This is an introductory graduate course to digital communication theory. It is designed to introduce graduate students to the fundamental concepts in digital signalling over the additive white Gaussian noise (AWGN) channel. Channel models other than the AWGN channel are treated in the follow-up course SYSC 5605 (ELG 6165) Advanced Digital Communications.

This course is offered as ELG 6154 by the University of Ottawa, which is our partner in the joint graduate program within the Ottawa Carleton Institute of Electrical and Computer Engineering (OCIECE).

Prerequisites and Co-requisites:
- A graduate course on stochastic processes, SYSC 5503 or equivalent (can be taken concurrently).

Recommended Textbook:

Optional Additional References:

Marking Scheme:
- 25% Assignments
- 75% Final Examination

Course Outline:
- **Introduction**: Elements of digital communication systems. Review of signals and systems. Review of basic concepts in probability theory. Digital signals and their spectral characteristics.
- **Channel Models**: Binary Symmetric Channel, AWGN, ISI, Multipath Fading.
- **Channel Capacity**: Channel models and channel capacity. Shannon limit.
- **Error Detection and Correction**: Block and convolutional codes. Viterbi and MAP algorithms. Trellis-Coded Modulation.