MA855 Fractal Analysis 4 0 0 4

Unit 1

Metric Spaces – Equivalent Spaces – Classification of Subsets – Self-Similarity – Classical Fractals.

Unit 2

Space of Fractals – Transformations on Metric spaces – Contraction mappings – Construction of Fractals.

Unit 3

Hausdorff Measure – Hausdorff Dimension – Fractal Dimension – Fractal Interpolation Functions – Hidden variable Fractal Interpolation – Space filling Curves.

Unit 4

Julia Sets - Iterated Function Systems Whose Attractors Are Julia Sets - Measures on Fractals – Introduction to Invariant Measures on Fractals - Fields and Sigma-Fields – Measures – Integration.

Unit 5

Parameter spaces and Mandelbrot sets – Mandelbrot Sets for Pairs of Transformations – The Mandelbrot Set for Julia Sets.

Text Book:

1. M. F. Barnsley, " Fractals Everywhere", Second Edition, Elsevier, 1993.
2. Kenneth Falconer, "Fractal Geometry – Mathematical Foundations and Applications", Second Edition, John Wiley & Sons, Ltd, 2003.