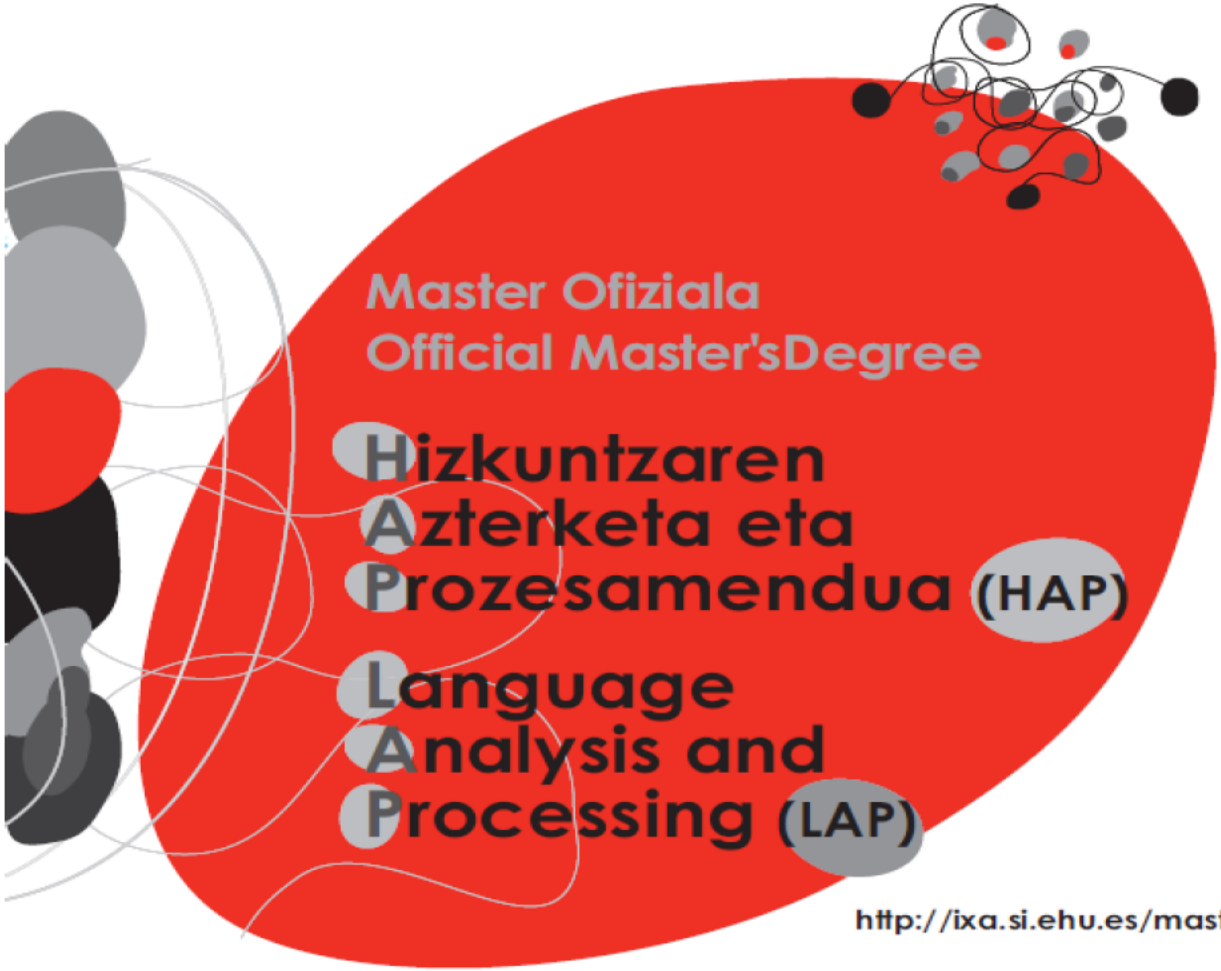
Erasmus Mundus



Language and Communication Technologies

Universidad del País Vasco | Euskal Herriko Unibertsitatea

MDE
Master eta Doktorego Eskola
Escuela de Máster y Doctorado
Master and Doctoral School

lct

Erasmus Mundus

Speech Processing

Basic data about the course Speech Processing

- ECTS credit number 4.5 ECTS (Part I)
- Teaching staff
  - Communication Engineering department (Faculty of Engineering of Bilbao)
  - Inma Hernáez inma.hernaez@ehu.eus

    94 601 3969 (P3F20)
  - Ibon Saratxaga ibon.saratxaga@ehu.eus

    94 601 7264 (P3F25)

Goals

- Learn the basic principles of Speech Processing and Speech Technologies
- Learn the fundamentals of the speech production and speech perception mechanisms
- To be able to correctly use the basic tools to analyze, visualize and process audio signals in general and speech signals in particular

Syllabus

- Lesson 1: Speech production and perception
- Lesson 2: Basic concepts about signals & systems (Part I & Part II)
- Lesson 3: Speech signal: representations (Part I & Part II)

Practices

- Short tasks and excercises
- Practice 1: Introduction to audio managing software
- Practice 2: Basic speech signal analysis
  - Part I
  - Part II

Methodology

- Oral lectures
  - Presentations available at *egela*
  - Evaluation of quick Tasks
- Lab practices
  - Software for signal analysis
    - MATLAB
  - Specific software for speech processing
    - Speech Analyzer, Praat, Audacity
  - Evaluation:
    - Weekly tasks
    - Reports from the lab practices:P2.1 14th Jan; P2.2-18th Feb.
    - Written exam 15th Feb.

Evaluation Part I

- Written examination 50 %
  - Min. 3,5 / 10
- Practical tasks 50 %
  - Min. 3,5 / 10
  - Report P2 30% (Part I 20%, Part II 10%)
  - Weekly tasks 20%

Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
8-12Nov					15:00-19:00
15-19Nov		15:00-19:00			
29Nov-3Dec		15:00-19:00			
13-17Dec		16:30-20:00		15:00-17:30	
20-24 Dec		15:00-19:00			
10-14 Jan					P2.1 Report
31Jan-4Feb		15:00-18:45			
7-11Feb		15:00-18:45			
14-18Feb		15:00-18:45 Final exam			P2.2 Report

Bibliography

- Oktay Alkin; "*Signals and Systems A MATLAB Integrated Approach*", CRC Press, 2014
- Zoher Z. Karu; "*Signals and Systems Made Ridiculously Simple*"; Zizi Press; 1995.
- Oppenheim, A.V.; Willsky, A.S.; "*Signals and Systems*", (2nd Edition); Upper Saddle River, NJ: Prentice-Hall, 1997.
- Haykin, S.; van Veen, B.; "*Signals and Systems*", (2nd Edition); John Wiley & Sons; 2002.
- A classical: Fant: Acoustic Theory of Speech Production (1960)
- "The Production and Perception of Speech" Mark Tatham Katherine Morton (1997) -several versions and editions
- Speech perception: R. Munkongand B. H. Juang, "Auditory perception and cognition" inIEEE Signal Processing Magazine, vol. 25, no. 3, pp. 98-117, May 2008.doi: 10.1109/MSP.2008.918418
- http://auditoryneuroscience.comfor a general understanding of sound and brain. Lots of videos.
- Simon King's video lectures: https://speech.zone/courses/speech-processing/