

CSE 551/651: Structure of Spoken Language Syllabus

Course Title: CSE 551/651: Structure of Spoken Language

Instructor: John-Paul Hosom, hosom@cse.ogi.edu

Term: Fall, 2005

Class Web Site:

<http://www.cse.ogi.edu/class/cse551/>

The lecture notes and homework assignments will be handed out in class and put on the web site as the course progresses.

Schedule:

Monday, Wednesday 11:30 am to 12:50 pm in Room WCC 407

Classes are September 26 – November 30.

Finals Week is December 5 – 9.

Class format:

Each class will typically have the following topics:

- (a) Review and grade homework (spectrogram reading exercises)
- (b) Lecture
- (c) Spectrogram reading

Reviewing the homework assignments will take 5 to 10 minutes; the remainder of the class time will be roughly split between the lecture and spectrogram reading.

Grading:

The final grade will be based on the following four areas, with approximate percentages of each area contributing to the final grade:

Project 1: Read/Review Literature Papers	18%
Midterm	25%
Final	30%
Homework	$18 \times 1.5\% = 27\%$

- There are a lot of homework assignments, but each one should not take very long to complete. Each assignment will require reading three spectrograms of individual words.
- The midterm exam will be in-class; the final exam will be take-home.
- Late homework generally not accepted, unless arrangements are made in advance.
- As an alternative to Project 1, you may collect and transcribe a small corpus of your speech or implement code on a relevant topic... more detail later.

Recommended Textbook:

A Course in Phonetics

Peter Ladefoged

3rd edition or later, ISBN 0-15-500173-6

Other Recommended Reading:

(See me if you have problems obtaining a copy)

An Introduction to the Psychology of Hearing

(Brian C. J. Moore, 1997)

The Physiology of Speech and Hearing: An Introduction

(Raymon Daniloff, Gordon Schuckers, Lawrence Feth, 1980)

The Acoustics of Speech Communication

(J. M. Pickett, 1999)

Acoustics of American English Speech: A Dynamic Approach

(Joseph P. Olive, Alice Greenwood, John Coleman, 1993)

Speech Communications: Human and Machine

(Douglas O'Shaughnessy, 2000)

Generative Phonology

(Sanford A. Schane, 1973)

Lecture Content:

1st Half of Course: Descriptions of Speech

Visualization of the speech signal (power spectrum)

Introduction to phonetics

Distinctive phonetic features

Symbols for phonetic transcription

Acoustic-Phonetics

Coarticulation

Prosody

2nd Half of Course: Modeling and Human Processing of Speech

Representations of speech: LPC, PLP, MFCC

The source-tract model of speech production

Sound perception by the ear

Speech perception: components

Speech perception: complete models

Text-to-speech technology

Automatic speech recognition technology

Spectrogram-Reading Content:

Vowels

Fricatives

Plosives

Nasals

Approximants

Affricates

Sentence-Level Speech

Speech in Noise

(Additional) Variability in Speech