COURSE DETAIL

INFORMATION THEORY
Country Sweden
Host Institution Lund University
Program(s) Lund University
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Engineering Computer Science
UCEAP Course Number 149
UCEAP Course Suffix
UCEAP Official Title INFORMATION THEORY
UCEAP Transcript Title INFORMATION THEORY
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description
This course provides an up-to-date introduction to topic information theory. The course emphasizes both the formal development of the theory and the engineering implications for the design of communication systems and other information handling systems. The course includes: Shannon's information measure and its relatives, both for the discrete and continuous case; Three fundamental information theorems: typical sequences, source coding theorem and channel coding theorem; Source coding: optimal coding and construction of Huffman codes, as well as universal source coding such as Ziv-Lempel coding (zip, etc.); Channel coding: principles of error detection and correction on a noisy channel, mainly illustrated by Hamming codes; Gaussian channel: continuous sources and additive white noise over both band limited and frequency selective channels; Derivation of the fundamental Shannon limit; Discrete input Gaussian channel: Maximum achievable rates for PAM and QAM, Coding and Shaping gain, and SNR gap; Rate distortion theory: source coding theorem and the fundamental limit revisited when a certain level of distortion is allowed.

Language(s) of Instruction
English

Host Institution Course Number
EITN45

Host Institution Course Title
INFORMATION THEORY

Host Institution Course Details

Host Institution Campus
Engineering

Host Institution Faculty

Host Institution Degree

Host Institution Department
Engineering- Computer Science

Course Last Reviewed

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