Advanced Voice Analysis and Characterization   2015/2016

Code: 103705
ECTS Credits: 6

Degree	Type	Year	Semester
2500893 Speech therapy	OT	3	2
2500893 Speech therapy	OT	4	2

Contact

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Use of languages

Principal working language: english (eng)

Other comments on languages

The course lingua franca is English. However language doubts will be clarified whenever necessary. Students are free to use the language of their preference.

Teachers

David Garcia Quintana

Prerequisites

Both 3rd year and 4th year SLP degree students are welcome. It is highly recommended that students enrolling in the course passed the courses *Física Acústica i Audiologia* (1st year), and *Alteracions de la Veu: Valoració i Intervenció* (2nd year). We recommend to enroll to the course *Educació de la veu i la seva salut* (4th year).
International students are welcome as long as they have a basic training in voice, such as SLP or singing, and in physics. Please contact the coordinator in case of doubt.

Objectives and Contextualisation

The global objective of the course is for the student to acquire specialized skills in integrated perceptual and acoustic analysis of human voice, both healthy and pathological, as part of an advanced training as future voice therapists.

This is not a course on spectral analysis for old school voice therapists who will, anyway, continue to rely on their ears only. Along the course, students will practically experience that the integrated use of perceptual and acoustic analysis makes a real difference in the professional practice. The combined use of the two approaches results in more reliable evaluations, as they provide information that mutually confirm each other, and solve the uncertainties due to the limitations of each individual approach alone. Upon successful completion of the course, our students should comfortably master perceptive and acoustic analysis equally.

In particular, the student will:

- Reach an in-depth understanding of human voice, the different qualities of voice timbre associated with voice handicap or pathology, and those related with optimized efficiency strategies for voice users.

- Train her perceptive skills in voice evaluation, and master the powerful spectral tools available for acoustic analysis.

- Acquire skills to modify and analyze their own voice, self-implementing the different strategies available to the voice therapist. Understanding one's own voice as starting point to understand the users' voices.

- Practice thoroughly, working with plenty of real cases, the complete process of integrated evaluation and intervention as potential voice therapist-to-be.

Skills

Speech therapy
- Critically evaluate the techniques and instruments of evaluation and diagnosis in speech therapy, as well as its procedures of intervention.
- Demonstrate an understanding of disorders in communication, language, speech, hearing, voice and non-verbal oral functions.
- Develop critical thought and reasoning and be able to communicate them effectively, both in your own language and second or third languages.
- Understand, interpret and express orally and in writing, in a foreign language, contents within the ambit of health.
- Use the exploratory techniques and instruments pertaining to the profession, and register, synthesise and interpret the data provided by integrating this into an overall information set.

Learning outcomes

1. Describe the characteristics of normal and pathological voice.
2. Develop critical thought and reasoning and know how to communicate this effectively, both in ones own and in a foreign language.
3. Interpret data provided by the objective measurement techniques of voice in order to produce a diagnosis.
4. Justify the usefulness of objective voice-measuring methods
5. Understand, interpret and express orally and in writing, in a foreign language, contents within the ambit of health.

Content

- Voice evaluation
    - Perceptual (subjective) evaluation
        - Perceptual scales: CAPE-V and GRBASI
        - Perceptual training
        - Perceptual illusions
    - Acoustic (objective) analysis of voice
        - Training on spectroscopical tools for voice analysis
        - How does acoustic analysis solve cases that the trained ear cannot
        - Limitations of acoustic analysis
    - An integrated approach for voice evaluation

- Acoustic-perceptual correlates
    - Vocal attack types
    - Vocal registers
    - Spoken Fundamental Frequency (SFF) and pitch
    - Intensity and loudness
    - Ring resonance and loudness
    - Sound duration in speech perception
    - Evaluation of instabilities
        - Pitch instability

                        Loudness instability
                        Timbre instability
                        Phonation breaks
                        Episodes with subharmonics
                Evaluation of timbre
                        Clear vs noisy
                        Resonance and vocal efficiency: ring region, phonetic region
                        Roughness (raspiness, harshness, hoarseness)
                        Breathiness
                        Asthenicity
                        Strain

- Analysis of voice changes upon voice therapy or singing training exercises

- Hints for therapeutic / voice coaching / preventive intervention.

- Analysis of cases.

Methodology

All sessions integrate theoretical and practical learning, there are no specific theory or practical classes. The course is essentially practical, as it is aimed at conferring skills, a reasonable amount of experience, and self-confidence as a potential voice therapist. The student will be the center of her/his own learning process. Understanding one's own voice as starting point to understand the users' voices.

Activities

Title	Hours	ECTS	Learning outcomes
Type: Directed			
Master classes, discussions and demos. All classes integrate theory and practice to different degrees, there are no specific theory or practical classes.	35	1.4	4, 5, 1, 2, 3
Type: Supervised			
Tutorials	4	0.16	4, 5, 1, 2, 3
Type: Autonomous			
Critical reading of articles, book chapters, online resources	25	1	4, 5, 1, 2
Practical exercises	25	1	4, 1, 2, 3
Preparation of learning evidences	6	0.24	4, 5, 1, 2, 3
Studying	50	2	4, 5, 1, 2, 3

Evaluation

EV1 - EV1 tests will be held during some of the classes (weeks 3-13), without prior notice. Individual or team tests.

EV2 - Individual, mid-term, in-class, written test to assess the learning results achieved so far (week 9). Individual test.

EV3 - Individual, final, in-class, written test to evaluate all the course competencies in an integrated manner. The student will carry out the analysis and report of the vocal evolution of one or more cases under SLP intervention (week 18). Individual report.

Definition of used-up enrollment: Having handed-in evaluations amounting for 40% or more of the global grade, irrespectively of passing or failing.

Definition of passed course: Both EV3 and the global average of EV1,2,3 must reach a grade equal or higher than 5 over 10.

Re-test: Students with a global grade equal or higher than 4 over 10 have an option to be re-tested. In a tutorial with the professor/s, the unsatisfactory learning results evidences will be identified. The professor/s will then propose the most suitable test for re-assessment during weeks 19-20.

Students may use Catalan or Spanish during their communications and also in the exams without affecting their marks. However using English will multiply the mark by 1.05 (intermediate level) or 1.10 (correct English).

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
EV1 - Short comprehension tests	20%	1	0.04	4, 5, 1, 3
EV2 - Perceptual and acoustic analysis of vocal samples test	40%	2	0.08	4, 5, 1, 2, 3
EV3 - Case analysis test	40%	2	0.08	4, 5, 1, 2, 3

Bibliography

Existing literature is not satisfactory. The instructors will provide specialised readings during the course whenever necessary.