**Depatment of Mathematics**

**Lecture Plan (Engg. Maths-II KAS-203)**

**w.e.f. 16-01-2020**

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| **Unit** | **Course Topics** | **No. of Lectures** |
| **Module – I: Ordinary Differential Equation**  | Solution of linear differential equation of n’th order with constant coefficientsSimultaneous linear differential equationSolution of second order linear differential equation with variable coefficients: Reduction of order, Normal form and By changing independent variableMethod of variation of parametersCauchy-Euler equationSeries solutions (Frobenius Method) | **2****2****3****2****2****2** |
| **Module – II: Multivariable Calculus**  | Improper IntegralsBeta and Gamma functions and their propertiesDirichlet’s integral and its applicationsApplication of definite integrals to evaluate surface areas and volume of revolutions |  **3** **3** **3** **3** |
| **Module– III: Sequences and Series** | Definitions of sequences and series with examplesConvergence of sequence and seriesTests for convergence of series : Ratio test, D’Alembert test and Rabbe’s testFourier seriesFourier half-range Sine and Cosine series | **2****2****3****3****2** |
| **Module – IV: Complex Variable (Differentiation)** | Limit, Continuity and Differentiability Functions of complex variable, Analytic functionCauchy-Riemann equations (Cartesian and Polar forms)Harmonic functionMethod to find Analytic functionsConformal mapping, Mobius transformation and their properties | **2****2****2** **2** **2** **3**  |
| **Module – V:****Complex Variable (Integration)** | Complex integrals and Contour integralsCauchy-Goursat theoremand Cauchy integral formula Taylor’s series, Laurent’s series and Liouvilles’s theoremSingularities, Classification of singularitiesZeros of analytic functions, ResiduesMethod of finding residues, Cauchy Residue theoremEvaluation of real integrals of the type  | **2****2****2****1****1****2** **3** |
|  | Total | **72** |