# Lesson Plan

**Name : Narender Rana**
**Discipline : Common for all branches**
**Year : 1st Sem**
**Subject : Applied Mathematics**
**Code : 180012**
**Duration : 11/10/2022 to 27/01/2023**
**Work Load : 4 Lectures per week**

| Theory | |
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| **Lecture No.** | **Topics** |
| **1** | Complex numbers: definition of complex number, real and imaginary parts of a complex number. |
| **2** | Addition, subtraction and multiplication of complex numbers. |
| **3** | Division of complex numbers. |
| **4** | Conjugate of a complex number, modulus and amplitude of complex numbers. |
| **5** | Polar and Cartesian Form and their inter conversion. |
| **6** | Logarithms and its basic properties.(L1) |
| **7** | Logarithms and its basic properties.(L2) |
| **8** | Permutation and value of ${}^{n}P_{r}$ with solved examples. |
| **9** | Combination and value of ${}^{n}C_{r}$ with solved examples. |
| **10** | Binomial theorem for positive integral index with simple problems. |
| **11** | General term from binomial expansion and related problems. |
| **12** | Binomial theorem for any index with simple problems |
| **13** | Some solved problems on Binomial theorem.(L1) |
| **14** | Some solved problems on Binomial theorem.(L2) |
| **15** | Definition of Matrix and its types with examples (L1) |
| **16** | Definition of Matrix and its types with examples. (L2) |
| **17** | Addition and subtraction of Matrices. (upto $2^{nd}$ order). |
| **18** | Multiplication of Matrices (upto $2^{nd}$ order). (L1) |
| **19** | Multiplication of Matrices (upto 2nd order).(L2) |
| **20** | Determinants: Evaluation of determinants (up to 2 orders).(L1) |
| **21** | Determinants: Evaluation of determinants (up to 2 orders).(L2) |
| **22** | Solution of equations (up to 2 unknowns) by Cramer's Rule (L1) |
| **23** | Solution of equations (up to 2 unknowns) by Cramer's Rule (L2) |
| **24** | Concept of angle: measurement of angle in degrees, grades, radians. |
| **25** | Conversions of angles. |
| **26** | T-Ratios of standard angle (0°, 30°, 45° etc.) and fundamental Identities. |
| **27** | Allied angles (without proof) Sum, Difference formulae and their applications (without proof). **(L-1)** |
| **28** | Allied angles (without proof) Sum, Difference formulae and their applications |

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| | (without proof). **(L-2)** |
| **29** | Product formulae (Transformation of product to sum, difference and vice versa). (L-1) |
| **30** | Product formulae (Transformation of product to sum, difference and vice versa). **(L-2)** |
| **31** | Applications of Trigonometric terms in engineering problems such as to find an angle of elevation, height, distance etc. **(L-1)** |
| **32** | Applications of Trigonometric terms in engineering problems **(L-2)** |
| **33** | Applications of Trigonometric terms in engineering problems **(L-3)** |
| **34** | Distance Formula, Mid Point Formula. |
| **35** | Centroid of triangle. |
| **36** | Straight line: Slope of a line, equation of straight line in various standards forms (without proof).(L1) |
| **37** | Straight line: Slope of a line, equation of straight line in various standards forms (without proof).(L2) |
| **38** | Examples based on slope intercept form, intercept form and one-point form of straight line. |
| **39** | Examples based on two-point form, normal form and general form of straight line.(L1) |
| **40** | Examples based on two-point form, normal form and general form of straight line.(L2) |
| **41** | Angle between two straight lines. |
| **42** | Intersection of two straight lines . |
| **43** | Concurrency of lines. |
| **44** | Parallel and perpendicular lines, perpendicular distance formula |
| **45** | Conversion of general form of equation to the various forms(L1) |
| **46** | Conversion of general form of equation to the various forms(L2) |
| **47** | Circle: General equation of a circle and identification of centre and radius of circle. (L-1) |
| **48** | Circle: General equation of a circle and identification of centre and radius of circle. (L-2) |
| **49** | To find the equation of a circle when centre and radius are given and when coordinates of end points of a diameter are given(L1) |
| **50** | To find the equation of a circle when centre and radius are given and when coordinates of end points of a diameter are given(L2) |
| **51** | To find the equation of a circle when three points lying on its .(L1) |
| **52** | To find the equation of a circle when three points lying on its .(L2) |
| **53** | Theoretical introduction of MATLAB (L1) |
| **54** | Theoretical introduction of MATLAB(L2) |
| **55** | MATLAB or Scilab as simple calculator(addition and subtraction values)(L1) |
| **56** | MATLAB or Scilab as simple calculator(addition and subtraction values)(L2) |

**Note: There will be Class Tests; Assessment Tests; Quizzes etc. will be given as per Academic Calendar.**