Name of the Teacher: Madhu Garg

Class: M.Sc.1St Year (1stSemester), Real Analysis (Paper –MM402)

**Lesson Plan**

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| **S No** | **Period** | **Topics to be Covered** | **Academic Activity to be Organized** |
|  | **17-31 July 2017** | **Definition and existence of Riemann Stieltjes integral, properties of the integral,integration and differentiation** | **Group Discussion** |
|  | **01-31 Aug 2017** | **the fundamental theorem of integral calculus, integrationby parts, integration of vector-valued functions, Rectifiable curves.** | **Oral Presentations** |
|  | **01-30 Sept 2017** | **Pointwise and uniform convergence, Cauchy criterion for uniform convergence,**  **Weirstrass M-test, Abel’s test and Dirichlet’s test for uniform convergence, uniformconvergence and continuity, uniform convergence and Riemann Stieltjes integration,uniform convergence and differentiation, existence of a real continuous nowheredifferentiable function, equicontinous families of functions, Weierstrass approximation** | **Oral Presentations** |
|  | **01-31 Oct 2017** | **Functions of several variables : linear transformations, Derivative in an open subset ofRn, Chain rule, Partial derivatives, directional derivatives, the contraction principle,inverse function theorem, Implicit function theorem, Jacobians, extremum problems with**  **constraints, Lagrange’s multiplier method, Derivatives of higher order, mean valuetheorem for real functions of two variables, interchange of the order of differentiation,** **Power Series : Uniqueness theorem for power series, Abel’s and Tauber’s theorem,** | **Group Discussion** |
|  | **01-13 Nov 2017** | **Taylor’s theorem, Exponential & Logarithm functions, Trigonometric functions, Fourierseries, Gamma function** | **Test** |

**Topics of Assignments/ Class Tests to be given to the Students:**

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| **Assignment 1** | **existence of a real continuous nowheredifferentiable function** |
| **Assignment 2** | **equicontinous families of functions, Weierstrass approximation** |
| **Class Test** | **Pointwise and uniform convergence, Cauchy criterion for uniform convergence,Weirstrass M-test, Abel’s test and Dirichlet’s test for uniform convergence, uniformconvergence and continuity, uniform convergence and Riemann Stieltjes integration,uniform convergence and differentiation,** |