

Course Content

Course Title (English)	Introduction to Digital Speech Processing
Course Title (Chinese)	數位語音處理概論
Credit	3
Instructor	Prof. Lin-Shan Lee 李琳山 教授
Outline	<p>This is a first course on computer processing of speech signals for undergraduate students in electrical engineering and computer science. Both theoretical issues and practical problems will be discussed, and both fundamental concepts and research topics will be emphasized. The viewpoints will be centralized on the vision of spoken language processing under-network environment.</p> <p>Part I: Fundamental Topics</p> <ol style="list-style-type: none">1.Introduction2.Basic Concepts in Speech Recognition3.Research Roadmap in this Area4.More about Hidden Markov Models (HMM)5.Acoustic Modeling6.Language Modeling7.Speech Signals and Front-end Processing8.Linguistic Decoding and Search Algorithm <p>Part II: Research Topics</p> <ol style="list-style-type: none">1.Speaker Variabilities: Adaptation and Recognition2.Latent Semantic Analysis for Linguistic Processing3.Voice-based Information Retrieval

	<p>4. Robustness for Acoustic Environment</p> <p>5. Spoken Document Understanding and Organization</p> <p>6. Some Fundamental Problem-solving Approaches</p> <p>7. Keyword Spotting and Utterance Verification</p> <p>8. Spoken Dialogues</p> <p>9. Distributed Speech Recognition and Wireless Environment</p>
Goal	<p>課程所需要的最主要基礎能力是數學模型(機率、線性代數)及軟體程式，前半強調基礎背景知識，後半則著重研究課題，讓修課同學體會由基礎走入研究的歷程。內容深度適合電機系或資工系大三或大四同學選修。</p>
English Teaching	<p><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>
Teaching Material	<p><input checked="" type="checkbox"/> English <input type="checkbox"/> Chinese</p>