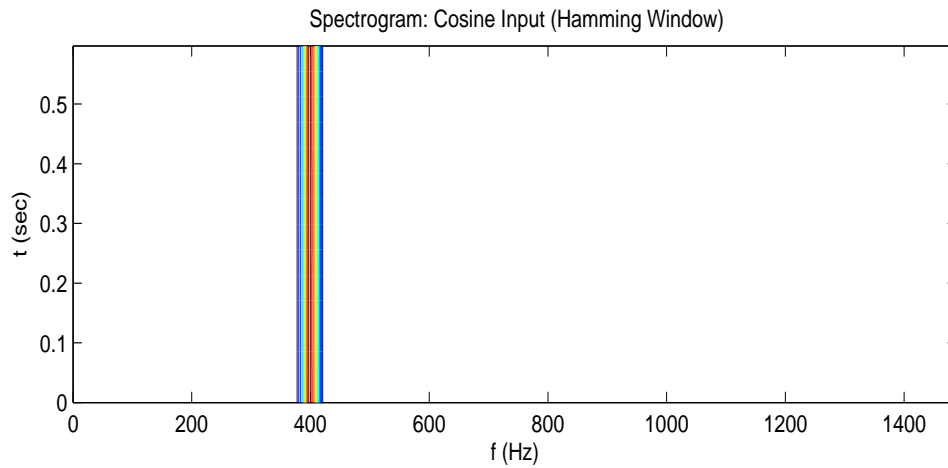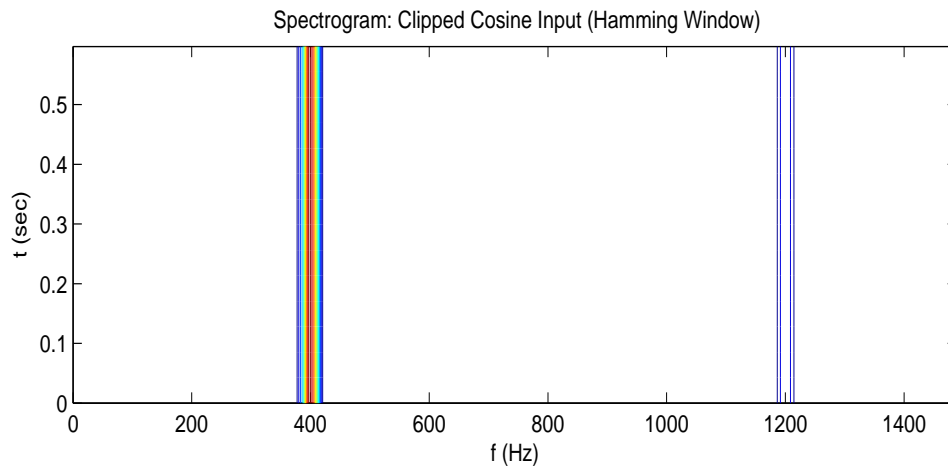3.18 Use the GUI module *g_spectra* to plot the spectrogram of the following signals. Use $f_s = 3000$ Hz and $N = 2048$ samples for each.

(a) Cosine of unit amplitude and frequency $f_a = 400$ Hz

(b) Cosine of unit amplitude and frequency $f_s = 400$ Hz, clipped to $[-0.5, 0.5]$

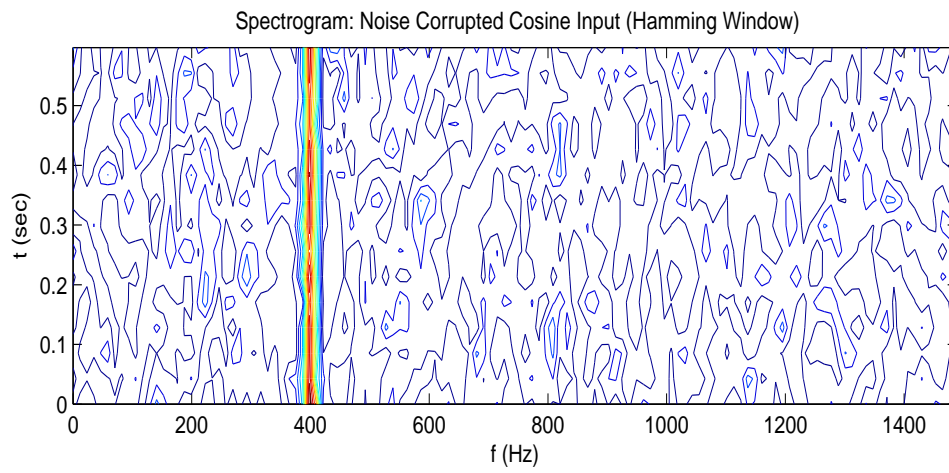(c) Cosine of unit amplitude and frequency $f_a = 400$ Hz, plus white noise uniformly distributed over $[-1.5, 1.5]$

Solution

(a)

(b)

Spectrogram: Noise Corrupted Cosine Input (Hamming Window)

(c)