13-EC522 **RADAR SIGNAL PROCESSING**

SYLLABUS

Angle-of-Arrival Estimation in the Presence of Multipath: The Low-Angle Tracking Radar Problem, Spectrum Estimation Background, Thomson's Multi-Taper Method, Test Dataset and a Comparison of Some Popular Spectrum Estimation Procedures, Multi-taper Spectrum Estimation, *F*-Test for the Line Components, Experimental Data Description for a Low-Angle Tracking Radar Study, **Time–Frequency Analysis of Sea Clutter:** An Overview of Non-stationary Behavior and Time–Frequency Analysis, Theoretical Background on Non-stationary, High-Resolution Multi-taper Spectrograms, **Dynamics of Sea Clutter:** Statistical Nature of Sea Clutter: Classical Approach, Is There a Radar Clutter Attractor, Hybrid AM/FM Model of Sea Clutter, Evidence for Amplitude Modulation, Frequency Modulation, and More, Modeling Sea Clutter as a Non-stationary Complex Autoregressive Process **Sea-Clutter Non-stationary: The Influence of Long Waves:** Radar and Data Description, Statistical Data Analyses, Modulation of Long Waves: Hybrid AM/FM Model, Non-stationary AR Model, Parametric Analysis of Texture Process **Two New Strategies for Target Detection in Sea Clutter:** Bayesian Direct Filtering Procedure, Operational Details, Experimental Results on the Bayesian Direct Filter, Additional Notes on the Bayesian Direct Filter, Correlation Anomally Detection Strategy

TEXT BOOKS

1. I. Haykin, Simon S, "Rader Adaptive signal processing", John Wiley & Sons
2. Mark A Richards, "Fundamentals of Radar signal processing", M C Graw Hill