

**Advanced Voice Analysis**

Code: 106736  
ECTS Credits: 6

Degree	Type	Year	Semester
2500893 Speech therapy	OT	4	2

**Contact**

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**Use of Languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

**Teachers**

Helen Rowson

**Prerequisites**

Basic training in voice therapy and in acoustic analysis.

**Objectives and Contextualisation**

The global objective of the course is for the student to acquire specialized skills in voice evaluation, as part of an advanced training as future SLT professionals, be it as vocal therapists, vocal coaches or voice researchers.

Students will experience in a practical manner how the integrated use of perceptual and acoustic analysis results in more reliable evaluations, both through mutual validation and by solving uncertainties due to the limitations of each individual approach alone.

In particular, the student will:

Understand her own voice as starting point to understand the users' voices, thus reaching an in-depth understanding of human voice, the different voice qualities associated with healthy and efficient voice, and the voice qualities related to voice handicap and pathology.

Acquire flight hours in voice analysis, working the complete process of integrated evaluation on real cases, thus acquiring advanced competences in perceptual voice evaluation and acoustic analysis at a professional level.

**Competences**

- Analyse and synthesise information.

- 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.
- Innovate in the methods and processes of this area of knowledge in response to the needs and wishes of society.
- Students can apply the knowledge to their own work or vocation in a professional manner and have the powers generally demonstrated by preparing and defending arguments and solving problems within their area of study.
- Students must develop the necessary learning skills in order to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- 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. Analyse a situation and identify points for improvement.
2. Analyse and synthesise.
3. Communicate in an inclusive manner avoiding the use of sexist or discriminatory language.
4. Describe the characteristics of normal and pathological voice.
5. Identify situations in which a change or improvement is needed.
6. Interpret data provided by the objective measurement techniques of voice in order to produce a diagnosis.
7. Justify the usefulness of objective voice-measuring methods
8. Propose new experience-based methods or alternative solutions.
9. Students can apply the knowledge to their own work or vocation in a professional manner and have the powers generally demonstrated by preparing and defending arguments and solving problems within their area of study.
10. Students must develop the necessary learning skills in order to undertake further training with a high degree of autonomy.
11. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
12. Understand, interpret and express orally and in writing, in a foreign language, contents within the ambit of health.
13. Use the techniques of objective measurement for voice: recording and the analysis of glottal sound, strobe, inverse filtering, electroglottography, deep-zymography laryngoscopic analysis, Fourier transformation, etc.

## Content

### 1. An overview of voice evaluation

- Perceptual (subjective) evaluation of voice
  - Auditory Scene Analysis (ASA)
  - Gold standard test for perceptual voice evaluation: CAPE-V
  - Limitations of pure perceptual evaluation: illusions, confusions, interferences, presbycusis
- Acoustic (objective) analysis of voice
  - Acoustic tools for voice analysis
  - How does acoustic analysis solve cases that the trained ear cannot

### Limitations of acoustic analysis

- An integrated protocol for voice evaluation

## 2. Training of the Auditive Scene Analysis Competences (ASA), and integrated evaluation:

- Intensity vs loudness
- Resonated voice
- Roughness; roughness types I, II, III
- Breathiness
- Strain
- Hypernasality
- Vocal attacks
- Instabilities
- Strategies to increase voice efficiency
- Research in voice
- Voice qualities in *Voice Craft*; intervention workshop

## Methodology

Classes include presentations and demos by the instructor and in-class work by the students, involving peer instruction, group discussion, and practical analysis work.

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 competences, 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.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classes (see description)	36	1.44	2, 1, 7, 12, 3, 4, 5, 6, 8, 11, 10, 9, 13
Type: Supervised			
Tutorial meetings	3	0.12	2, 12, 3, 5, 6, 11, 10, 9
Type: Autonomous			
Critical reading of articles, book chapters; critical visualisation of online resources	18	0.72	2, 11, 10
Practical exercises	25	1	2, 1, 7, 12, 3, 4, 5, 6, 8, 11, 10, 9, 13
Preparation of learning evidences	7	0.28	2, 1, 12, 3, 4, 5, 6, 8
Study	50	2	2, 1, 7, 12, 4, 6, 11, 10, 9, 13

## Assessment

Continued assessment. That is not (only) a fractionated evaluation but a strategy for the student and the instructor to assess learning progression, and to identify areas that require strengthening. Each and every evaluation is part of the learning process. For this reason, Evidence 1 consists of several exercises that address different specific problems, and Evidence 2 is a first rehearsal of a global evaluation identical to Evidence 3 (final). The instructor provides individual feedback for all the evidences.

Evidence 1 - Continuous evaluation: Individual, written, online, short practical exercises to evaluate specific competences, progression, and to identify weaknesses that must be addressed.

Evidence 2 - Individual, mid-term, in-class, written, practical test to evaluate the progress in the acquisition of competences. Analysis of one or more cases. First evaluations week.

Evidence 3 - Individual, final, in-class, written, practical test to evaluate all the course competences in an integrated manner. Analysis of one or more cases. Final evaluations week.

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

Referral evaluation: According to UAB rules, students who fail the course after handing-in evaluations amounting for at least 2/3 of the global grade (irrespectively of passing or failing them), will qualify to take a referral test. In this course a final test equivalent to EV3 will take place during referral evaluations week. To pass the course, a mark equal or higher than 5.0 must be achieved in the referral evaluation.

Condition to be considered non-assessable: According to UAB rules, having handed-in evaluations amounting for less than 40% of the global grade, irrespectively of passing or failing them.

Misconduct: According to UAB rules, students who cheat or copy in an exam once, or plagiarize an assignment once, will get a 0 in that test. If misconduct occurs more than once during the course the final mark will be 0.

Regulations that apply: <https://www.uab.cat/web/estudiar/graus/graus/avaluacions-1345722525858.html>

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Evidence 1 - Continuous evaluation: In-class short practical tests	15%	7	0.28	2, 1, 7, 12, 3, 4, 5, 6, 8, 11, 10, 9, 13
Evidence 2 - Half-term test: Analysis of vocal samples	35%	2	0.08	2, 1, 7, 12, 3, 4, 5, 6, 8, 11, 10, 9, 13
Evidence 3 - Final test: Analysis of vocal samples	50%	2	0.08	2, 1, 7, 12, 3, 4, 5, 6, 8, 11, 10, 9, 13

## Bibliography

Complementary bibliography: Practical Vocal Acoustics, Kenneth Bozeman (2013), Pendragon Press. Available at the library.

## Software

Praat (freeware): <https://www.fon.hum.uva.nl/praat>. Available for PC, Mac and Lynux.