# LESSON PLAN

Name of Assistant Professor:

Class: B.Sc. Non medical. -4<sup>th</sup> sem

Subject: Mathematics (Special Function and Integral Transforms)

| Week | Topic/Chapter/Activity |
|------|------------------------|
| Week 1 | Series Solution of differential equations<br>Power series method, Definition of Beta and Gamma functions |
| Week 2 | Bessel equation and its solution, Bessel functions and their properties- Convergence, |
| Week 3 | Recurrence relations and Generating functions, Orthogonality of Bessel functions |
| Week 4 | Legendre and Hermite differential equations and their solutions. Legendre and Hermite's function and their properties |
| Week 5 | Recurrence relations and generating functions. Orthogonality of Legendre and Hermite's polynomials. |
| Week 6 | Rodrigues' Formula for Legendre and Hermite polynomials, Laplace Integral Representation of Legendre polynomial. |
| Week 7 | Laplace Transforms: Existence theorem for Laplace Transform, Linearity of the Laplace transforms. |
| Week 8 | Laplace transforms of derivatives and integrals, Differentiation and Integration of Laplace transforms, Convolution theorem. |
| Week 9 | Inverse Laplace transforms, Convolution theorem, Inverse Laplace transforms of derivatives and integrals, Solution of ordinary derivatives and integrals using Laplace transforms. |
| Week 10 | Fourier transforms: Linearity property, Shifting, Modulation, Convolution theorem. |
| Week 11 | Fourier transforms of derivatives, Relation between Fourier transforms and Laplace transforms. |
| Week 12 | Praseval's identity for Fourier transforms, Solution of differential equations using Fourier transforms. |