SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Mathematics)
Semester: IV
Syllabus with Effect from: November-2013

Paper Code: PS04EMTH15	Total Credit: 4
Title Of Paper: Relativity - II	

Unit	Description in detail	Weighting (%)
I	Essential Riemannian geometry, space-time fundamental tensors, Christoffel symbols, Riemann tensor, Ricci tensor, Einstein tensors in general relativity.	25%
II	Metric for spherically symmetric space-times, Schwarzschild exterior solution, various forms of Schwarzschild solution. The general relativistic Kepler problem and crucial tests of GR, Kruskal coordinates and the black hole, Schwarzchild solution.	25%
III	Relativistic cosmology, observational background, cosmological postulates, Robertson-Walker metric and cosmological red shift, cosmological field equations.	25%
IV	Friedmann models, radiation models. Cosmological models: Einsein's equations and Robertson-Walker metric, static models of the universe, Non-static models of the universe.	25%

Basic Text & Reference Books:-

> Adler, R., Bazin, M. and Shiffer, M., Introduction to general relativity (Second Edition). McGraw Hill.
> Narlikar, J.V., General relativity and cosmology, Mac Millan.