



TEHRAN UNIVERSITY
OF
MEDICAL SCIENCES

School of Rehabilitation

Master's Degree, Speech Therapy Program

Course specifications:

1- Course name: Master of Science in Speech Therapy

2- Course length and its structure: According to the regulations and rules of the master's degree program approved by the Supreme Planning Council of Medical Sciences.

3. Total number of courses: The number of courses is 32 units.

Compulsory Courses: 24

Optional Courses: 4

Thesis: 4

Total: 32

Table of compensatory courses:

Code	Course Title	Number of Credits			Hours			Prerequisite
		Theoretical	Practical	Total	Theoretical	Practical	Total	
01	Medical Information System	0.5	0.5	1	9	17	26	None
02	Scientific Writing	1.5	0.5	2	9	51	60	None
	Total					3		

Table of Compulsory Courses:

Code	Course Title	Number of Credits				Hours			Prerequisite	
		Theoretical	Practical	Internship	Total	Theoretical	Practical	Internship		Total
03	Biostatistics	2	-	-	2	34			34	None
04	Research method and test development	1	1	-	2	17	34		51	None
05	Speech and Language and swallowing Laboratory (oral-pharyngeal and oral phases)	0.5	1.5	-	2	9	51		60	None
06	Introduction to Neuropsycholinguistic	0.5	0.5	-	1	9	17		26	None

07	Clinical internship (1)	-	-	1	1	-	-	51	51	None
08	Clinical internship (2)	-	-	1	1	-	-	51	51	None
09	Clinical internship (3)	-	-	1	1	-	-	51	51	None
10	Speech therapy in swallowing disorders (oropharyngeal and oral phases) in adults	0.5	0.5	-	1	9	17	-	26	None
11	Speech therapy in reading and writing developmental disorders	1	1	-	2	17	34	-	51	None
12	Speech therapy in autism spectrum disorders	0.5	0.5	-	1	9	17	-	26	None
13	Speech therapy in acquired language disorders	1.5	0.5	-	2	26	17	-	43	None
14	Speech therapy in developmental language disorders (specific language impairments)	0.5	0.5	-	1	9	17	-	26	None
15	Speech therapy in fluency disorders	1.5	0.5	-	2	26	17	-	43	None
16	Speech therapy in voice disorders	1	1	-	2	17	34	-	51	None
17	Speech therapy in communication disorders in cleft palate and craniofacial anomalies	0.5	0.5	-	1	9	17	-	26	None
18	Speech therapy in motor speech disorders in adults	1.5	0.5	-	2	26	17	-	43	None
19	Thesis	-	4	-	4	-	-	-	-	None
	Total							28		

Table of Optional Courses

Code	Course Title	Number of Credits			Hours			Prerequisite
		Theoretical	Practical	Total	Theoretical	Practical	Total	
20	Speech therapy in speech sounds disorders	1	1	2	17	34	51	None
21	Neuroscience related to language and cognition	1	-	1	17	-	17	None
22	Evidence-based speech therapy	1	1	2	17	34	51	None
23	Clinical linguistics	1.5	0.5	2	26	17	43	None
24	Single-subject studies	1	1	2	17	34	51	None
25	Biomechanics of speech articulators	2	-	2	34	-	34	None
	Total						11	

Section I:

Title: Speech Therapy

Degree: M.Sc.

Introduction: Speech therapy is a branch of science that studies pathology, evaluation and intervention in the fields of communication-cognition, language, speech and swallowing (in oral and oral-pharyngeal phases), and their disorders.

Definition: Speech therapy with the subject of pathology, evaluation and treatment of speech, language, communication, and swallowing disorders (oral and oro-pharyngeal phases) is one of the main disciplines in the field of rehabilitation sciences. Graduates of the discontinuous master's degree program can perform measures related to the prevention, diagnosis, evaluation and speech therapy of developmental language disorders, acquired language disorders, speech disorders, and swallowing disorders (oral and oral-pharyngeal phases) with an evidence-based activity perspective. They will also gain the ability to design and conduct field-related research.

The Aim of the Course: The general objectives of the Master of Speech Therapy are:

- 1- Training graduates who can conduct prevention, diagnosis, evaluation and treatment of developmental language disorders, language communication disorders in autism spectrum disorders, motor speech disorders in adulthood, developmental reading and writing disorders, fluency disorders, swallowing disorders (oral and oro-pharyngeal phases), voice disorders, cleft palate speech disorders, speech sound disorders, and acquired language disorders in adults based on evidence-based activity at the end of this course.

- 2- Training graduates who can design and conduct field-related research at the end of this course.

General Competencies:

The general competencies expected of graduates of this course are:

- To apply interactive communication skills effectively;
- To Educate undergraduate or graduate students in earlier years;
- To Raise public awareness of speech and language development and its disorders;

- To obtain the ability to design, write proposals, conduct research related to the field and the needs of society, and be able to publish the results of this research;
- To obtain critical thinking and problem-solving skills;
- To obtain evidence-based management skills (planning, organizing, monitoring, monitoring and control-evaluation);
- To apply the acquired knowledge and skills in a professional and committed manner.

Educational strategies:

This program is based on the following strategies:

- Task based training;
- Both student and teacher-centered educations;
- Problem- based education;
- Community oriented education;
- Hospital- based education;
- Evidence- based education.

Educational methods and techniques:

Types of intra-department, inter-department, hospital, interdisciplinary, inter-university conferences and seminars, small group discussions, workshops, club magazine, case presentation, training courses, outpatient training, observation of various surgical techniques related to voice disorders and cleft palate in the operating room or laboratory, distance learning if possible, self-education, self-study, cooperation in education of bachelor students?. Other teaching methods and techniques according to educational needs and goals.

Student Assessment:

A. Evaluation method

Students will be assessed by the following methods

- Written;
- Oral;
- 360 degree test;

- Portfolio evaluation including: Log book, test results, essays, commendations, certifications.
- Objective Structured Clinical Examination (OSCE), Direct Observation of Procedural Skills (DOPS), Project- based Assessment.

B. Frequency of evaluation:

- Continuous
- Periodic
- Ultimate

Number and Type of Credits and Tables of the Courses (including compulsory and optional [elective] courses)

The minimum number of credits required for obtaining a master's degree in Speech Therapy is 32.

This course includes Compulsory Core Courses, Compulsory Specialized Courses, Elective Specialized Courses, and Thesis, which are defined as follows:

Compulsory Courses: 24

Optional Courses: 4

Thesis: 4

Total: 32

Ethical expectations of learners

- Strictly following the patients' legal charter.
- Strictly following the regulations related to protection and safety (personal, staff, work environment, and patients). These regulations are developed by Speech Therapy department.
- Following the rules related to Dress Code.
- Protecting the resources and equipment they work with under any circumstances.
- Respecting professors, staff, classmates, and other learners and participating in creating a friendly and respectful atmosphere in the workplace.
- Observing social and professional ethics considerations when criticizing the programs.

Part 2: Course Description

Title of the Course: Medical Information System

Prerequisite: None

Code of the course: 01

Number of Credits: 1 (0.5 theoretical, 0.5 practical)

Type of the course: Theoretical-Practical

The overall purpose of the course: At the end of this course, the student should be able to recognize the various components of a personal computer and know the function of each, be familiar with the Windows operating system, be able to install and troubleshoot it and learn to work with important applications. Also, they should have the ability to use library templates and various search methods in important databases in their field of study and get acquainted with the library services of the university where they study. Another goal of this course is to get acquainted with popular Internet browsers so that the student can work with search engines and get acquainted with famous and useful information sites in their field. Finally, the student should be able to create and use e-mail to send and receive letters and files.

Course description: In this course, the student gets acquainted with different components of PC, Windows operating system, internet, important websites-mail and databases to be able to use the computer practically in researches in his/her field.

Outlines: (Theoretical 9 hours-Practical 17 hours)

Principal objective(s) of the course:

A. Getting acquainted with the personal computer:

- 1) Understanding different components of PC hardware and accessories;
- 2) Learning about function and importance of each hardware and accessories components.

B. Getting acquainted and setting up windows operating system:

- 1) Learning about the history of advanced operating systems such as Windows;
- 2) Learning about capability and features of windows operating system;
- 3) Using windows help;
- 4) Getting acquainted with important applications of windows.

C. Getting acquainted with important databases and useful applications in his/her field:

- 1) Learning about introduction and terminology of information system;

- 2) Being familiar with reference books applications on CD;
- 3) Getting acquainted with databases such as biological abstract, Embase, Medline, and learning how to search in these databases;
- 4) Getting acquainted with full-text electronic journals on CD and learning how to search in these journals;

D. Getting acquainted with the internet:

- 1) Learning about information networks;
- 2) Learning about internet browsers and their features;
- 3) Learning about setting up an internet browser to connect to the network;
- 4) Searching with Search engines;
- 5) Getting acquainted with popular and important websites in his/her field.

Reference:

- 1.Lambert J. Lambert PA. Finding information in science, technology and medicine. Routledge; last edition.
- 2.Zielinski K, Duplaga M, Ingram D. Information technology solutions for healthcare. Springer Science & Business Media: Last edition

Student evaluation method:

In the field of cognition: Student assessment is done descriptively in the middle and at the end of the course and in the field of motor psychology, the practical test of student skills in using the computer, Windows operating system and Internet search is done using a checklist.

Course name: Scientific Writing

Code of course: 02

Prerequisites: None

Number of credits: 2 (0.5 theoretical, 1.5 practical)

Type of the course: Theoretical-Practical

The overall purpose of the course: Familiarity with the principles, framework, and patterns of writing scientific and research papers in English, scientific correspondence and presentation of research achievements in scientific societies.

Course description:

In this course, the student learns about writing a scientific paper, templates of the thesis and different parts or components of the articles. With practical exercises, the student gains the ability to write a thesis with his/her research results and should be able to prepare and arrange his/ her research achievements for publication in scientific and research journals in the country and abroad or prepare oral presentations or posters for presentation in scientific forums.

Outlines: Theoretical (9 hours):

Becoming familiar with:

- 1) Writing scientific papers;
- 2) Ethics in writing (Bias in writing, acknowledgments, plagiarism, participants) ;
- 3) Principles of writing in English (Text structure, paragraph structure, grammar, text coherence, direct and indirect citations, text citation methods) ;
- 4) Types of articles (Original, Review, case study, short communication, Letter to editor...);
- 5) Types of databases, search method and indexing them (ISI, SCI, SCOPUS, PubMed);
- 6) Types of Journals (Extension science, research science, international);
- 7) Patterns or templates of writing articles, thesis, and scientific correspondence.

Practical (51 hours)

- 1) Classification types of journals and articles
- 2) Practical implementation of search in databases
- 3) Writing two articles in English by observing the principles of scientific writing (Title, Abstract, Key words, Introduction, Methods, Results, Discussion and conclusion, Acknowledgment, References)
- 4) Writing two scientific letters in English (Letter to specialist, articles author, Editor-in-Chief)

5) Preparation of research achievements to be presented in scientific conferences in the form of oral and poster presentation using the capabilities of PowerPoint software, prezi, and other common software.

References:

1. Brookshire RH, Brundage SB. Writing scientific research in communication sciences and disorders. Plural Publishing
2. Hegde MN. A coursebook on scientific and professional writing for speech-language pathology. (4th ed). Delmar: Cengage Learning.
3. American Psychological Association. Publication manual of the American Psychological Association. (6th ed.) Washington DC: American Psychological Association.

Student evaluation method:

Student evaluation in the cognitive domain is done with descriptive and multiple-choice questions and in the domain of proficiency with reviewing an article with the use of a checklist.

Course name: Biostatistics

Code of course: 03

Prerequisites: None

Number of credits: 2

Type of the course: Theoretical

The overall purpose of the course: Getting acquainted with advanced statistical methods in health research and using them in designing and writing research projects.

Course description:

In this course, students learn about Information analysis methods and statistics tests, so that they can use this knowledge in their future researches.

Outlines: Theoretical (34 hours):

- 1) A review of descriptive statistics (Central tendency, dispersion, Types of charts)
- 2) Normal distribution and its characteristics
- 3) Confidence Interval
- 4) Hypothesis Test of the ratio of two communities
- 5) Sample compliance test with normal distribution
- 6) Hypothesis Test of the mean of two communities
- 7) Independence test, Fisher exact test, Mantel Hansel test
- 8) One-way analysis of variance
- 9) Correlation analysis between variables
- 10) Nonparametric tests

References:

1. Mohammad k, Malek Afzali M, Statistical methods and health indicators. 15th, Tehran: Daricheye No
2. Neter J, Vaserman V, Witmurji A. Translated: Ali Amidi. Applied Statistics. 5th. Tehran: University Publication Center.
3. Rozner B. Translated: Ali Amidi. Principles of Biostatistics. 2nd. Tehran: University Publication Center.

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist, and the practical implementation of the methods.

Course name: Research method and test development

Code of course: 04

Prerequisites: None

Number of credits: 2 (1 theoretical, 1 practical)

Type of the course: Theoretical-Practical

The overall purpose of the course: Familiarity with the principles and methods of research, test development and measurement and writing of research drafts.

Course description:

In this course, students are fully acquainted with the basic concepts of research and prepare and present a research project in the field of speech and language pathology based on the principles of writing. Learners are also introduced to the concepts of measurement and the general principles of preparation, implementation, and analysis of tests for the purpose of evaluation and diagnosis.

Outlines: Theoretical (17 hours):

1. Criteria for identifying the research topic
2. Expressing the problem and its importance
3. Necessity of literature review and methods of literature review
4. Objectives, questions, research hypotheses, and how to organize them
5. Types of variables and how to set the table of variables
6. Society, samples, and types of sampling methods
7. Pilot study and its benefits
8. A variety of methods of collecting information
9. Types of studies (Observational and experimental)
10. Definition of evaluation, measurement, types of evaluation, definition of concept and structure
11. Types of tests, test objectives, scale and units of measurement
12. Familiarity with the process of localization of external scales
13. Concepts of validity, reliability, sensitivity, and specificity of the tool

14. Scheduling the implementation of the plan and set the table
15. Familiarity with the principles of costing the plan and setting its tables

Outlines: Practical (34 hours)

1. Writing a complete research draft including the following sections:
 - a. Selecting a research topic
 - b. Adjusting the problem statement for the selected topic
 - c. Setting the literature review for the selected topic
 - d. Writing goals for the selected topic
 - e. Writing research questions and hypotheses for the selected topic
 - f. Introducing the community, sample and sampling method for the selected topic
 - g. Selecting and introducing appropriate tools with emphasis on sensitivity, specificity, validity and reliability for the selected topic
 - h. Selecting and writing the type of study correctly for the selected topic
 - i. Proper referrals of references and its proper arrangement in the references section
2. Evaluate the psychometric properties of a measurement tool

References:

1. Malek Afzali H. Health system research. Tehran: Daricheye No Publication.
2. Sajadi H, Biglariyan A. Thesis writing guide. Tehran: University of Social Welfare and Rehabilitation Sciences Publications.
3. Pasha sharifi H and Sharifi N. Principles of psychometrics and psychoanalysis. Tehran: Roshd Publications
4. Delavar A. Research Methods in Psychology and Educational Sciences. Tehran: Virayesh publications
5. Hooman H. Psychological and educational measurements: Test preparation and questionnaire technique
6. varkevisser CM, Pathmanathan I, Brownlee AT. Designing and conducting health systems research projects. IDRC: Available at http://archives.who.int/prduc/Resource_Mats/Designing_1.pdf.
7. Mohler P, Dorer B, De Jong J, Hu M. Adaptation: Guidelines for best practice in cross-cultural surveys. Ann Arbor, MI: Survey Research Center, Institute for Social Research. University of Michigan. Retrieved from <http://www.ccsr.isr.umich.edu/>

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist, and the practical implementation of the methods.

Course name: Speech and Language and swallowing Laboratory (Oral and Oral-pharyngeal Phases)

Code of course: 05

Prerequisites: None

Number of credits: 2 (0.5 theoretical, 1.5 practical)

Type of the course: theoretical- practical

The overall purpose of the course: Acquiring knowledge and skills of using laboratory and paraclinical equipment in evaluating, diagnosing, and measuring outcome in speech therapy.

Course description:

In this course, students get acquainted with laboratory and paraclinical tools and equipment, the structure and applications of this equipment in the process of evaluation, diagnosis and measurement of outcome in speech therapy. They also learn how to implement and interpret the results of the application of laboratory and paraclinical methods in at least three devices.

Outlines: Theoretical (9 hours):

- ✓ Imaging of the larynx (concepts, principles, application, instrumental specifications and interpretation of results of different Laryngeal imaging instruments and procedures including videostroboscopy in normal specimens and voice disorders)
- ✓ Acoustic features of consonants (Concepts, principles, application, instrumental specifications and interpretation of results in acoustic sound analysis or use of *Praat* software in normal and speech impaired samples)
- ✓ Nasometer (Concepts, principles, applications, instrumental specifications and interpretation of results in different types of devices and methods of performing Nasometer)
- ✓ Concepts, principles, application, instrumental specifications and interpretation of results in various tools and methods of palatography and glotography (laryngography)
- ✓ Familiarity with swallowing assessment tools (Oral and Oral-pharyngeal Phases): (Fiberoptic endoscopic evaluation of Swallowing FEES)
- ✓ Familiarity with language sample analysis software (CHILDES, SALT, Concepts, principles, application, instrumental specifications and interpretation of results)

Outlines: Practical (51hours)

- Observation, practical implementation and interpretation of laryngeal imaging results using laryngoscopic and video stroboscopic methods in normal specimens and voice disorders.
- Observation and practical implementation and analysis of acoustic features of consonants using *Praat* software in normal samples and speech disorders.
- Observation, practical implementation and interpretation of palatography and glotography results (laryngography).
- Observation, practical implementation and interpretation of Nasometer results in normal and disturbed samples.
- Perform language sample analysis using software such as CHILDES, SALT.

References:

1. Woo P. Stroboscopy. United Kingdom: Plural Publishing.
2. Behrman A. Speech and Voice Sciences. SanDiego: Plural Publishing, 3th

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist and the practical implementation of the methods.

Course name: Introduction to Neuropsycholinguistic (Introduction to the neuropsychology of language)

Code of course: 06

Prerequisites: None

Number of credits: 1 (0.5 theoretical, 0.5 practical)

Type of the course: Theoretical- practical

The overall purpose of the course: Increasing students' theoretical and practical knowledge in the field of relation between brain and language by emphasizing the general principles of the neuropsychology of language (Neuropsycholinguistic).

Course description:

In this course, students are introduced to the place of language in the brain and how language is processed in the brain hemispheres in healthy and sick people, and while getting acquainted with the widely used neuropsychological tests, they learn how to use them.

Outlines: Theoretical (9 hours):

1. An overview of the function of the language and the cerebral hemispheres
 - a. Individual differences in language organization in the brain
 - b. Specialization of the cerebral hemispheres
 - c. The role of cortical and subcortical structures in language processing
2. An overview of excellent cortical functions
 - a. Memory and learning
 - b. Excitement
 - c. Attention and vigilance
 - d. Brain flexibility
3. Bilingualism
 - a. Vocabulary comprehension in a bilingual brain
 - b. Vocabulary acquisition in a bilingual brain
 - c. Language processing in a bilingual brain
4. Study methods in the Neuropsycholinguistic
 - a. Event-Related potentials technique (ERPS)
 - b. Functional magnetic resonance imaging (fMRI)
 - c. Analytical Methods for single-subject Studies
5. Neuropsychological tests

- a. Introducing tests and the logic of using them (such as Benton's neuropsychological investigation, Boston Process Approach, Frontal-Lobe assessment, Luria-Nebraska Battery, CANTAB, Verbal fluency tasks...)
- b. Factors affecting test selection
- c. Memory, attention, and alertness tests

Outlines: Practical (17 hours)

Performing and analyzing common neuropsychological tests related to speech and language (such as verbal fluency tasks) on normal individuals.

References:

1. Faust M. The handbook of the neuropsychology of language. Blackwell Publishing Ltd.
2. Kolb B. Whishaw IQ. Fundamentals of human neuropsychology. Worth Publishers.

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist and the practical implementation of the methods.

Course name: Clinical internship (1)

Code of course: 07

Number of credits: 1

Type of the course: Internship

Prerequisites: None

The purpose of the course: Application of principles of professional ethics in clinical practice, performing evidence-based clinical practice and practicing professionalism, familiarity with clinical education, learning advanced clinical activity in dysphagia (oral-pharyngeal and oral phases) in adults, voice disorders and reading and writing developmental disorders.

Course description: In this course, students practice the application of professional ethics in the field of speech therapy so that they can provide clinical education to undergraduate students after completing the course. They will also be able to evaluate swallowing disorders, voice disorders and reading and writing developmental disorders based on high quality evidence, treat them based on new therapeutic approaches, and report to the scientific community.

Outlines: Internship (51 hours):

- ✓ Professional ethics, professional clinical practice, professional standards, professional competency requirements.
- ✓ Principles of professional ethics in dysphagia (oral-pharyngeal and oral phases) in adults, voice disorders, and reading and writing developmental disorders.
- ✓ Methods of obtaining, evaluating and applying evidence for clinical activity.
- ✓ Evaluation of evidence for clinical activity, how to turn evidence results into clinical activity, use evidence to assess and treat swallowing disorders (oral-pharyngeal and oral phases) in adults, voice disorders, and reading and writing developmental disorders.
- ✓ Principles of training and clinical supervision: Familiarizing with the principles and methods of clinical supervision and teach undergraduate students in the clinic under the supervision of the main supervisor of the clinic.
- ✓ Dysphagia internship (oral-pharyngeal and oral phases): Evaluating a case with adult swallowing disorder (Implementation of clinical evaluation methods for swallowing disorders in adults including case-history, evaluating the structure and function of the organs involved in swallowing, Clinical evaluation of swallowing), forming the baseline, designing and performing treatment based

on a specific approach (implementation of rehabilitation methods for the treatment of swallowing disorders (oral-pharyngeal and oral phases) in adult including oral movement exercises, swallowing maneuvers and Temperature tactile stimuli), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.

- ✓ Voice disorders internship: Evaluating a case of voice disorders (Auditory perceptual assessment, posture evaluation), forming the baseline, designing and performing treatment based on a specific approach (physiologic voice therapy: Manual therapy of the larynx relying on phonation, functional voice exercises, resonant voice therapy, warm up methods, voice therapy by stress), evaluating the baseline again, making comparison before and after treatment, preparing a case report and presenting it orally in the form of a seminar.

- ✓ Reading and writing developmental disorders internship: Evaluating a case of reading and writing developmental disorders, using the Cognitive Neuroscience model, Psycholinguistic and Neurolinguistic approach to explain defects in children with reading and writing developmental disorders, applying team approaches in assessing and treating children with reading and writing developmental disorders, assessing general and specific areas such as intelligence, motor skills, and language and reading, forming the baseline, designing and performing treatment based on a specific approach (implementation of therapeutic methods in the fields of cognition, language, reading and writing), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.

References:

1. McAllister L. Issues and innovations in clinical education. *Advances in speech and language pathology*, 7(3), 138-148. 2005.
2. Body R. *Ethics in speech and language therapy*. John Wiley & Sons.
3. Reilly S, Douglas J, Oates J. *Evidence based practice in speech pathology*. London: Whurr Publishers.
4. Murry T, Carrau RL. *Clinical assessment of swallowing disorders*. Plural Publishing.
5. Corbin-Lewis K, Liss, JM Sciortino KL. *Clinical anatomy & physiology of swallow mechanism*. Thomson Delmar.
6. Carrau RL, Murry T. *Comprehensive management of swallowing disorders*. Plural publishing.
7. Rosenbek J. *Dysphagia in movement disorders*. Plural publishing.
8. Stemple Jc, Roy N, Klaben BK. *Clinical voice pathology: Theory and management*. Plural publishing.

9. Seikel JA, Drumright DG, King DW. Anatomy & physiology for speech, language and hearing: Nelson Education.

10. Colton RH, Casper JK, Leonard R. Understanding voice problems: Philadelphia: Techbooks.

11. Snowling M, Stackhouse J. Dyslexia, speech and language: A practitioner's handbook, 2nd ed. Whurr.

12. Paul R. Language disorders from infancy through adolescence. Elsevier.

13. Christo C, Davis J, Brock SE. Identifying, assessing and treating dyslexia at school. Springer.

14. Wallach GP. Language and school-age children with learning disabilities, chapter 4, in Vicki A. Reed (Eds). An introduction to children with language disorders, (5th ed). New York: Pearson.

15. Kamara CA. Neurolinguistic approach to reading: A guide for speech-language pathologists treating dyslexia. Plural publishing.

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist and the practical implementation of the methods.

Course name: Clinical internship (2)

Code of course: 08

Number of credits: 1

Type of the course: Internship

Prerequisites: None

The purpose of the course: Application of principles of professional ethics in clinical practice, performing evidence-based clinical practice and practicing professionalism, familiarity with clinical education, learning advanced clinical activity in developmental language disorder (specific language impairments), acquired language disorders and motor speech disorders in adults.

Course description: In this course, students practice the application of professional ethics in the field of speech therapy and they can provide clinical education to undergraduate students after completing the course. They will also be able to evaluate developmental language disorder (specific language impairments), acquired language disorders, and motor speech disorders in adults based on high quality evidence, treat them based on new therapeutic approaches, and report to the scientific community.

Outlines: Internship (51 hours):

- ✓ Professional ethics, professional clinical practice, professional standards, professional competency requirements.
- ✓ Principles of professional ethics in developmental language disorders (specific language impairments), acquired language disorders, and motor speech disorders in adults.
- ✓ Methods of obtaining, evaluating, and applying evidence for clinical activity.
- ✓ Evaluation of evidence for clinical activity, how to turn evidence results into clinical activity, using evidence to assess and treat developmental language disorder (specific language impairments), acquired language disorders and motor speech disorders in adults.
- ✓ Principles of training and clinical supervision: familiarizing with the principles and methods of clinical supervision and teaching undergraduate students in the clinic under the supervision of the main supervisor of the clinic.
- ✓ Developmental language disorder (specific language impairments) internship: Diagnosing and evaluating a child with developmental language disorder and determining the baseline of her/his communication and language skills in the field of syntax and morphology, meaning and

phonological skills. Assessing areas related to language impairment using language sampling methods, indigenous tests, and age-appropriate observations and analyzing the evaluation results to design an appropriate treatment plan. Then selecting and implementing the treatment method appropriate to the field of the child's disorder in the areas of grammar and meaning and other possible areas among the treatment methods she has learned. Evaluating the baseline again, making comparison before and after treatment, determining clearance criteria for the client, preparing a case report, and presenting it orally in the form of a seminar.

- ✓ Acquired language disorders internship: Evaluating a case of Aphasia, forming the baseline, designing and performing treatment based on a specific approach (model-based evaluation and treatment of aphasia deficits including verbal-auditory impairments, anomia, dyslexia, dysgraphia), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar
- ✓ Motor speech disorders in adult internship: Evaluating a case of adult motor speech disorder (Implementation of clinical methods of dysarthria in adults, including case-history, evaluation of the structure and function of organs involved in speech, perceptual evaluation and differential diagnosis of perceptual features of different types of dysarthria and apraxia of speech), forming the baseline, designing and performing treatment based on a specific approach (implementation of rehabilitation methods related to dysarthria or apraxia of speech), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.

References:

1. McAllister L. Issues and innovations in clinical education. *Advances in speech and language pathology*,7(3),138-148.2005.
2. Body R. *Ethics in speech and language therapy*. John Wiley & Sons.
3. Reilly S,Douglas J, Oates J. *Evidence based practice in speech pathology* . London: Whurr Publishers.
4. Rescorla L, Dale PS(Eds). *Late talker: Language development, interventions and outcomes*. Paul H. Brookes Publishing Company
5. Stavrakaki S(Ed). *Specific Language impairment: current trends in research(vol.58)*.John Benjamins Publishing Company.
6. Leonard LB. *Children with specific language impairment*.MIT.2014.

7. Reed VA. Toddlers and preschoolers with specific language impairment, chapter3, in Vicki A. Reed (Ed). An introduction to children with language disorders. (5th ed). New York: Pearson.
8. Hoff E. Research methods in child language: A practical guide. West Sussex: Blackwell Publishing Ltd.
9. Papathanasiou I, Coppens P. Aphasia and related neurogenic communication disorders. Jones & Barlett Publishers.
10. Whitworth A, Webster J, Howard DA. Cognitive neuropsychological approach to assessment and intervention in aphasia: A clinician's guide. New York: Psychology Press.
11. Chapey R. Language intervention strategies in aphasia and related neurogenic communication disorders. Philadelphia, Lippincott, Williams
12. Duffy J. Motor speech disorders: substrate, differential diagnosis, and management (3rd ed). Mosby
13. Freed D. Motor speech disorders: diagnosis and treatment. Delmar.
14. Perrier P. About speech motor control complexity. In Harrington, J, and Tabain, M. (Eds): Towards a better understanding of speech production processes. New York: Psychology Press

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist and the practical implementation of the methods.

Course name: Clinical internship (3)

Code of course: 09

Number of credits: 1

Type of the course: Internship

Prerequisites: None

The purpose of the course: Application of principles of professional ethics in clinical practice, performing evidence-based clinical practice and practicing professionalism, familiarity with clinical education, learning advanced clinical activity of autism Spectrum Disorder, fluency disorders and communication disorders in cleft palate and cranio-facial anomalies.

Course description: In this course, students practice the application of professional ethics in the field of speech therapy and they can provide clinical education to undergraduate students after completing the course. They will also be able to evaluate autism Spectrum Disorder, fluency disorders and communication disorders in cleft palate and cranio-facial anomalies based on high quality evidence, treat them based on new therapeutic approaches, and report to the scientific community.

Outlines: Internship (51 hours):

- ✓ Professional ethics, professional clinical practice, professional standards, professional competency requirements.
- ✓ Principles of professional ethics in communication-language impairments in autism spectrum disorder, fluency disorders and communication disorders in cleft palate and cranio-facial anomalies.
- ✓ Methods of obtaining, evaluating, and applying evidence for clinical activity: Evaluation of evidence for clinical activity, how to turn evidence results into clinical activity, using evidence to assess and treat communication-language impairments in autism spectrum disorder, fluency disorders and communication disorders in cleft palate and cranio-facial anomalies.
- ✓ Principles of training and clinical supervision: familiarizing with the principles and methods of clinical supervision and teaching undergraduate students in the clinic under the supervision of the main supervisor of the clinic.
- ✓ Communication-language impairments in autism spectrum disorder internship: Evaluating a case of Communication-language impairments in autism spectrum disorder (diagnosing autism spectrum disorder with screening tools and diagnosing communication-language impairments such as M-CHAT,GARS,CARS and assessment of communication and language Communication-language impairments in autism spectrum disorder including prelinguistic assessment, linguistic and social skills assessment), forming the baseline, designing and performing treatment based on a specific

approach (behavioral interventions to promote learning and communication and social ability or augmentative and alternative communication, language-specific interventions to enhance linguistic capabilities based on patterns of language development), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.

- ✓ Fluency disorders internship: Evaluating a case of fluency disorders (a variety of quantitative and qualitative methods for children and adults with fluency disorders), forming the baseline, designing and performing treatment based on a specific approach (speech restructuring approaches such as camper down program, video-self monitoring (VSM) and comprehensive stuttering program (CSP)), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.
- ✓ Fluency disorders internship: Evaluating a case of fluency disorders (a variety of quantitative and qualitative methods for children and adults with fluency disorders), forming the baseline, designing and performing treatment based on a specific approach (speech restructuring approaches such as camper down program, video-self monitoring (VSM) and comprehensive stuttering program (CSP)), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.
- ✓ Communication disorders in cleft palate and cranio-facial anomalies internship: Evaluating a case of Communication disorders in cleft palate and cranio-facial anomalies (Standard perceptual assessments such as CPAP, differential diagnosis of speech disorders related to cleft palate, transcription and error recording, evaluation of velo-pharyngeal system using Nasometer, interpretation of the results of instrumental evaluation and relating the findings to perceptual evaluations), forming the baseline, designing and performing treatment based on a specific approach (Implementation of treatment techniques for articulation disorders related to cleft palate, hyper nasality treatment methods in borderline velo-pharyngeal dysfunction, fixing nutrition problems and prosthetic treatments and types of secondary surgeries in VPI, application of ICF model in cleft palate and its associated disorders), evaluating the baseline again, making comparison before and after treatment, preparing a case report, and presenting it orally in the form of a seminar.

References:

1. McAllister L. Issues and innovations in clinical education. *Advances in speech and language pathology*,7(3),138-148.2005.
2. Body R. *Ethics in speech and language therapy*. John Wiley & Sons.
3. Reilly S, Douglas J, Oates J. *Evidence based practice in speech pathology*. London: Whurr Publishers.
4. Volkmar FR, Paul R, Klin A. Cohen DJ (Eds). *Handbook of autism and pervasive developmental disorders, diagnosis, developmental, neurobiology, and behavior* (Vol. 1&2). John Wiley & Sons.
5. Longerbeam M, Sigafoos J. Language and children with autism spectrum disorder, chapter 7, in Vicki A. Reed (Ed). *An introduction to children with language disorders*. (5th ed). New York: Pearson.
6. Tarbox J, Dixon DR, Sturmey P, Matson JL(Eds). *Handbook of early intervention for autism spectrum disorders: Research, Policy, and practice*. New York: Springer.
7. Guitar B. *Stuttering: An integrated approach to its nature and treatment*. Lippincott Williams & Wilkins
8. Guitar B, McCauley RJ. *Treatment of stuttering: Established and emerging interventions*. Wolters Kluwer.
9. Reardon-Reeves N, Yaruss JS. *School-age stuttering therapy: A practical guide*.
10. Packman A, Onslow M, Webber M, Harrison E, Arnott s.,Liyod W. Lidcombe program treatment trainers, consortium. Retrieved at: Lidcombe program treatment guide.
<http://lidcombeprogram.org/wb-content/uploads/Lidcombe-Program-Treatment>.
- 11.O, Brian S, Carey B, Lowe R, Onslow M, Packman A, Cream A. Camperdown program treatment guide. Australian Stuttering Research Center, University of Sydney. Retrieved at
<https://www.uts.edu.au/sites/default/files/10/camperdown20%program20%Treatment20%Guide20%>
12. Ward D, Scott KS (Eds).*Cluttering:A handbook of research, intervention and education*. Psychology Press. Pertijs MAJ, Oonk LC, Beer de JJA, Bunschten EM, Bast EGEG, Veenendaal van H. *Clinical guideline stuttering in children, adolescents and adults*. NVLF, Woerden
13. Howard S, Lohmander A. *Cleft Palate Speech: Assessment and intervention*. Wiley-Blackwell.
14. Kummer AW. *Cleft palate and craniofacial anomalies*. Thomson.
15. Peterson-Falzone SJ, Trost-Cardamone J, Karnell MP, Hardin-Jones MA. *The clinician 's guide to treating cleft palate speech*. Mosbey.
16. Peterson-Falzone SJ, Hardin-Jones MA, Karnell MP. *Cleft palate speech*. Mosbey.

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist, and the practical implementation of the methods.

Course name: Speech therapy in dysphagia (oro-pharyngeal and oral phases) in adults

Code of course: 10

Prerequisites: None

Number of credits: 1 (0.5 theoretical, 0.5 practical)

Type of the course: Theoretical- practical

The overall purpose of the course: Familiarity with natural swallowing (oro-pharyngeal-oral phases), dysphagia (oro-pharyngeal and oral phases), and methods of assessment and treatment of swallowing disorders in adults.

Course description: In this course, students will learn about the mechanism of natural swallowing in adults, the nature of swallowing disorders, the types of causes that cause it in adults, and the methods of assessment and treatment of swallowing disorders (dysphagia) (oro-pharyngeal and oral phases) in adults.

Outlines: Theoretical (9 hours):

1. Anatomy and physiology of normal swallowing in adults.
2. Definition, classification, terminology of frequently used words and the prevalence of swallowing disorders in adults.
3. Pathophysiology and symptoms of swallowing disorder (oro-pharyngeal and oral phases) in neurological disorders (Cerebrovascular accident CVA, Traumatic brain injuries, Parkinson's disease, Alzheimer's diseases, Multiple sclerosis, Amyotrophic Lateral Sclerosis).
4. Pathophysiology and symptoms of swallowing disorders in head and neck cancers.
5. Pathophysiology and symptoms of dysphagia after intubation (intubation).
6. Familiarity with dysphagia in the oral-pharyngeal and esophageal phases.
7. Clinical evaluation methods for swallowing disorders (oro-pharyngeal and oral phases) in adults including history, evaluation of the structure and function of the organs involved in swallowing, and familiarity with common tests in the evaluation of swallowing disorders.
8. Instrumental evaluation methods, Fiberoptic endoscopic evaluation of swallowing (FEES), Video fluoroscopy swallowing studies (VFSS), Manometry, sonography, Radiography.

9. Principles and approaches of swallowing disorder treatment (oro-pharyngeal and oral phases) in adults.
10. Compensatory methods of treating swallowing disorders (oro-pharyngeal and oral phases) in adults (change of position, change of food concentration, change of food delivery method and use of prostheses).
11. Rehabilitation methods for the treatment of swallowing disorder (oro-pharyngeal and oral phases) in adults (oral motor exercises, swallowing maneuvers (oro-pharyngeal and oral phases) and temperature tactile stimulation).
12. Familiarity with new methods of treating swallowing disorder (oro-pharyngeal and oral phases) in adults (such as Neuromuscular Electrical Stimulation (NMES)).
13. Familiarity with medical treatment methods for swallowing disorder (oro-pharyngeal and oral phases) in adults (medication, surgery and non-oral feeding methods).
14. The role of speech and language pathologist in the evaluation and treatment of swallowing disorder (oro-pharyngeal and oral phases) in the intensive care unit (ICU).
15. Familiarity with coding adults swallowing disorders based on the ICF framework.

Outlines: Practical (17 hours):

1. Screening for swallowing disorders (oro-pharyngeal and oral phases) in adults.
2. Implementation of clinical evaluation methods for swallowing disorder (oro-pharyngeal and oral phases) in adults, including case history, evaluation of structure and function of organs involved in swallowing (oro-pharyngeal and oral phases), clinical evaluation of swallowing (oro-pharyngeal and oral phases).
3. Implementation of treatment methods for swallowing disorder (oro-pharyngeal and oral phases) in adults.
4. A case of coding adult swallowing disorder based on ICF.

References:

1. Murry T, Carrau RL. Clinical assessment of swallowing disorders. Plural Publishing.
2. Corbin-Lewis K, Liss, JM Sciortino KL. Clinical anatomy & physiology of swallow mechanism .Thomson Delmar.
3. Carrau RL, Murry T. Comprehensive management of swallowing disorders. Plural publishing.

4. Rosenbek J. Dysphagia in movement disorders. Plural publishing.

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple choice questions and in the domain of the proficiency will be carried out with a written report, the checklist and the practical implementation of the methods.

Course name: Speech therapy in Reading and writing developmental disorder

Code of course: 11

Prerequisites: None

Number of credits: 2 (1 theoretical, 1 practical)

Type of the course: Theoretical- practical

The overall purpose of the course: In this course, the student will be fully acquainted with the theoretical foundations of the reading and writing developmental disorder. He/she learns general and specific assessment methods of reading and writing and methods of improving reading and writing performance by relying on eliminating linguistic defects.

Course description: In this course, the student will be introduced to the evolution of theories in the field of reading and writing developmental disorders. In particular, he/she learns theories related to linguistic defects. He/she learns approaches of the evaluation and treatment of reading and writing developmental disorders based on theories.

Outlines: Theoretical (17 hours):

1. Familiarity with the types of reading and writing developmental disorders and the characteristics of each one.
2. Familiarity with the differences between the classification of reading and writing developmental and acquired disorders.
3. Familiarity with the etiology of reading and writing developmental disorders including:
 - a. Visual Processing Approaches
 - b. Temporal Processing
 - c. Phonological Core Deficit
 - d. Dual Subtype Approaches (Phonological processing, rapid automatized naming, and orthographic processing)
 - e. Neurolinguistic approach
4. Introduction to cognitive neurology model in explaining defects in children with reading and writing developmental disorders
5. Familiarity with the approach of psycholinguistic in explaining the defects of children with reading and writing developmental disorders.

6. Introducing team approaches in the evaluation and treatment of children with reading and writing developmental disorders and determining the role of speech and language pathologist in the team.
7. Familiarity with assessing the general domains of children with reading and writing developmental disorders (such as intelligence, motor skills...).
8. Familiarity with assessment in specific areas of cognition, language, reading and writing in children with reading and writing developmental disorders.
9. Familiarity with therapeutic approaches in areas of cognition, language, reading and writing in children with reading and writing developmental disorders.
10. Reading and spelling developmental disorders in children with specific language impairments.
11. Familiarity with coding in? of? reading and writing developmental disorder based on the ICF framework.

Outlines: Practical (34 hours):

1. Performing and interpreting assessments in specific areas of cognition, language, reading and writing in children with reading and writing developmental disorder.
2. Implementation and interpretation of therapeutic approaches in specific areas of cognition, language, reading and writing in children with reading and writing developmental disorder.
3. A case of code reading and writing developmental disorder based on ICF.

References:

1. Snowling M, Stackhouse J. Dyslexia, speech and language: A practitioner's handbook, 2nd ed. Whurr.
2. Paul R. Language disorders from infancy through adolescence. Elsevier.
3. Christo C, Davis J, Brock SE. Identifying, assessing and treating dyslexia at school. Springer.
4. Wallach GP. Language and school-age children with learning disabilities, chapter 4, in Vicki A. Reed (Eds). An introduction to children with language disorders, (5th ed). New York: Pearson.
5. Kamara CA. Neurolinguistic approach to reading: A guide for speech-language pathologists treating dyslexia. Plural publishing.

Student evaluation method:

The evaluation of students in the cognitive domain in the middle and at the end of the course is done with descriptive and multiple-choice questions and in the domain of the proficiency will be carried out with a written report, the checklist and the practical implementation of the methods.

Title of the Course: Speech Therapy in Autism Spectrum Disorder

Code of the course: 12

Prerequisite: None

Number of Credits: 1(0.5Theoretical – 0.5practical)

Type of the course: Theoretical – practical

The overall purpose of the course: Familiarity with the nature, causes and principles of assessment and specific treatment of communication-language disorders in autism spectrum disorder

Course description: The student is able to define and explain pathology, principles of evaluation, and specific intervention in children with a range of language communication disorders in autism spectrum disorder.

Theoretical (9 hours):

1. Criteria for diagnosing a child with communicative-linguistic impairments in autism spectrum disorder from the perspective of DSM-V and prevalence
2. The Progress of communicative-linguistic impairments in autism spectrum disorder in infancy, childhood, school, and adulthood
3. Etiology of communicative-linguistic impairments in autism spectrum disorder including genetic findings, neuropsychology, and biological neuropathy
4. Specific symptomatology of Characteristics of behavioral neuropsychology, emotional, cognitive, sensory-motor and social-communicative and linguistic in communicative-linguistic impairments in autism spectrum disorder
5. Differential diagnosis of communicative-linguistic impairments in autism spectrum disorder with disorders such as social communication disorder, childhood schizophrenia, ADHD, and developmental language disorder (specific language impairment)
6. Screening tools and diagnosis of communicative-linguistic impairments in autism spectrum disorder such as M-CHAT, GARS, and CARS
7. Assessment of communication and language in children with communicative-linguistic impairments in autism spectrum disorder (pre-assessment, linguistic assessment, and social skills)
8. Familiarity with non-specific interventions such as medication, psychotherapy, and occupational therapy

9. Speech therapy interventions for communicative-linguistic impairments in autism spectrum disorder such as behavioral interventions to promote learning, communication, and social ability such as PECS or complementary and alternative communication and to enhance linguistic competencies based on language development patterns

10. Familiarity with the coding of communicative-linguistic impairments in autism spectrum disorder based on the ICF framework

Practical (17 hours):

1. Practical implementation and interpretation of assessment of language-related areas such as games, etc. in at least two samples of referrals with patients

2. Determining the level of communication and language skills in at least two samples of referrals with patients

3. Practical implementation of treatment approaches such as PECS for at least two samples of referrals with patients

4. A case of coding of communicative-linguistic impairments in autism spectrum disorder based on ICF

The main references:

All references are based on the latest version

1. Volkmar FR, Paul R, Klin A, Cohen DJ (Eds.). Handbook of autism and pervasive developmental disorders, diagnosis, development, neurobiology, and behavior (Vol.1&2). John Wiley & Sons.

2. Longerbeam M, Sigafos J. Language and children with autism spectrum disorder, chapter in Vicki A. Reed (Ed.). An introduction to children with language disorders, (5th ed.). New York: Pearson

3. Tarbox J, Dixon DR, Sturmey P, Matson JL (Eds.). Handbook of early intervention for autism spectrum disorders: Research, Policy and practice. New York: Springer.

Student assessment method:

Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Speech therapy in acquired language disorders

Code of the course: 13

Prerequisite: None

Number of Credits: 2 (1.5 Theoretical – 0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course: Increasing students' knowledge and skills in assessing and treating a variety of acquired language disorders.

Course description: In this course, students will learn about the types of acquired language disorders caused by various neurological diseases and conditions, such as aphasia, dementia, right hemisphere injury, and concussion. Additionally, they learn how to use defined frameworks such as the ICF model, cognitive neuropsychological models, and evaluating and treating these disorders by considering the importance of the quality of life approach.

Theoretical (9 hours):

1. Definition and classification of acquired language disorders
2. A review of the types of aphasia and the mechanisms of recovery from brain injury
3. A review of aphasia assessment approaches (ICF model, application of EBP elements, and quality of life)
 - a. Psychometrics of aphasia tests
- | 4. Approaches to the treatment of aphasia
 - a. Describing the treatment process
 - b. Application of ICF model in the treatment of aphasia
 - c. Start and end point of treatment
 - d. Distinguishing between different treatment approaches
5. The model based assessment and treatment of aphasia defects
6. The assessment and treatment approaches of sentence processing disorders in aphasia
7. Assessment and treatment of multilingual aphasia
 - a. Different patterns of recovery in multilingual aphasia
 - b. Perspectives and effective factors on the treatment of multilingual aphasia
8. Approaches to assessment and treatment of discourse disorders
 - a. Defining discourse perspective, conversation analysis, and narrative perspective

- b. Discourse Disorder Assessment Approaches
 - c. Discourse Disorder treatment Approaches
9. Pathophysiology, assessment, and treatment of communication defects in right hemisphere damage (RHD)
- a. Linguistic and non-linguistic defects in RHD
 - I. . Cognitive resource hypothesis in right hemisphere communication disorders
 - II. Subduction Defect Hypothesis
 - b. Types of treatments for RHD communication deficits
 - I. Medical models, ICF, and cognitive rehabilitation in the evaluation and treatment of right hemisphere disorders
 - II. Guiding the treatment by the patient himself
 - III. Treatment of cognitive resource deficits
11. Pathophysiology, assessment, and treatment of TBI
- a. Epidemiology of TBI?
 - b. Communication, cognitive-behavioral assessment, and executive function in TBI
 - c. Recovery steps from TBI
 - d. TBI Rehabilitation Objectives
 - e. Principles of assessment and treatment of TBI
 - f. TBI treatment approaches
12. Pathophysiology, assessment, and treatment of dementia
- a. Recognition of diseases leading to dementia
 - b. Types of dementia syndromes.
 - c. Linguistic and cognitive deficits in dementia with an emphasis on Alzheimer's
 - d. The role of speech and language pathologist in working with patients with dementia
 - e. Appropriate treatment strategies for patients with dementia
13. Para clinical studies in neurological disorders (concepts, principles, applications, instrumental specifications, and interpretation of results in a variety of tools and methods of imaging of the nervous system, including MRI,CT-Scan in normal samples and samples with acquired language disorders)
14. Familiarity with coding of acquired language disorders based on the ICF framework

Practical (17 hours):

- 1. Observation of neuroimaging results including CT-Scan, MRI in normal sample and samples with acquired language disorders

2. Assessment and design of treatment plan based on ICF model (using the displayed video, case description with role play)
3. Assessment and design of treatment plan based on cognitive neuropsychology model (using the video shown, case description with role play)
4. Assessing the quality of life using a questionnaire
5. Evaluating the effectiveness of the treatment program using a quality of life questionnaire
6. Implementation of treatments related to brain damage caused by traumatic brain injury (TBI) and dementia
7. Implementing approaches to assess and treat discourse disorders

The main references:

All references are based on the latest version

1. Papathanasiou I. Coppens P. Aphasia and related neurogenic communication disorders. Jones & Bartlett Publishers.
2. Whitworth A, Webster J. Howard DA. Cognitive neuropsychological approach to assessment and intervention in aphasia: A clinician's guide. New York: Psychology Press.2014,
3. Chapey R. Language intervention strategies in aphasia and related neurogenic Communication disorders. Philadelphia: Lippincott, Williams

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist. and practical implementation of methods.

Title of the Course: Speech therapy in developmental language disorders (specific language impairments)

Code of the course: 14

Prerequisite: None

Number of Credits: 1 (0.5 Theoretical –0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course: Familiarity with the nature, causes, and principles of assessment and specific treatment of language developmental disorder (specific language impairment)

Course description: The student is able to define and explain pathology, principles of assessment, and specific intervention in children with language developmental disorder (special language impairment).

Theoretical (9 hours):

1. Definition and terminology of language developmental disorder (specific language impairment)
2. Criteria for diagnosing a child with a developmental language disorder (special language impairment) and epistemology
3. Etiology of language developmental disorder (specific language impairment) including genetic findings and biological neurology
4. Specific cognitive, linguistic, social, and academic communication semiotics in language developmental disorder (specific language impairment)
5. Differential diagnosis of language developmental disorder (specific language impairment) with disorders such as language communication disorders in autism spectrum disorder, social communication disorder, childhood schizophrenia, and ADHD
6. Screening, diagnosis and evaluation of communication and language in children with developmental language disorder (specific language impairment)
7. Speech therapy interventions for language developmental disorder (specific language impairment) and promotion of linguistic abilities, including interventions focused on grammar and meaning, treatment dosing, based on language developmental patterns
8. Familiarity with the coding of language developmental disorder based on the ICF framework

Practical (17 hours):

1. Assess and determine the level of communication and language skills in at least two samples of clients or patients
2. Practical implementation of speech therapy interventions for at least two samples of clients or patients
3. A case of ICF-based language developmental disorder coding

The main references:

All references are based on the latest version

1. Rescorla L. Dale PS (Eds.). Late talkers: Language development, interventions, and Outcomes. Paul H. Brookes Publishing Company,
2. Stavrakaki S (Ed.). Specific language impairment: current trends in research (Vol. 58). John Benjamins Publishing Company
3. Leonard LB. Children with specific language impairment. MIT.
4. Reed VA. Toddlers and preschoolers with specific language impairment, Chapter 3, in Vicki A. Reed (Ed.). An introduction to children with language disorders. (5th ed.) New York: Pearson
5. Hoff E. Research methods in child language: A practical guide. West Sussex: Blackwell Publishing Ltd.

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Speech therapy in fluency disorders

Code of the course: 15

Prerequisite: None

Number of Credits: 2 (1.5 Theoretical – 0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course: Increasing students' knowledge and skills in assessing and treating children and adults with fluency disorders based on new perspectives on pathology, assessment, and scientific evidence-based approaches.

Course description: In this course, students are expected to differentiate between fluency disorders and critique theories and models of the etiology of stuttering, evaluate stuttering and other fluency disorders and its effect on quality of life quantitatively and qualitatively and criticism, and implement scientific evidence-based therapies for the treatment of stuttering in adults. They also learn how to use the ICF framework in the assessment and treatment of fluency disorders to improve the quality of life of adults with stuttering.

Theoretical (26 hours):

1. Differential diagnosis of different types of speech disfluency including developmental and acquired disorders
2. awareness of epidemiological indicators of types of speech disfluency
3. Familiarity with models and theories of etiology of stuttering, including linguistic, neurological, motor, three-factor, demand-capacity based, and multi-factorial theories
4. Familiarity with various quantitative and qualitative assessment methods for adults with fluency disorders
5. Familiarity with Lidcombe therapy and demand-capacity based therapies
6. Familiarity with the comprehensive approach to stuttering treatment in adults
7. Familiarity with speech restructuring approaches such as Video self, Camper down Program and Comprehensive Stuttering Program (CSP), modeling (VSM) in the treatment of adolescents and adults
8. Familiarity with evidence-based assessments and treatments for emotional, psychosocial, and attitudinal issues associated with stuttering, including cognitive-behavioral therapies in adults with stuttering

9. Familiarity with different methods of stuttering treatment, including group therapy and distance therapy
10. Evaluation and treatment of acquired stuttering
11. Assessment and treatment of cluttering
12. Familiarity with coding mental disorders based on the ICF framework

Practical (17 hours):

1. Clinical observation, recording and interpretation of speech disfluency and stuttering-related behaviors in adults by using quantitative and qualitative tools
2. Determining the prognosis, short-term and long-term goals of treatment interventions in adults
3. Performing quantitative and qualitative assessment of adults with fluency disorders
4. Design and implementation of treatment plan based on evaluation results and case report
5. A case of coding speech disorder based on ICF

The main references:

All references are based on the latest version

1. Guitar B. Stuttering: An integrated approach to its nature and treatment. Lippincott Williams & Wilkins. 2014.
2. Guitar B, McCauley RJ. Treatment of stuttering: Established and emerging interventions. Wolters Kluwer.
3. Reardon-Reeves N. Yaruss JS, School-age stuttering therapy: A practical guide. 4. Packman A. Onslow M, Webber M. Harrison E. Arnott S, ..., Lloyd W. Lidcombe program trainers' consortium. Retrieved at: lidcombe program treatment guide. <http://lidcombeprogram.org/wp-content/uploads/Lidcombe-Program-Treatment>.
5. O'Brian S, Carey B, Lowe R. Onslow M, Packman A, Cream A. Camperdown program treatment guide. Australian Stuttering Research Centre, University of Sydney, Retrieved at [https://www.uts.edu.au/sites/default/files/10/Camperdown%20Program%20Treatment%20\(Guide%20June%2020](https://www.uts.edu.au/sites/default/files/10/Camperdown%20Program%20Treatment%20(Guide%20June%2020)
6. Ward D. Scott KS (Eds.). Cluttering: A handbook of research, intervention and education. Psychology Press.

7. Pertijs MAJ, Oonk LC, Beer de JJA, Bunschoten EM, Bast EJEG..... Veenendaal van. Clinical guideline 'stuttering in children, adolescents and adults. NVLF, Woerden.

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Speech therapy in voice disorders

Code of the course: 16

Prerequisite: None

Number of Credits: 2 (1 Theoretical Credit –1 practical Credit)

Type of the course: Theoretical – practical

The overall purpose of the course: In this course, students' knowledge about pathology, evaluation, diagnosis and treatment of voice disorders, and skills in this field will be increased by focusing on physiological approach.

Course description: In this course, the student is introduced to the functional anatomy and pathophysiology of dystonic muscle tension, and to additional sound assessments. Also, they learn the types of treatments for voice disorders with a focus on the physiological approach and know and perform the method of coding voice disorders within the ICF framework.

Theoretical (17 hours):

1. Functional anatomy (touch) of laryngeal and neck muscles
2. Phonological physiology (mechanisms of frequency change, loudness, and sound quality)
3. Pathophysiology of dysphonic primary and secondary muscle tension
4. Auditory perceptual assessment and posture assessment
5. Physiological sound therapy: manual laryngeal therapy based on vocalization, functional voice exercises, resonant sound therapy, sound warming methods, and sound therapy by stressing method
6. Introduction of laryngeal surgery treatments
7. Speech rehabilitation before and after laryngeal cancer surgeries
8. Familiarity with the coding of voice disorders based on the ICF framework

Practical (34 hours):

1. Observation and practical implementation of functional anatomy (touch) of laryngeal and neck muscles
2. Practical implementation of perceptual assessment of sound steadiness using formal scales, observation, and practical implementation of postural assessment

3. Observation and practical implementation of manual laryngeal treatment based on phonation
4. Observation and practical performance of functional exercises of the voice.
5. Observation and practical implementation of resonant voice therapy
6. Observation and practical implementation of methods of voice warming
7. Observation and practical implementation of voice therapy by stressing method.
8. Watching the video of voice surgery treatments
9. Observation and practical implementation of speech rehabilitation before and after laryngeal cancer surgeries
10. A case of coding voice disorder based on ICF

The main references:

All references are based on the latest version

1. Stemple JC, Roy N, Klaben BK. Clinical voice pathology: Theory and management: Plural Publishing
2. Seikel JA, Drumright DG, King DW. Anatomy & physiology for speech, language, and Hearing: Nelson Education,
3. Colton RH, Casper JK, Leonard R. Understanding voice problems. Philadelphia: Techbooks

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Speech therapy in communication disorders in cleft palate and cranial-facial abnormalities

Code of the course: 17

Prerequisite: None

Number of Credits: 1Credit (0.5 Theoretical –0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course: In this lesson, the student is introduced to the advanced topics of communication disorders in congenital and acquired facial cranial malformations, focusing on cleft lip and palate and how to evaluate and treat them.

Course description: At the end of this course, the student is expected to know the structure and function of the velopharyngeal valve, the effect of velopharyngeal insufficiency and mouth, face and throat abnormalities on speech, the growth of language in the cleft palate, and various perceptual and instrumental assessments. They also learn to interpret them, differentiate diagnosis and record speech errors related to cleft palate, design an appropriate treatment plan and know and perform the method of coding cleft palate within the ICF framework.

Theoretical (9 hours):

1. A review of the anatomy and physiology of oral-facial structures, function of the velopharyngeal valve in non-verbal and verbal activities, causes and symptoms of velopharyngeal dysfunction, articulation errors associated with cleft palate
2. The effect of mouth, face, and pharynx abnormalities on speech and resonance
3. Primary phonological development in children with cleft palate.
4. Standard perceptual assessments (such as CAPS), differential diagnosis of speech disorders associated with cleft palate and transliteration, and error recording
5. A review of instrumental assessments including nasometry, nairoscopy, video fluoroscopy, and aerodynamics
6. Evaluation of velopharyngeal system using Nasometer
7. Interpretation of the results of instrumental evaluations and the relationship of their findings with perceptual evaluations
8. Treatment techniques for cleft palate articulation disorders
9. Methods of treatment of hyper nasality in borderline velopharyngeal dysfunction

10. The role of speech and language pathologist in resolving nutrition problems and prosthetic treatments and various secondary surgeries in VPI.

11. Familiarity with cleft palate coding and associated disorders in the ICF framework

Practical (34 hours):

1. Performing perceptual assessments (such as completing a standardized CAPS form) for at least 2 patients, linking their findings to data from direct and indirect instrumental assessments, and performing differential diagnosis through video viewing

2. Designing a treatment plan for at least 2 real patients (hyper nasality therapy and articulation)

3. Observing the implementation of hyper nasality therapy techniques and articulation and prepare reports

The main references:

All references are based on the latest version

1. Howard S. Lohmander A. Cleft palate speech: Assessment and intervention. Wiley Blackwell.

2. Kummer AW. Cleft palate and craniofacial anomalies. Thomson.

3. Peterson-Falzone SJ, Trost-Cardamone J, Karnell MP, Hardin-Jones MA. The clinician's guide to treating cleft palate speech. Mosby,

4. Peterson-Falzone SJ, Hardin-Jones MA, Karnell MP. Cleft palate speech. Mosby

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Speech therapy in motor speech disorders in adulthood

Code of the course: 18

Prerequisite: None

Number of Credits: 2 (1.5 Theoretical –0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course:

The aim of the course is to get acquainted with the natural and non-natural aspects of the components and functions of the speech motor system and to achieve the ability to assess and treat speech motor disorders in adulthood.

Course description: In this course, the student will be introduced to speech motor disorders in adulthood and the basics and neural pathways needed to control speech movement. Also, they learn the pathology, types, symptoms, evaluation, and treatment of motor speech disorders in adulthood.

Theoretical (26 hours):

1. Familiarity with what is motor control and different theories of motor control
2. Familiarity with speech motor control models
3. Familiarity with the difference between motor control of non-spoken limbs and speech.
4. Familiarity with the difference between controlling verbal and non-verbal movements
5. Familiarity with methods of assessing speech motor disorders
6. Evaluation of the mechanism of speech production in speech motor disorders
7. Familiarity with flaccid paralysis and treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects
8. Familiarity with spastic paralysis and treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects
9. Familiarity with ataxic paralysis and treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects
10. Familiarity with hypokinetic paralysis and treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects
11. Familiarity with hyperkinetic paralysis and treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects

12. Familiarity with hyperkinetic paralysis and treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects
13. Familiarity with speech apraxia and its treatment methods
14. Familiarity with the coding of speech movement disorders based on the ICF framework

Practical (17 hours):

- Evaluation and implementation of treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects in flaccid paralytic speech
- Evaluation and implementation of treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects in spastic paralytic speech
- Evaluation and implementation of treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects in ataxic paralytic speech
- Evaluation and implementation of treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects in hypokinetic paralytic speech
- Evaluation and implementation of treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects in hyperkinetic paralytic speech
- Evaluation and implementation of treatment methods for respiratory, resonance, phonation, articulation and related speech rhythms defects in mixed paralytic speech

The main references:

All references are based on the latest version

1. Duffy J. Motor speech disorders: substrates, differential diagnosis, and management (3rd ed.). Mosby.
2. Freed D. Motor speech disorders: diagnosis and treatment. Delmar.
3. Perrier P. About speech motor control complexity. In Harrington, J. and Tabain, M. (Eds.): Towards a better understanding of speech production processes. New York: Psychology Press.

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Title of the Course: Thesis

Code of the course: 19

Prerequisite: None

Number of Credits: 4

Type of the course: Research

The overall purpose of the course: To increase students' knowledge and awareness about the requirements and principles of conducting research and practical familiarity with the design and implementation of research in the field of speech therapy.

Course description: In this course, the student, with the help of supervisors and counselors, writes a proposal and implements practical research related to specialized areas of speech therapy.

Content Outline:

Writing a proposal

Conducting research

Preparing a research report

The main references:

References related to dissertation research.

Student assessment method: Students are evaluated by the referee professors and the research guidance team at the time of presenting the dissertation research results in accordance with the provisions of the discontinuous Master's regulations approved by the High Council for Medical Sciences Planning.

Title of the Course: Speech therapy in speech sounds disorders

Code of the course: 20

Prerequisite: None

Number of Credits: 2 (1 Theoretical –1 practical)

Type of the course: Theoretical – practical

The overall purpose of the course:

Increasing students' knowledge and awareness by introducing new perspectives and attitudes in pathology, evaluation, and methods to improve phonetic and phonological disorders with different causes.

Course description: In this lesson, the student examines perspectives based on the nature of phonological and phonetic disorders.

They get acquainted with the methods of assessment and treatment of speech sound disorders in the nervous system damage and the cognitive, structural, sensory, and motor disorders. With evidence-based analysis, they select appropriate treatment methods and manage the treatment process.

Theoretical (26 hours):

1. Familiarity with theories and topics of learning speech sounds and how they are disturbed from a linguistic, sensory, motor, and structural perspective
2. Assessing speech sounds and abilities required for the target population and determining the ICF - based level
3. Examination and assessment of the structure of the speech organs, motor functions, communication activities and environmental factors (data collection using formal and informal tests)
4. Determining the prognosis based on the analysis of abilities and disabilities and personal and environmental factors affecting treatment
5. Determining treatment goals according to assessment findings to increase speech clarity and achieve proper production of sounds in different linguistic contexts.
6. Determining the level of damage of language units (syllabic, lexical), communication contributions and sensory, motor, and cognitive abilities to design treatment
7. Clinical decision for choosing treatment method using an activity based on the best empirical evidence
8. Familiarity with coding speech sound disorders based on the ICF framework

Practical: (34 hours)

1. Implementation of assessment methods in a case of patients with speech sounds disorders
2. Collecting speech samples from the person being studied
3. Speech sample analysis by analyzing phonological, phonetic, motor, and productive aspects
4. Determining the prognosis and planning treatment goals and plans
5. Implementation of treatment in the studied disorder
6. Analyzing the findings and describing the treatment method based on scientific and clinical evidence
7. Oral and written reports of the studied client
8. A case of coding speech sound disorder based on ICT

The main references:

1. Williams AL, McLeod S, McCauley RJ. Interventions for speech sound disorders in children. Baltimore, MD: Brookes Publishing Company,
2. Bernthal JE, Bankson NW, Flipsen JR. Articulation and phonological disorders: Speech sound disorders in children. 7th ed. Boston: Pearson
3. Dodd B. Differential diagnosis and treatment of children with speech disorder. John| Wiley & Sons.
4. Miller N, Lowit A. (Eds.). Motor speech disorders: A cross-language perspective. Bristol, UK: Multilingual Matters.
5. Zarifian. Speech Sound Disorders in Children. Tehran nevis

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple choices questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Neuroscience in connection with language and cognition

Code of the course: 21

Prerequisite: None

Number of Credits: 1

Type of the course: Theoretical

The overall purpose of the course: Increasing students' knowledge in the field of neuroscience and its role in cognition, speech and language.

Course description:

In this course, students are introduced to the principles of neuroscience and neuroanatomy and neurophysiology related to cognition, speech, and language and learn their importance in the formation of cognition, speech and language.

Theoretical content (17 hours):

1. A review of neuroanatomy and neurophysiology of the central nervous system
2. A Review of sensory, motor, and balance systems (anatomy, nervousness, clinical considerations)
3. A review of cranial nerves (classification, routes, clinical considerations)
4. Familiarity with the limbic system and its function
5. Familiarity with organizing cognition in the brain
6. Familiarity with cognitive functions of the motor area
7. Neural mechanisms of language, learning, and memory

The main references:

1. Kandel ER, Schwartz JH, Jessell T, Siegelbaum SA, Hudspeth AJ. Principles of neural science. 5th edition. McGraw-Hill professional.

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Evidence-based speech therapy

Code of the course: 22

Prerequisite: None

Number of Credits: 1

Type of the course: Theoretical

The overall purpose of the course:

Student familiarity with the principles and methods of evidence-based clinical practice (Evidence-based Practice (EBP)) in the field of speech therapy so that they can apply these methods in the pathology, assessment, and treatment of speech, language, communication and swallowing (oral and pharyngeal phases) disorders in children and adults, in addition they will be able to design and implement research projects based on evidence.

Course description:

Evidence-based clinical practice (EBP) is the comprehensive, explicit, and accurate use of the best available evidence to be able to make decisions about the health care of each individual.

EBP is based on the premise that the clinical opinions and decisions of any therapist must be based on strong support, and that is the best clinical evidence from systematic research, given the wider use of the EBP approach in speech therapy. According to the above mentioned definition, which is originally derived from medicine and epidemiology, students of speech and language pathology should learn:

- (1) How to use the most documented and valid clinical evidence in clinical environments to provide the most appropriate interventions and also help clients to reduce costs in this area as well;
- (2) Relying on evidence-based clinical activity to develop a systematic framework for required researches in the country and in this way, the needs of the society with speech, language, communication, and swallowing disabilities (oral and oral -pharyngeal phases) are properly identified and research is directed towards a more purposeful direction.

Theoretical content (17 hours):

1. Introduction to the definition of Evidence-Based Medicine (EBM), Evidence-Based Activity (EBP)
2. Introduction to related terms regarding how to design an EBP-based clinical and research question
3. Familiarity with the principles of effective search protocol design and the principles of conducting a systematic search to find the best evidence for the clinical question

4. Familiarity with the world's leading systems for leveling scientific evidence
5. Familiarity with quality assessment systems in the world to evaluate the quality of research methodologies,
6. Familiarity with the principles of critical appraisal and quality evaluation criteria of the methodology of various researches, including qualitative and quantitative researches by their subsets, as well as effectiveness studies
7. Learning how to use search results based on finding the best evidence, both in the research environment and in the clinical setting
8. Familiarity with the types of evidence derived from clinical work, client preferences, and how they are used in the clinical setting

Practical content (34 hours):

1. Designing a clinical question in each area of clinical problems (PICO-PECO-PO-PCO)
2. Practical design of effective search protocol and search execution to find the best evidence related to the above designed question (library-based)
3. Determining the level of obtained evidence in the search by using the principles of EBP
4. Practical evaluation of a variety of studies with different methodologies using critical appraisal checklists including:
 - a. Critical evaluation of observational-qualitative studies,
 - b. Critical evaluation of observational-analytical studies (case-control and cohort),
 - c. Critical Evaluation of Quantitative Studies - RCT d,
 - d. Critical evaluation of quantitative studies - Systematic review and meta-analysis,
 - e. Critical evaluation of case-control quantitative studies,
 - f. Critical evaluation of quantitative studies - diagnostic accuracy,
 - g. Critical evaluation of quantitative studies - validity and reliability,
 - h. Critical evaluation of case studies and single subject.
5. Practical implementation of a critical review of the evidence relevant to the student's clinical question So that it has clinical efficiency in the moment.
6. Establishing the writing of the student's own proposal review section, based on the principles of FBP, so that the principles of critical review is used in the writing in a systematic review or meta-analysis manner.
7. Implementation of the proposal in order to add to the existing evidence by looking at the specific clinical question of each student.

The main references:

All references are based on the latest version

1. Dollaghan CA. The handbook for evidence-based practice in communication disorders Baltimore, MD: Paul H. Brookes.
2. Greenhalgh T. How to read a paper: The basics of evidence based medicine (4th ed. London: Blackwell/BMJ Books.
3. Hayne, RB, Sackett DL, Guyatt GH, Tugwell P. Clinical epidemiology: how to do clinical practice research (3rd Ed.). Philadelphia: Lippincott Williams & Wilkins.
4. Reilly S, Oates J, Douglas J. Evidence-based practice in speech pathology: future directions. In S. Reilly, J. Douglas & J. Oates (Eds.), Evidence-based practice in speech pathology (pp. 330-352). London: Whurr.
5. Rose M, Baldac S. Translating evidence into practice. In S. Reilly, J. Douglas & J. Oates (Eds.). Evidence-based practice in speech pathology (pp. 317-329). London: Whurr

The list of essential articles and up-to-date sites in the field of evidence-based speech therapy for study will be updated at the time of teaching and will be made available to students.

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Clinical Linguistics

Code of the course: 23

Prerequisite: None

Number of Credits: 2 (1.5 Theoretical – 0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course:

Familiarity of students with theories in various fields of linguistics in order to analyze data and language performance of children and adults with a clinical linguistic approach.

Course description:

In this course, students are introduced to up-to-date theories of linguistics in various fields (word construction, syntax, meaning, phonology, discourse analysis, and social linguistics) and apply these theories in various clinical areas and in a patient-centered manner. In this way, they examine the data obtained from people with various disorders from linguistic perspectives.

Theoretical Outline (26 hours):

1- Pragmatic, discourse analysis and social linguistics which includes the following topics:

- a. Discourse analysis and communication disorders
- b. Implications for conversation and communication disorders
- c. Communication theory and communication disorders

2. Syntax and semantics which includes the following topics:

- a. Chomsky's syntactic theory and linguistic disorders
- b. Formal sequence and language disorder
- c. Syntactic processing in developmental and acquired language disorders

3. Word construction and language disorder

4. Phonetics and phonology which includes the following topics:

- a. Acoustic speech analysis
- b. Clinical transcription
- c. Phonological analysis and processes related to the field of phonology
- d. Familiarity with some up-to-date theories of phonology such as " optimality theory" and its application and clinical approaches

Practical content (17 hours):

1. Instrumental analysis of articulation in speech disorders
2. Instrumental resonance analysis in speech disorders
3. Analytical instrumentation of vowel and non-vowel
4. Speech to text conversion tools

The main references:

All references are based on the latest version

1. Ball MJ. Perkins MR Muller N. Howard S. (editors). The handbook of clinical linguistics. Blackwell Publishing Ltd.
2. Hornstein N. Nunes J. Grohmann KK. Understanding minimalism. Cambridge University Press.

۳، بی جن خان، م. واج شناسی؛ نظریه بهینگی، ناشر: سمت، ۱۳۹۷

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Methodology of single subject studies

Code of the course: 24

Prerequisite or simultaneous: Research and testing methods

Number of Credits: 2 (1.5 Theoretical – 0.5 practical)

Type of the course: Theoretical – practical

The overall purpose of the course:

Familiarity with the principles of design and implementation of single subject study in the field of communication, language, speech, and swallowing (oral and oral-pharyngeal phases) disorders

Course description: In this course, the student is introduced to the position of individual case research and its types in behavioral science research, especially speech and language pathology, and by learning the principles of the design of a single case study they can design and implement a suitable plan for a patient with speech and language or swallowing (oral and pharyngeal geese) disorders and analyze the results based on the specific analytical measurements of these studies as well as one of the types of special effect size of these studies.

Theoretical content (17 hours):

1. Familiarity with various research methods in behavioral sciences, the place of single subject studies in them, and their differences with group studies
2. The difference between single subject with case study and types of case reports
3. All kinds of design: withdrawal, reversal multiple baseline / probe, interaction, alternating
4. Familiarity with the concepts of baseline, different phases, independent and dependent variables and confounders and how to measure them in single subject studies
5. Familiarity with common types of effect size calculations in single subject studies
6. How to measure variables in single subject studies
7. Familiarity with specific charts of single subject studies
8. Familiarity with the concepts of slop, trend, level, variability, and visual analysis of data
9. Quality assessment of individual case studies and their standard implementation criteria
10. Reproducibility and validity in single subject studies
11. Validity of the intervention in single subject studies
12. Limitations of such studies and their solutions

Practical content (34 hours):

- Estimation of the conditions and selection of references to enter the study
- Single subject study design
- Execution of phases
- Draw diagrams
- visual analysis
- effect size analysis
- Submitting a report

The main references:

All references are based on the latest version

1. Gast D. Single Subject Research Methodology in Behavioral Sciences. Taylor & Francis

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.

Title of the Course: Biomechanics of speech production organs

Code of the course: 25

Prerequisite or simultaneous: none

Number of Credits: 2 Credits

Type of the course: Theoretical

The overall purpose of the course: Familiarity with the biomechanics of the speech organs and the role of speech muscles in speech production

Course description: In this course, the student will be introduced to the basic concepts of biomechanics and neurophysiology of speech muscles. They learn the kinematics and biomechanics of the speech organs and the role of the various muscles of the larynx, tongue and lips in producing speech sounds.

Theoretical Outline (34 hours):

What is biomechanics, definition of concepts in biomechanics, arthritis of muscles, neurophysiology of skeletal muscles in motion, biomechanical properties of muscles in motion, mechanisms of movement due to muscle nerve interaction and joint

Skeletal considerations in movement of Speech organs

Physiology of speech organs and their function in speech production

Laryngeal biomechanics

Biomechanics of arytenoid cartilage

Hyoid biomechanics and supra and infra hyoid muscles

Laryngeal biomechanics in different vocal styles

Biomechanics of lip muscles and their function in the production of vowels

Biomechanics of lip muscles and their function in the production of consonants

Biomechanics of tongue muscles and its function in the production of vowels

Biomechanics of tongue muscles and its function in the production of consonants

The main references:

All references are based on the latest version

1. Winter A. Biomechanics and motor control of human movement. John Wiley & Sons.

2. MeLoon LK. Andrade F. Craniofacial muscles: A new framework for understanding the Effector side of craniofacial muscle. Springer

3. Harris T. Howard DM. The voice clinic handbook. (2nd Ed.). Wiley.

4. Marchal A. From speech physiology to linguistic phonetics. (1st Ed.). Wiley

Student assessment method: Assessment of students in the field of cognition in the middle and at the end of the course is by descriptive and multiple-choice questions and in the field of skills is done using a written report, checklist, and practical implementation of methods.