MA-308 DIFFERENTIAL GEOMETRY-II

Definition and examples of manifolds; Differential maps; Submanifolds; Tangents; Coordinate vector fields; Tangent spaces; Dual spaces; Multilinear functions; Algebra of tensors; Vector fields; Tensor fields; Integral curves; Flows; Lie derivatives; Brackets; Differential forms; Introduction to integration theory on manifolds; Riemannian and semi-Riemannian metrics; Flat spaces; Affine connextions; Parallel translations; Covariant differentiation of tensor fields; Curvature and torsion tensors; Connexion of a semi-Riemannian tensor; Killing equations and Killing vector fields; Geodesics; Sectional curvature.

RECOMMENDED BOOKS:

1.   Bishop, R.L. and Goldberg, S.I., Tensor Analysis on Manifolds, Dover Publications, Inc. N.Y., 1980.
2.   do Carmo, M.P., Riemannian Geometry, Birkhauser, Boston, 1992.
3.   Lovelock, D. and Rund, H. Tensors., Differential Forms and Variational Principles, John-Willey, 1975.
4.   Langwitz, D., Differential and Riemannian Geometry, Academic Press, 1970.
5.   Abraham, R., Marsden, J.E. and Ratiu, T., Manifolds, Tensor Analysis and Applications, Addison-Wesley, 1983.