semester)
3. Mid semester 25%  (as per AUD academic calendar)
4. End semester 35%  (as per AUD academic calendar)
5. Group Presentations 15%  (early April)
MAIN TEXTS AND READINGS:


