

LORETO COLLEGE
Department of Mathematics

TIME PLAN 2019-2020

Name of the teacher : Dr Satyabrota Kundu

Initials : SK

Teaching Objectives:

- To impart comprehensive knowledge in theoretical and empirical perspectives on the core mathematical issues.
- To indoctrinate the fundamental mathematical tools required for empirical appraisal of various mathematical problems.
- To give exposure to analytical and logical matters subsumed in mathematical theories.

1st Semester Topic-wise Time Plan

Topics	Hours allotted	Topics (as per curriculum)	Teaching method	Learning outcome (output)	Assessment
Algebra I	10	<ol style="list-style-type: none">1. Complex Numbers2. Polynomials3. Rank of a matrix4. Statements of : (i) If a polynomial $f(x)$ has opposite signs for two real values a and b of x, the equation $f(x) = 0$ has odd number of real roots between a and b. If $f(a)$ and $f(b)$ are of same sign, either no real root or an even number of roots lies between a and b. (ii) Rolle's Theorem and its direct applications. Relation between roots and coefficients, symmetric functions of roots, transformations of equations. Cardan's method of solution of a cubic equation.	Class lecture and problem solving sessions. Revisions and doubt clearing slots	Achieve a fervent understanding of basic algebra.	Class test and home assignments
Differential Calculus-I	20	<ol style="list-style-type: none">1. Rational numbers, Geometrical	Class lecture and problem	Gather	Class test

		<p>representations, Irrational number, Real number represented as point on a line — Linear Continuum. Acquaintance with basic properties of real number (No deduction or proof is included).</p> <p>2. Real-valued functions defined on an interval, limit of a function (Cauchy's definition). Algebra of limits. Continuity of a function at a point and in an interval. Acquaintance (on proof) with the important properties of continuous functions on closed intervals. Statement of existence of inverse function of a strictly monotone function and its continuity.</p> <p>3. Derivative</p> <p>4. Successive Derivative</p> <p>5. Functions of two and three variables</p> <p>6. Applications of Calculus</p>	<p>solving sessions. Revisions and doubt clearing slots</p>	<p>theoretical insights of the fundamental calculus.</p>	<p>and home assignments</p>
Differential Equation-I	10	<p>1. Order, degree and solution of an ordinary differential equation (ODE) in presence of arbitrary constants, Formation of ODE.</p> <p>2. First order equations</p> <p>3. Second order linear equations</p> <p>4. Second order differential equations</p>	<p>Class lecture and problem solving sessions. Revisions and doubt clearing slots</p>	<p>Getting skilled in problem solving techniques</p>	<p>Class test and home assignments</p>
Coordinate Geometry	20	<p>1. Transformations of Rectangular axes</p> <p>2. General equation of second degree in x and y.</p> <p>3. Pair of straight lines</p> <p>4. Equations of pair of tangents from an</p>	<p>Class lecture and problem solving sessions. Revisions and doubt clearing slots</p>	<p>Developing a strong aptitude in making basic aspects of Geometry.</p>	<p>Class test and home assignments</p>

		<p>external point, chord of contact, poles and polars in case of General conic.</p> <p>5. Polar equation of straight lines and circles. Polar equation of a conic referred to a focus as pole. Equation of chord joining two points. Equations of tangent and normal.</p> <p>6. Sphere and its tangent plane. Right circular cone.</p>			
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