## Fundamentals of Electrical Engineering

## Spectral Analysis

- Windowing
- Short-time Fourier analysis



Speech Spectrogram



Reverse-engineering: Highest frequency about 5.5 kHz, implying  $R_S = 11$  kHz









- Hamming window is better for computing the spectrum, but...
- Need to overlap the windowed sections to let all the data through







Speech Spectrogram



• Must determine window length, overlap and transform length

