



International Master's Program in Telecommunication Engineering

## **Course Name: Digital Signal Processing 數位信號處理**

### **Course Objects:**

In this class, we aim to give basic treatment knowledge of the discrete-time signal processing including linear systems, sampling, filtering and filter design, reconstruction, the discrete-time Fourier and z-transforms, Fourier analysis of signals, the fast Fourier transform, and spectral estimation. We will teach the basic theory for each of the transform domains and provide illustrative examples.

### **Course Syllabus:**

- Discrete Time-Signals and Systems
- The z-Transform
- Sampling of Continuous-Time Signals
- Transform Analysis of Linear Time-Invariant Systems
- Structures for Discrete-Time Systems
- Filter Design Techniques
- The Discrete Fourier Transform
- Computation of the Discrete Fourier Transform