Instrumental Phonetics

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1 Course Description

1.1 Title of a Course

Instrumental Phonetics is a course for 1st-year Master's students of the National Research University Higher School of Economics.

1.2 Pre-requisites

The course establishes some demands on students' skills in spoken and written English, some knowledge of Articulatory phonetics, and some basics of R programming languages (runing scripts, uploading .csv files, installing and loading libraries).

1.3 Course Type

Instrumental Phonetics is a Compulsory Course for Master's programme 'Linguistic Theory and Language Description'.

1.4 Abstract

2 Learning Objectives

Learning objectives of the course 'Instrumental Phonetics' are to introduce students to:

- theoretical apparatus, key notions, and main principles of articulation and acoustic phonetics;
- the logic of articulation and acoustic analysis of sounds patterns of languages;
- instrumental methods of the phonetic analysis (including computer programing);
- critical thinking and reasoning within articulation and acoustic analysis.

3 Learning Outcomes

After completing the study of the discipline 'Instrumental Phonetics' students should:

- understand the principles of articulation and acoustic phonetics
- be able to read and critically assess current phonetic literature;
- be able to make empirical observations and theoretical generalizations;
- to apply their knowledge of the essentials of Instrumental Phonetics to various research problems in both Phonetics and Phonology.

4 Course Plan

1. Wave characteristics, spectrogram, oscilogram
2. Vowels and articulatory phonetics related to them. Formants. Tube model
3. Sonorants
4. Obstruents
5. Spectrum analysis
6. Prosody: stress, tones, pitch
7. Methods of phonetic investigation: palatography, MRI, electrography, laryngoscopy, etc.
8. Perceptional phonetics
9. Speech recognition and synthesis
10. Phonological and phonetic description durig fieldwork

5 Reading List

5.1 Required

1. Ashby, P. Understanding phonetics / P. Ashby. – London: Hodder Education, 2011. – 230 c. – (Understanding language series) . ISBN 978-0-340-92827-1.
2. Ladefoged, P. A course in phonetics / P. Ladefoged, K. Johnson. – 6th ed. – Belmont: Wadsworth Cengage Learning, 2011. – 322 c. + CD-ROM. ISBN 978-1-428-23127-6.

5.2 Optional

1. Above and beyond the segments: experimental linguistics and phonetics / Ed. by J. Caspers [et al.]. – Amsterdam; Philadelphia: John Benjamins Publishing Company, 2014. – 363 c. ISBN 978-90-272-1216-0.
2. Davenport, M. Introducing phonetics and phonology / M. Davenport, S. J. Hannahs. – 3rd ed. – London: Hodder Education, 2010. – 255 c. ISBN 978-1-444-10988-7.
3. Sweet, H. A handbook of phonetics: including a popular exposition of the principles of spelling reform / H. Sweet. – Cambridge [etc.]: Cambridge University Press, 2013. – 215 c. – (Cambridge library collection) . ISBN 978-1-10-806228-2.
4. O'Grady, G. Key concepts in phonetics and phonology / G. O'Grady. – New York: Palgrave Macmillan, 2013. – 174 c. – (Palgrave key concepts) . ISBN 978-0-230-27647-5.
5. The Bloomsbury companion to phonetics / Ed. by M. J. Jones, R.-A. Knight. – London; New York; New Delhi: Bloomsbury, 2013. – 314 c. – (Bloomsbury companions) . ISBN 978-1-441-14606-9.
6. Zsiga, E. C. The sounds of language: an introduction to phonetics and phonology / E. C. Zsiga. – Chichester: Wiley-Blackwell, 2013. – 474 c. – (Linguistics in the world) . ISBN 978-1-405-19103-6.
7. Baayen, R. H. Analyzing linguistic data: a practical introduction to statistics using R / R. H. Baayen. – Cambridge [etc.]: Cambridge University Press, 2014. – 353 c. ISBN 978-0-521-70918-7.

6 Grading System

Type of work	**Characteristics**	
Homework assignments	3	Annotating and annolising audio data.
Exam	1	Solving the theoretical problemes, programming and data analisys

During all types of assignments students have to demonstrate their demonstrate their acquaintance with the spectral characteristics of differend acoustic signals and ability to annotate and annalise acoustic data using computer programs such as Praat and R.

7 Guidelines for Knowledge Assessment

Cumulative grade for the student's work during the module is the mean scores for homework assignments. The assessment consists of final assessment is the final exam. Final course mark is obtained from the following formula:

$$\text{Final Mark} = 0.6 \times (\text{Cumulative Grade}) + 0.4 \times (\text{Exam})$$

The grades are rounded to the nearest integer. All grading scales are summed up in following table:

Grading Scale		
ten-point	five-point	
1 — very bad	2 — no pass	FAIL
2 — bad		
3 — no pass		
4 — pass	3 — pass	PASS
5 — highly pass		
6 — good	4 — good	
7 — very good		
8 — almost excellent	5 — excellent	
9 — excellent		
10 — perfect		

8 Methods of Instruction

The following educational technologies are used in the study process:

- classic lectures
- seminar could be as following:
  - some scientific problem solution using computer programs
  - group discussion and analysis of the results of home readed scientific articles
  - group work on some recording and analysing technics such as recoreder and headset usage, palatography practice and so on

9 Special Equipment and Software Support

The course requires a laptop, projector, and acoustic systems. Durig the seminars all students should be equiped with laptop and computer programs R and Praat (both are available under the GNU General Public License).