

**HKUSTx: ELEC1200.2x A System View of Communications: From Signals to Packets (Part 2)**

- ▶ Pre-course Materials
- ▶ Topic 1: Course Overview
- ▶ Topic 2: Lossless Source Coding: Hamming Codes
- ▶ Topic 3: The Frequency Domain
- ▶ Topic 4: Lossy Source Coding
- ▶ Topic 5: Filters and the Frequency Response
- ▶ Topic 6: The Discrete Fourier Transform

## LAB 5 - OVERALL OBJECTIVES

In this lab, we will study digital communication using two modulation schemes: Binary Phase-Shift Keying (**BPSK**) and Quadrature Phase-Shift Keying (**QPSK**). These two modulation schemes convey data by changing the phase of the carrier wave in accordance to the digital input signal. The phase of transmitted signal itself conveys the information and the receiver needs a synchronized carrier signal to recover the original message. You will complete three tasks:

In task 1, you will implement Binary Phase-Shift Keying (BPSK).

In task 2, you will implement Quadrature Phase-Shift Keying (QPSK).


In task 3, you will investigate the effect of phase mismatch between the carriers used by the transmitter and receiver in a QPSK communication system.

▶ Topic 7: Signal  
Transmission -  
Modulation


▶ Topic 8: Signal  
Transmission -  
Demodulation

▼ Topic 9: IQ  
Modulation


**9.1 Binary Phase Shift  
Keying**

Week 5 Quiz due Nov 30,  
2015 at 15:30 UTC 


**9.2 I/Q Modulation**

Week 5 Quiz due Nov 30,  
2015 at 15:30 UTC 

**9.3 Quadrature Phase  
Shift Keying**

Week 5 Quiz due Nov 30,  
2015 at 15:30 UTC 

**9.4 Constellation  
Diagrams**

Week 5 Quiz due Nov 30,  
2015 at 15:30 UTC 

**9.5 Lab 5 - BPSK and  
QPSK**

Lab due Nov 30, 2015 at  
15:30 UTC



- ▶ Topic 10: Summary and Review
- ▶ MATLAB download and tutorials
- ▶ MATLAB Sandbox

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