Novosibirsk National Research State University (NSU)

Bachelor Degree Program 035800

Fundamental and Applied Linguistics

Compulsory entrance tests are the following: a Foreign Language, the Russian Language, Mathematics.
Standard term of apprenticeship is 4 years.
Total workload comprises 240 points of credit.

Structure of the Presentation

General Information

Background

The application of mathematical and computer methods in linguistics have been actively developed since the mid-1950s.

The first admission of students to the speciality «Mathematical linguistics» was accomplished at the NSU in the academic year of 1962/1963. It was made in accordance with the Directive of the Ministry of Higher and Secondary Education of the Russian Soviet Federated Socialist Republic (RSFSR) of 12 February 1962. It was the Directive No. 111.

The Department of Mathematical Linguistics functioned at the NSU until 1976.

The modern successor of the speciality «Mathematical linguistics» is the Bachelor Degree Program «Fundamental and Applied Linguistics». It was instituted by the Directive No. 856 of the Ministry of Education and Science of the Russian Federation of 12 August 2010.

At the NSU the Department of Fundamental and Applied Linguistics was branched in 2011.

Mission

The development of an educational and research center at Novosibirsk State University.
This center will carry out the theoretical and applied interdisciplinary studies of language on the interfaces between linguistics, mathematics, informatics, cognitive science, and neurosciences. The center will also train specialists in these fields of science. The specialists are to be trained on the basis of two sciences — linguistics and mathematics.

Leo Tolstoi, a Russian writer of the XIX century, wrote in one of his letters: «There are only two sciences that are absolutely useful. One of them is language or the skills to express all kinds of thoughts in different forms. Another one is mathematics.»

Objectives:

• To create opportunities that will allow the students and teachers who are interested in multisubject studies to gain a better understanding of the problems associated with these studies. Cooperation with Russian and foreign scientists will be of service here.

• To involve competent teachers who are engaged in the multisubject studies of language.

● To train graduates who will be able to work in the interdisciplinary teams. The graduates are expected to be familiar with the works of Russian and foreign scientists who specialize in the relevant areas of science. The graduates are also expected to be ready to work in the international academic environment.

● To create opportunities for the secondary school students to learn about this field of interdisciplinary research, which will allow these students to use the information obtained for the informed choice of their future profession.

Our department is young. We have just started to head for these objectives. And we shall be happy if you join us in our way to them.

Fundamental and Applied Linguistics implies:

• Research into the hidden laws of language, especially the laws that are connected with the logical, cognitive, and neurophysiological aspects of the linguistic activities of people.

● Mathematical and computer modelling of various aspects of the linguistic activities of people.

● Mathematical and computer modelling of the linguistic structures and linguistic notions.

• Development, implementation, and application of computer tools for linguistic studies.

• Creation and support of linguistic electronic resources (corpora, dictionaries) and the programs for automated language processing.

• Development of computerized tools for general purposes. The tools are meant to be used for the semantic information search, for the automatic abstracting, classification, and comparison of texts as well as for the measurement of different formalized characteristics.

Activities

•   Theoretical and applied research in the field of fundamental and applied linguistics.

•   Creation of experimental versions and display materials for the models and computer systems under development.

•   Study of demand for applied linguistic products.

•   Orientation of the educational process towards the above mentioned types of activities. All categories of students are supposed to take part in these activities.

•   Work with the secondary school students.

Academic activities

During the course of studies every student needs to:

- Master all the compulsory disciplines of the degree course scheme.

- Do at least six semestral speciality courses.

- Undertake the research and development internship.

• Write and defend a graduate qualification work (State Final Certification).

Total workload over the four years of studies comprises 240 points of credit.

On the succeeding slides you will find detailed information about the following:
•**Teaching personnel**.
•**Educational subjects (disciplines).**
•**Degree course scheme for every year of study**.

Teaching Personnel

The teaching personnel of the Department of Fundamental and Applied Linguistics is composed of 35 people. Among them there are

7 professors and doctors of sciences, and

26 associate professors and candidates of sciences (Philosophy doctors).

Most of the teachers have extensive knowledge and practical experience in the area of the disciplines that they teach. They are also engaged in their own research activities.

The curator of the department is Doctor of Philology, Professor Timofeeva Mariya Kirillovna.

Information about the teachers who teach the basic subjects is given on the next two slides.

Mathematical Disciplines:

Full Name	Science Degree	Subject
Emel'yanov Pavel Gennad'evich	Cand. Sc. {Physics and Mathematics}	Discrete Mathematical Models
Leman Anna Yakovlevna	Mgr. of Technology in Informatics and Computer Engineering, analyst	Informatics and the Fundamentals of Programming, Software Engineering Techniques for Linguistic Research
Pishchik Boris Nikolaevich	Cand. Sc. {Engineering}	Databases and Information Search
Savel'ev Lev Yakovlevich	Cand. Sc. {Physics and Mathematics}	Theory of Probability and Mathematical Statistics
Stukachyova Marina Viktorovna	Cand. Sc. {Physics and Mathematics}	Mathematical Logic
Rapoport Ernest Osherovich	Cand. Sc. {Physics and Mathematics}	Mathematical Analysis
Revin Danila Olegovich	Doctor of Physics and Mathematics	Algebra

Major-Specific Disciplines (except for special courses)

Full Name	Science Degree	Subject
Belitsa Tatyana Ivanovna	Cand. Sc. {Philology}	Introduction to Linguistics
Koshkaryova Natalya Borisovna	Doctor of Philology	Structural Linguistics
Kuznetsova Elena Sergeevna	Cand. Sc. {Philology}	Contemporary Russian Language
Mal'tseva Alla Aleksandrovna	Cand. Sc. {Philology}	General Linguistics
Mozhejkina Lyudmila Borisovna	Cand. Sc.{Psychology}	Psycholinguistics
Panin Leonid Grigor'evich	Doctor of Philology	Fundamentals of Comparative Philology
Savost'yanov Aleksandr Nikolaevich	Doctor of Philosophy	Neurolinguistics
Snytnikova Natalya Ivanovna	Cand. Sc. {Education}	Introduction to Applied Linguistics, Languages for Special Purposes
Sorokina Elena Nikolaevna	Cand. Sc. {Philology}	Contemporary Russian Language, Orthology, Sociolinguistics
Timofeeva Mariya Kirillovna	Doctor of Philology	Mathematical Methods in Philology, Mathematical Models of Language

The students of the Department of Fundamental and Applied Linguistics study three groups of disciplines:

Common Cultural and Socioeconomic Disciplines: Introduction to Psychology, History of Russian Culture, History of European Culture, Philosophy, History of Russia, Fundamentals of General Economics, Introduction to Business Economics.

Mathematical Disciplines and Science: Informatics and the Fundamentals of Programming, Mathematical Logic, Algebra, Mathematical Analysis, Theory of Probability and Mathematical Statistics, Discrete Mathematical Models, Databases and Information Search, Cognitive Science.

Major-Specific Disciplines: Introduction to Linguistics, Orthology, Contemporary Russian Language, Introduction to Applied Linguistics, General Linguistics, Structural Linguistics, Fundamentals of Comparative Philology, Mathematical Methods in Philology, Mathematical Models of Language, Neurolinguistics, Psycholinguistics, Sociolinguistics, Corpus Linguistics, Languages for Special Purposes, Software Engineering Techniques for Linguistic Research, special courses.

Languages: English, French, Latin, Old Slavonic, a Non-Indo-European language.

Goals and the brief outline of every year of studies:

The first year of studies: general basic knowledge of linguistics and mathematics that is necessary for the acquisition of the future profession. Educational coursework on the discipline «Informatics and the Fundamentals of Programming».

The second year of studies: the basics of professional knowledge of fundamental and applied linguistics. The coursework on one of the disciplines of possible future specialization (at the choice of students).

The third year of studies: enrichment and extension of professional knowledge, acquisition of practical skills, the choice of the speciality area, the coursework in the speciality area.

The fourth year of studies: enrichment and extension of professional knowledge, carrying out own theoretical or applied research, writing the graduate qualification work, the defence of the graduate qualification work.

The forms of appraisal, the content and the workload of all educational subjects are indicated on the succeeding slides (the workload is measured in points of credit).

The outline of the first year of studies

Major-Specific Disciplines:
Introduction to Linguistics (4 points of credit, examination)
Contemporary Russian Language (8 points of credit, examination)
Mathematical Methods in Philology (2 points of credit, graded test)
Orthology (4 points of credit, pass-fail test)

Languages:
English (12 points of credit, examination)
Latin (4 points of credit, graded test)

Mathematical Disciplines and Science:
Algebra (4 points of credit, examination)
Mathematical Analysis (8 points of credit, examination)
Informatics and the Fundamentals of Programming (4 points of credit, examination)
Theory of Probability and Mathematical Statistics (4 points of credit, examination)

Common Cultural and Socioeconomic Disciplines:
Introduction to Psychology (2 points of credit, pass-fail test)
History of Russian Culture (2 points of credit, pass-fail test)

Physical training (8 points of credit, pass-fail test)

The outline of the second year of studies

Major-Specific Disciplines:
Contemporary Russian Language (8 points of credit, examination)
Psycholinguistics (4 points of credit, graded test)
Neurolinguistics (2 points of credit, examination)
Languages:
English (12 points of credit, examination)
French (8 points of credit, examination)
Old Slavonic language (4 points of credit, graded test)

Mathematical Disciplines and Science:
Mathematical Logic (8 points of credit, examination)

Common Cultural and Socioeconomic Disciplines:
History of Russia (6 points of credit, graded test)
Philosophy (6 points of credit, examination)
History of European Culture (2 points of credit, pass-fail test)

Physical training (8 points of credit, pass-fail test)

The outline of the third year of studies

Major-Specific Disciplines:
Introduction to Applied Linguistics (4 points of credit, examination)
Corpus Linguistics (2 points of credit, pass-fail test)
Mathematical Models of Language (4 points of credit, examination)
Software Engineering Techniques for Linguistic Research (4 points of credit, graded test)
Languages:
English (12 points of credit, examination)
French (8 points of credit, examination)

Mathematical Disciplines and Science:
Discrete Mathematical Models (4 points of credit, examination)

Common Cultural and Socioeconomic Disciplines:
Fundamentals of General Economics (4 points of credit, pass-fail test)
Civil Defence (3 points of credit, pass-fail test)

Research and Development Internship (5 points of credit, graded test)

The outline of the fourth year of studies

Major-Specific Disciplines:
Structural Linguistics (4 points of credit, examination)
General Linguistics (4 points of credit, examination)
Fundamentals of Comparative Philology (2 points of credit, pass-fail test)
Languages for Special Purposes (2 points of credit, pass-fail test)

Languages
English (12 points of credit, examination)
French (8 points of credit, examination)
Non-Indo European language (2 points of credit, pass-fail test)

Mathematical Disciplines and Science:
Databases and Information Search (4 points of credit, examination)
Cognitive Science (2 points of credit, pass-fail test)

Common Cultural and Socioeconomic Disciplines:
Sociolinguistics (2 points of credit, pass-fail test)
Introduction to Business Economics (2 points of credit, pass-fail test)

State Final Certification (4 points of credit, defence of the graduate qualification work)

Research and Development Internship

The students of the Department of Fundamental and Applied Linguistics undertake their research and development internship in the first semester of the third year of studies. Total number of hours is 180. That is equal to 5 points of credit.

The students have one day a week when they only do their internship. They do not have any classes on that day.

Within the framework of their internship the students can take part in such activities as the development and software implementation of the algorithms of textual data processing. They can also collect and arrange the linguistic data that are supposed to be used for solving different kinds of problems relating to the processing of texts both from natural and artificial languages. The problems include, for example, the search for regularities, linguistic text analysis, machine translation, categorization of texts, extraction of factual information, textual games, etc.

The place and content of the internship is to be cleared with the head of the internship. The list of possible institutions where the intrnship can be undertaken is announced at the beginning of the semester.

Internship Activity Types:

- Efficient cooperation with the people of different specialities in interdisciplinary teams.

- Competent definition and refinement of problems.

- Scheduling and arranging the execution of the theoretical and practical constituents of the internship.

- Realistic assessment of the amount of work and of the time period for doing the work.

- Reading books on the subject-matter of the internship.

- Attending the research and practice seminars.

- Presentation of the materials of one's own work.

- Writing a report on the results of internship.

Possibilities of Individual Educational Paths

Individual educational paths are organized by means of the choice of the following:

• Alternative courses, special courses, special seminars, and elective courses.

• Topics of courseworks (beginning with the second year of studies).

• Place of doing the internship.

• Area of specialization.

After the area of specialization has been chosen, the individual educational path is to be cleared with the scientific advisor.

Specialization

The choice of the area of specialization takes place at the third year of studies.

There are two alternatives:

- Continue the work started in the second year of studies under the same scientific advisor.

- Begin working in a different area, perhaps under another scientific advisor.

These two alternatives are possible because there are a lot of areas of specialization. And it is difficult to discern one's own abilities and interests in one area or another well in advance.

Specialization can be conducted at basic scientific institutes such as the Sobolev Institute of Mathematics of the Siberian Branch of the Russian Academy of Sciences (SB RAS), the Institute of Philology of the SB RAS, at some other institutes of the SB RAS and the institutes of the Siberian Branch of the Russian Academy of Medical Sciences, as well as in organizations that perform linguistic analysis of texts and develop linguistic software.

The list of possible areas of specialization is provided at the beginning of the academic year. The students are supposed to make their choice until 30 September.

Special Courses

The students are allowed to attend the special courses of the Department of Fundamental and Applied Linguistics, the special courses of other departments of the Faculty of Humanities of the NSU as well as the special courses of other faculties of the NSU. The choice of special courses on speciality is to be cleared with the scientific advisor.

The following special courses at the Department of Fundamental and Applied Linguistics are planned for the 2013 / 2014 academic year:

> Criptography
> Methods of Automatic Text Attribution
> Analysis of Character Sequences
> Animal Communication

Some special courses are delivered by non-resident teachers.
In the 2012 / 2013 academic year there were two courses of that sort:

> [Fundamental Linguistic Concepts of Automatic Text Processing](#)
> Technologies of Cognitive Interaction Modelling ([1](#),[2](#))

State Final Certification

The students conduct their own independent research in the chosen area of specialization and write the graduate qualification work on the basis of this research during two academic years: the third and the fourth years of studies at the NSU.

The graduate qualification work and the defence of this work should show the following:

• Mastery of terminology, understanding of the problematics of the chosen area of specialization, of the methods used in this area, as well as orientation in the available results and publications.

• Clear understanding of the own scientific problem and of the place of this problem among the other theoretical and applied developments.

• Ability to arrange the research logically and reasonably, ability to give reasons for the decisions made, competently analyze and interpret the results.

• Ability to set out ideas clearly.

• Ability to use all the above mentioned when discussing different aspects of the own research and when answering the questions of the certification commission.

Job Possibilities for the Graduates

The NSU graduates who have completed the bachelor degree program «Fundamental and Applied Linguistics» can work in any organizations that deal with the following:

Development of computer systems that simulate different kinds of linguistic activities of people (automatic translation, information search, analysis and design of texts, recognition and synthesis of oral speech, automatic abstracting, etc.).

• Creation, development and support of computer programmes and electronic collections that facilitate the work of linguists (text corpora, electronic dictionaries, and various linguistic data bases).

• Criptography.

• Linguistic expertise.

• Creation of electronic training resources in linguistics.

• Theoretical investigations that are necessary for solving the above listed problems.

At present There are a lot of computer programs that work with the natural language data. You can find the information about them if you click the following links

1. Programs of automatic text processing at the site of the automatic text processing (ATP)
Morphological Analysis
Syntax Analysis
Semantic Analysis
Automatic Morphological Analysis in the Starling System

2. Syntax text analyzer of the English language (Link Grammar Parser)

3. Text Visualization («Semantic Mapping», content analysis, word frequency characteristics, context cooccurrence, forms of concordance presentation)

4. Automatic translation on the basis of the language processor ETAP 3.
There are some more on-line translation systems: PROMT, TRIDENT, SYSTRAN.

5. International project on the development of an intermediate universal language for translations Universal Networking Language (UNL).

6. Conversation partner programs (chatterbots): Alice (the English language), talking robot (the English and the German languages), conversation partner program in Russian.

7. Linguistic data bases on different languages on the site tower of Babel, materials on the Indo-European languages on the site TITUS.

8. Linguistic corpora (These are large collections of labeled texts, the collections having specialized search systems):

[National Corpus of the Russian Language](), [Overt Corpus of the Russian Language]()

Main possibilities of the linguistic corpora applications:
- Testing of linguistic hypotheses.
- Search for the exact forms, lexical items, and constructions.
- Search by grammar and semantic parameters.
- Selection of occurrence contexts.
- Creation of subcorpora.
- Statistical data acquisition.

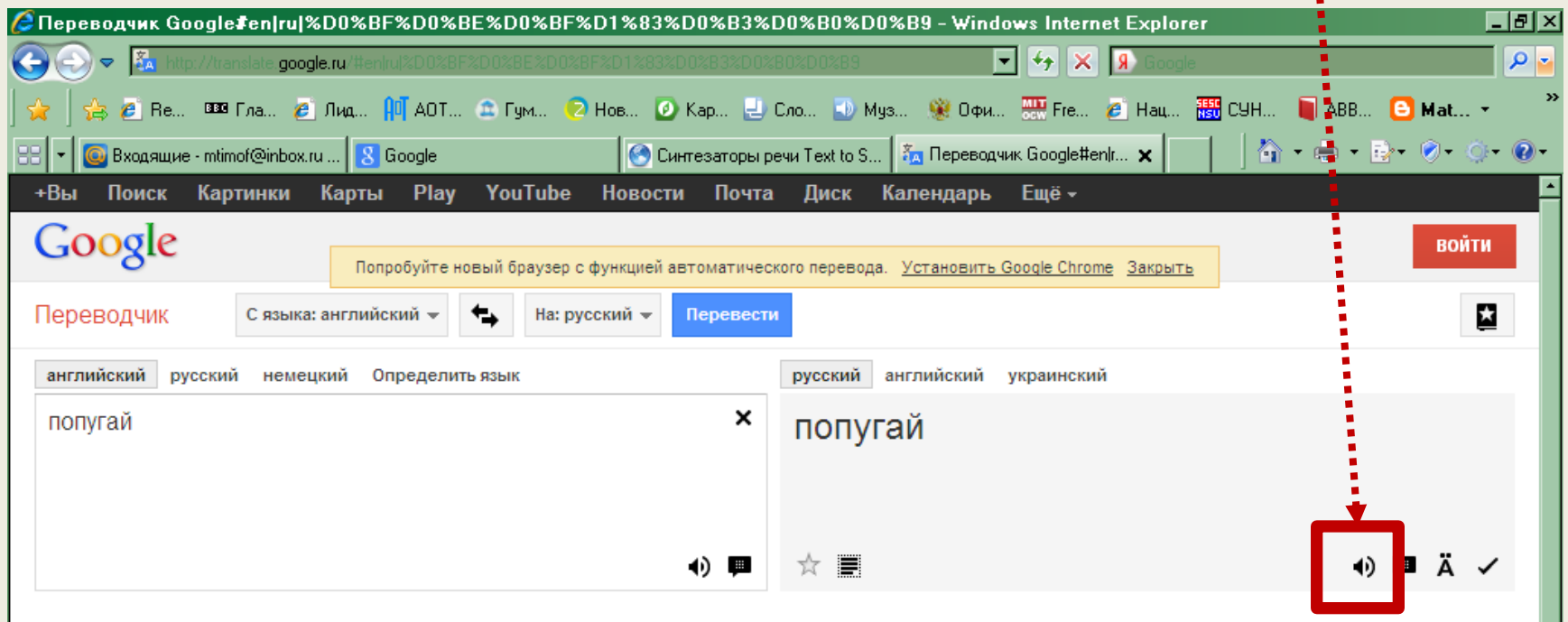**9.** Automatic analyzers of the author's style: [Attributor]()

10. Speech synthesisers:

«Weather robot» Meteonova

Online synthesisers that can be used, for example, when studying foreign languages or when travelling: Linguatec Voice Reader, Acapela Text to Speech

Speech synthesiser in the automatic Google translator

11. Computer lexicography (deals with the development of electronic versions of dictionaries, the automation of the processes of dictionary constructions, and the creation of dictionaries for the systems of automatic text processing), [dictionaries](#) created on the basis of the [National Corpus of the Russian Language](#)

12. Electronic thesauruses

[WordNet](#) – thesaurus for the English language (Princeton University), [WordNet online](#)

[EuroWordNet](#) – multilingual lexical database

The creators of wordnet-dictionaries are united in the [Global WordNet Association](#)

Electronic Thesaurus [RussNet](#) - has been developed since 1999 by the team of researchers under I.V. Azarova (the Chair of Mathematical Linguistics of the Faculty of Philology of Saint Petersburg State University).

Information on the Graduates

The Department of Fundamental and Applied Linguistics was branched in 2011. The first graduates will be in 2015.

The Department of Mathematical Linguistics of the NSU functioned from 1962 to 1976. Among its gruduates there are Candidates of Sciences in Philology, Education and Engineering, Doctors of Philology, Doctors of Phisics and Mathematics, and Doctors of Philosophy.

The graduates of the Department of Mathematical Linguistics work at scientific research institutes and business companies both in Russia and abroad.

The graduates of the department work in the following areas: theoretical and applied research in the field of mathematical and computer modelling of the natural language, programming, creation, development and support of data bases, teaching foreign languages, criptography, and philosophy.

Admission Requirements

For the citizens of the Russian Federation the rules of admission to Novosibirsk State University in 2013 are determined by the following [Regulations](#)

The foreign citizens will find the information on the rules of admission in the following [Statutory documents](#) in Russian. There is also some [brief overview](#) of these statutory documents in English.

Entrance tests are the following:
 a Foreign Language, the Russian Language, Mathematics.

Minimum test scores in the current academic year have been the following:
a Foreign Language – 55
the Russian Language – 50
Mathematics – 45

Campus Life
Social organizations, life, clubs, sport

• Students unions: «Kvant», «Kontora Brat'ev Divanovykh», «Maksimin», Fenclub, «Geya», Glumclub, the team of the Club of cheerful and sharp-witted of the NSU, the club of young orthodox christians of the NSU, the German youth club of the NSU, poetry club.

• Official forums of the NSU, the campus forum, the forum Animegorodok.

• Sociocultural center of the NSU comprises: Academic choir of the NSU, Ensemble of violinists of the NSU, Folk music group «KrAsota», Creation-theatre «Isle», Theatre school «vNoGU», Dance school, Studio of contemporary dance, Studio of costume dance «Medieval'», Studio of Oriental dance, Studio of experimental dance, Amateur singing club, Vocal studio, Academic male chamber choir of the NSU, Dancing club «Waltzes».

• For sports fans there are the following possibilities: the section of trekking, the club of climbers «Kaskad», the sections of judo wrestling, Greco-Roman wrestling, etc.

• Every year in May the festival «Interweek» is held.

• The NSU has the recreation camp «Universitetskaya» by the side of the Ob River.

• During the study time the students have the opportunity to enjoy the prophylactic sanatorium.