

MANGALORE UNIVERSITY
DEPARTMENT OF BIOSCIENCES

M.Sc. ENVIRONMENTAL SCIENCE

ESS 504 ENVIRONMENTAL MANAGEMENT TOOLS

39 hrs.

Course Outcomes:

CO1 Learn the principles of remote sensing.

CO2 Know the applications of statistics in environmental studies.

CO4 Study information technology and its applications in environmental data analysis.

CO5 Understand the applications of GIS.

UNIT I (13 hours)

Remote sensing: Principles and basic concepts. Earth observational satellites – Landsat, SPOT, NOAA for environmental monitoring, IRS series, remote sensing platforms, principles, Aerial platforms, aerial photography and its principles, Construction of Base maps and Thematic maps like vegetation resource map, geological resources map, soil resource map, water resource map etc. using IRS satellite data. GIS applications.

UNIT II (13 hours)

Information technology: Components of computers, hardware and software, machine language, compiler and interpreter, high level language, C language, Lotus, MS Word. Application of computer in environmental data analysis: Forecasting of weather, flooding, seismic data analysis; natural resource database management.

UNIT III (13 hours)

Application of statistics in environmental studies: Sampling techniques, Measures of Central tendency - Mean, Median and Mode; Frequency distribution, graphical and diagrammatic representations of data; Measures of Dispersion - Range, Variance, Standard deviation, Standard error. Tests of significance (X^2 , 't' and 'F' tests), Regression and Correlation analysis. Analysis of variance, Statistical packages.

References:

1. Schultz, G.A., 2002. Remote Sensing in Hydrology & Water Management.
2. Vidal, A., Remote Sensing and Geographic Information Systems in Irrigation and Drainage; Methodological Guide and Applications.
3. Manual of Remote Sensing, 1980. Vol. I and Vol. II, American Society of Photogrammetry, 4th Ed., Falls Church.
4. Avery T.E and G.L Berlin, Interpretation of Aerial Photographs , 4th Ed, Bergress Minneapolis, Minn, 1985
5. Bruno Marcolongo and Franco Mantovani, 1997. Photogeology, Remote Sensing Applications in Earth Science, Oxford and IBH Publ. Co. Pvt., New Delhi.
6. Pandey, S.N., 1987. Principles and Applications of photogeology, Wiley Eastern.
7. Rees, W.G., 1990. Physical Principles of Remote Sensing, Cambridge University Press.
8. Sabins, F.F., 1986. Remote Sensing Principles and Interpretations, 2nd Ed., W.H Freeman and Company, New York.
9. Siegel, B.S. and Gillespie, A.R. (Eds.), 1980. Remote Sensing in Geology, John Wiley and Sons, New York.
10. Thomas, M., Lillesand and Ralph W Kiefer, Remote Sensing and Image Interpretations, John Wiley and Sons, New York, 1994.

11. Verbyla, D., 1995. Satellite remote sensing for natural resources; Lewis Publishers, Boca Rotaon, FL.
12. Wolf, P.R., 1983. Elements of Photogrammetry, 2nd Ed., McGraw-Hill, New York.
13. Nishit Mathur, 2010. Fundamentals of Computers, Aph Publishing Corporation

