Course Outline for
Basic University Mathematics - I

Course No : MAT 100 Section : 01
Semester : Spring 2016 Office: Room # 6004
Instructor : Dr. Asma Begum e-mail : ablipi@gmail.com

Tutorial Hours : S, M, T, W 12.40pm–1.40 pm, or by appointment

This is one of the courses offered by the university, which fulfils the requirement of “Numeracy” for graduation from the University. This course is mandatory for the students who wish to major in any Liberal Arts subject. The course forms a one-year standard course in University Mathematics. There is no prerequisite for this course though it is expected that the students have a fair amount of background in school mathematics.

Assessment and Grading Procedures

Students are required to come to the class on time. None will be allowed to enter the class later than 5 minutes from the start of the class. Students are requested to follow the attendance policy strictly which has been set by the university.

Home assignment and problems will be assigned for practice, regularly. Students must submit the assignment within due date declared by faculty. Assessment will be based on the following weighting:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Tests and Home assignment</td>
<td>30%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Class attendance &amp; performance</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
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</tbody>
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Note: The students are advised to sit in the exam in the prescribed dates. No alternative times or extra test will be arranged for the students who will fail to sit for their test on prescribed dates.

At the end of the course a letter grade will be awarded to students based upon their performance in all tests conducted over the length of the semester. The breakup of the final grade will be calculated with the following schedule:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>85% and above</td>
</tr>
<tr>
<td>A-</td>
<td>80% to less than 85%</td>
</tr>
<tr>
<td>B+</td>
<td>75% to less than 80%</td>
</tr>
<tr>
<td>B</td>
<td>70% to less than 75%</td>
</tr>
<tr>
<td>B-</td>
<td>65% to less than 70%</td>
</tr>
<tr>
<td>C+</td>
<td>60% to less than 65%</td>
</tr>
<tr>
<td>C</td>
<td>55% to less than 60%</td>
</tr>
<tr>
<td>C-</td>
<td>50% to less than 55%</td>
</tr>
<tr>
<td>D</td>
<td>40% to less than 50%</td>
</tr>
<tr>
<td>F</td>
<td>Below 40%</td>
</tr>
</tbody>
</table>
Tentative Dates of the Exams

(These dates may be changed with prior notification, if unavoidable circumstances arise)

Class Test : 2nd February 2016, Tuesday
Midterm Exam - I : 28th February 2016, Sunday
Midterm Exam - II : 15th March 2016, Tuesday
Final Exam : According to the green book

- [Syllabus will be declared in the class before Exam]

Recommended Text Books


Description of Course Materials

Chapter 1 : Algebraic Topics

- a) Introduction to Algebra
- b) Nature of equations, identities, inequalities.
- c) Quadratic Equation and their Solutions
- d) Surds and Indices : Index, Exponent or Power, General Rule of Surds.

Chapter 2 : Number Systems

- a) Real Number System : Real number, Integer, Natural Number, Prime Numbers, Rational Number, Irrational numbers; Absolute values, Intervals.
- b) Complex numbers : Imaginary number, algebra of complex numbers, complex roots of quadratic equations, Cube roots of unity.

Chapter 3 : Topics on Geometry

- a) Introduction to Geometry
- b) General discussion on Triangle, Quadrilateral, Circle, Sphere, Cylinder
- c) Introduction to Trigonometry : Right angle triangle and Pythagoras Theorem, Introducing Trigonometric Ratios and few Trigonometric Identities.
- d) Coordinate Geometry : Coordinates and Locus, Definition of Cartesian, Polar and spherical coordinate systems, Distance between two points.
- e) Straight Line: Definition of function, Equation of a straight line, Slope of a line, Parallel and Perpendicular lines, Collinear points.

Chapter 4 : Set Theory

- (a) Sets, Finite and Infinite sets, Equality of Sets, Null Sets, Singleton, Subset, Proper subset, Set of sets, Universal set, Power set.
- (b) Algebra of sets : Union, Intersection, Difference, Complement, De Morgan’s Laws, Venn – Euler Diagram

Chapter 5 : Matrix

- a) Definition and Classification of Matrix.
- b) Addition, Subtraction and Multiplication of two matrices.
- c) Transpose of a Matrix, Inverse of a Matrix