

Course Content

Course Title (English)	Digital Communications (I)
Course Title (Chinese)	數位通信 (一)
Credit	3
Instructor	Prof. Char-Dir Chung 鐘嘉德 教授
Outline	<p>Digital communication techniques are important and fundamental in modern communication applications. These techniques include data modulation and demodulation, signal synchronization, source coding and decoding, channel coding and decoding, channel equalization and estimation. Familiarity with various communication techniques has become a must for communication engineers to delve into modern communication systems and circuits. In the course, we shall provide students with fundamentals and theoretical frameworks for the design and analysis of linear modulation systems, trellis-coded modulation system and spread-spectrum modulation system. The students majoring in communications are strongly recommended to take this course. The course consists of lectures organized in class notes.</p>
Goal	<p>Below is the course content:</p> <ol style="list-style-type: none">1. Introduction2. Random Variables and Random Processes (reference 1)3. Decision and Estimation Theories (reference 2, chap. 2)4. Digital Modulation Techniques: Optimum Receiver Principles, Digital Modulation and Demodulation in AWGN, Useful Digital Modulation Systems, Power Spectral Density of Digital Modulations, Orthogonal Frequency-Division Multiplexing (reference 3, chap. 4; reference 4, chaps. 5

	and 10; reference 5, chaps. 4 and 5; reference 6, chap. 2) 5. Trellis Coded Modulation Techniques (reference 7, chap. 3) 6. Spread Spectrum Modulation Techniques (references 8 & 9)
English Teaching	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Teaching Material	<input checked="" type="checkbox"/> English <input type="checkbox"/> Chinese