

## TECHNOLOGY IN SPEECH PATHOLOGY

### (1) GENERAL

<b>SCHOOL</b>	HEALTH SCIENCES		
<b>ACADEMIC UNIT</b>	SPEECH LANGUAGE THERAPY		
<b>LEVEL OF STUDIES</b>	Graduate Program (Level 6)		
<b>COURSE CODE</b>	<b>slt – 45</b>	<b>SEMESTER</b>	4
<b>COURSE TITLE</b>	TECHNOLOGY IN SPEECH PATHOLOGY		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
Lectures		2	5
Small Group Discussion		1	
Laboratory Exercises		1	
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Special Background		
<b>PREREQUISITE COURSES:</b>			
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek and English		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	<a href="http://moodle.ioa.teiep.gr/course/view.php?id=12">http://moodle.ioa.teiep.gr/course/view.php?id=12</a>		

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b> <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul> <p>This is course is a special background course in the Field of Applied Informatics in speech pathology. The aim of the course is to familiarize students with basic concepts and technologies in the speech pathology. Topics related to digital signal processing, sound processing, speech processing and speech recognition, speech recognition and speech synthesis from computers, specialized clinical software and logistics are introduced. It also familiarises important modern technologies for speech therapy such as Leap motion, touch screens, portable technology and apps, Internet-Of-Things, sensor technologies that can be used for measurements in various clinical settings.</p> <p><b>Upon successful completion of the course the student will be able to:</b></p> <ul style="list-style-type: none"> <li>• Understand and describe key elements of digital signal processing, sound processing, speech processing and voice recognition, voice synthesis from TTS and STT computers and systems (Level 1 – 2: Knowledge, Skills)</li> <li>• understand and describe modern technologies, software and hardware that can</li> </ul>
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provide digital measurements or automated results / graphical representation for the clinical practice in speech therapy (Level 1 – 3: Knowledge, Skills, Ability)

### **General Competences**

*Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?*

*Search for, analysis and synthesis of data and information, with the use of the necessary technology*

*Adapting to new situations*

*Decision-making*

*Working independently*

*Team work*

*Working in an international environment*

*Working in an interdisciplinary environment*

*Production of new research ideas*

*Project planning and management*

*Respect for difference and multiculturalism*

*Respect for the natural environment*

*Showing social, professional and ethical responsibility and sensitivity to gender issues*

*Criticism and self-criticism*

*Production of free, creative and inductive thinking.....*

*Others.....*

- *Search for, analysis and synthesis of data and information, with the use of the necessary technology*
- *Adapting to new situations*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment*
- *Project planning and management*

### **(3) SYLLABUS**

1. Introduction
2. Digital signal processing
3. Audio Editing
4. Voice technology
5. Voice technology - speech therapy
6. Specialized clinical software and hardware - Automated results / Graphical display
7. Tele-education & Telepractice – Speech & Language therapy
8. Leap motion – Speech & Language therapy
9. Touch screens, portable technology and apps – Speech & Language therapy
10. Internet-Of-Things - Sensor Technology and Measurements
11. Eye-Tracking
12. Facial recognition analysis
13. Serious digital games

### **(4) TEACHING and LEARNING METHODS - EVALUATION**

<p style="text-align: center;"><b>DELIVERY</b></p> <p><i>Face-to-face, Distance learning, etc.</i></p>	<p>Face-to-face &amp; blended learning supported with online educational material.</p>																	
<p style="text-align: center;"><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b></p> <p><i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> <li>• Use of ICT in teaching, laboratory education,</li> <li>• Communication with students via email, messenger, facebook, moodle etc.</li> <li>• Laboratory education supporting the understanding of creating multimedia material</li> <li>• Support with blended learning using the learning management system moodle and a webpage accommodating online educational material for this course</li> <li>• Posting course-grades through the online course management platform of the UOI</li> </ul>																	
<p style="text-align: center;"><b>TEACHING METHODS</b></p> <p><i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Activity</i></th> <th style="text-align: center;"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">26</td> </tr> <tr> <td>Practice</td> <td style="text-align: center;">13</td> </tr> <tr> <td>Laboratory</td> <td style="text-align: center;">13</td> </tr> <tr> <td>Group work in a project</td> <td style="text-align: center;">20</td> </tr> <tr> <td>Study and analysis of bibliography</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Personal Study/Evaluation</td> <td style="text-align: center;">43</td> </tr> <tr> <td><b>Course total</b></td> <td style="text-align: center;"><b>125</b></td> </tr> </tbody> </table>		<i>Activity</i>	<i>Semester workload</i>	Lectures	26	Practice	13	Laboratory	13	Group work in a project	20	Study and analysis of bibliography	10	Personal Study/Evaluation	43	<b>Course total</b>	<b>125</b>
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<p style="text-align: center;"><b>STUDENT PERFORMANCE EVALUATION</b></p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p><b>I. Written final exam (50%):</b></p> <ul style="list-style-type: none"> <li>- Multiple choice test</li> <li>- Short answer questions</li> <li>- Open-ended questions</li> </ul> <p><b>II. Written Essay and presentation (30%)</b></p> <p><b>III. Laboratory work - (20%)</b></p> <p>The final exams will be offered in Greek &amp; English</p>																	

## (5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Edmunds, M., Hass, C. & Holve, E. (2019). Consumer Informatics and Digital Health: Solutions for Health and Health Care. Springer International Publishing.

2. Mullennix, J. & Stern, S. (2010). *Computer Synthesized Speech Technologies: Tools for Aiding Impairment*. New York: Medical Information Science Reference.
  3. Braunstein, M. (2016). *Contemporary Health Informatics*. AHIMA Press.
- *Related academic journals:*
1. Neuroinformatics, <https://www.springer.com/biomed/neuroscience/journal/12021>
  2. Measurement: Sensors, ELSEVIER, <https://www.journals.elsevier.com/measurement-sensors>
  3. Journal of Telemedicine and Telecare, SAGE, <https://journals.sagepub.com/home/jtt>