National Institute of Technology Meghalaya **CURRICULUM** An Institute of National Importance **Master of Technology** Year of Regulation Programme 2025 Department **Civil Engineering** Semester II Credit Structure Marks Distribution Course Course Name Pre requisite Code L C INT MID **END** Total 0 1 2 **CE 586 Remote Sensing & GIS Lab NIL** 100 100 1. To train students in the use of geospatial tools for environmental Able to Use remote sensing software for image CO1 mapping and analysis. processing and classification. 2. To introduce satellite data processing and thematic map Able to Apply GIS tools for environmental CO2 modeling and analysis. generation. 3. To use GIS for decision support in environmental planning and Course Able to Interpret satellite images for land Course CO₃ Outcomes disaster management. use/land cover studies. Objectives Able to Georeference and digitize spatial features CO4 for environmental databases. Able to Analyze spatial data for environmental CO₅ impact assessments and planning. Mapping with Program Outcomes (POs) Mapping with PSOs No. COs PO₁ PO₂ PO4 PO₅ **PO6** PO7 PO9 PO10 PO11 PO12 PSO₁ PO₃ PO8 PSO₂ 3 3 2 3 2 0 0 3 0 3 3 0 3 0 CO1 1 0 2 0 0 3 3 3 2 CO₂ 0 0 3 3 3 2 3 0 3 0 3 0 3 0 0 0 3 3 CO3 0 3 3 2 3 0 0 0 3 0 3 3 0 3 CO4 3 0 0 0 3 3 2 2 0 3 0 3 3 3 5 CO₅ **SYLLABUS** Content Hours COs No. Image acquisition and georeferencing CO1, CO3, Ι 3 **CO5** Satellite image enhancement and band combination 3 II **CO1** Supervised and unsupervised classification 3 III CO₁ Land use/land cover (LULC) mapping and change detection 3 IV CO1, CO3, Watershed delineation and analysis using DEM 3 CO1, CO3, V **CO4** Air/water pollution hotspot mapping 3

PSO3

2

2

2

2

2

CO1, CO3,

CO5 CO1, CO3,

CO4

CO1, CO3,

CO4

3

3

24

Essential Readings

VI

VII

VIII

1. J. B. Campbell and R. H. Wynne, Introduction to Remote Sensing, 5th ed., New York, NY, USA: Guilford Press, 2011.

Total Hours

2. Bhatta, Remote Sensing and GIS, 3rd ed., New Delhi, India: Oxford Univ. Press, 2021.

Overlay and buffer analysis for environmental planning

Hazard zonation mapping (flood, landslide, air quality)