

# COORDINATING AND SUPPORTING ROLE OF THE CENTER FOR THE DEAF WITHIN THE UNIVERSITY

## BAUMAN MOSCOW STATE TECHNICAL UNIVERSITY

### DEPARTMENTS:

RADIO-ELECTRONICS  
AND LASER TECHNOLOGY

INFORMATICS AND  
CONTROL SYSTEMS

ROBOTICS  
AND INTEGRATED  
AUTOMATION

ENGINEERING BUSINESS  
AND MANAGEMENT

MANUFACTURING  
ENGINEERING

FUNDAMENTAL  
SCIENCES

BIOMEDICAL  
ENGINEERING

### CENTER FOR THE DEAF

PROVIDES:

#### Services:

SUPERVISING

SIGN LANGUAGE  
INTERPRETING

AUDIOLOGICAL  
MONITORING &  
PROSTHESIS

SPEECH THERAPY

TUTORING

COUNCELING

NOTETAKING

PSYCHOLOGICAL  
MONITORING

CONSULTING

ADVISING

TECHNICAL DEVICES  
SUPPORTING



MULTIMEDIA LAB



SELF - INSTRUCTION LAB

DEAF  
STUDENT

#### Curricula

SPECIAL

SPECIAL REHABILITATION  
AND EDUCATION COURSES

STANDARD



AUDIOLOGICAL  
MONITORING ROOM



SPEECH CORRECTION  
ROOM

Preliminary  
courses



# ACHIEVEMENTS OF PEN-RUSSIA LAB IN 2003

*The lab was founded in co-operation with NTID (USA) granted by Nippon Foundation within the frame of Postsecondary Education Network International Project*

Laboratory Staff - 3 people

## Tasks.

Development, management and support of education and rehabilitation process based on new technologies

Development and implementation of network technologies

Development and implementation of distance learning technologies

Development and implementation of special software and multimedia products

Development of methodic materials

Development of learning courses, curricula and teaching methodic

Personnel training and development of teachers' skills

Co-operation with partner organizations (Russian and foreign)

Using the Lab as education and production complex

Investigation and assessment of outcomes

## Outcomes.

### Formal and informal Course Use

35 hours of formal lessons per week according to student curriculum.

7 hours per week were assigned for consulting teachers (to teach them to use technologies)

12 hours per week were assigned for self-instruction for students.

### Other activities

Common network with the Center was created

Essentials of distance learning system were created

2 educational movies were produced

1 electronic tutorial was developed

Web mastering course was developed

7 labworks were developed

Methodic materials on using technologies for the deaf were developed

9 Workshops were held at PEN Lab:

2 - for partner universities

2 - for audiological specialists;

2 - for special school teachers;

2 - for students, specialized in deaf-and-dumb pedagogy;

1 - developed in collaboration with NTID, for the university faculty

5 school leavers were prepared within *Step into the Future* program for young researchers

3 conferences were held

bachelors' diploma defense was held

over 50 presentations of the lab for different institutions were held

And numerous other activities



TEACHER'S WORKSTATION



ASSISTANT'S WORKSTATION



STUDENT'S VIEW



DEVELOPER'S WORKSTATION



PRACTICAL CLASS



PRESENTATION



WORKSHOP

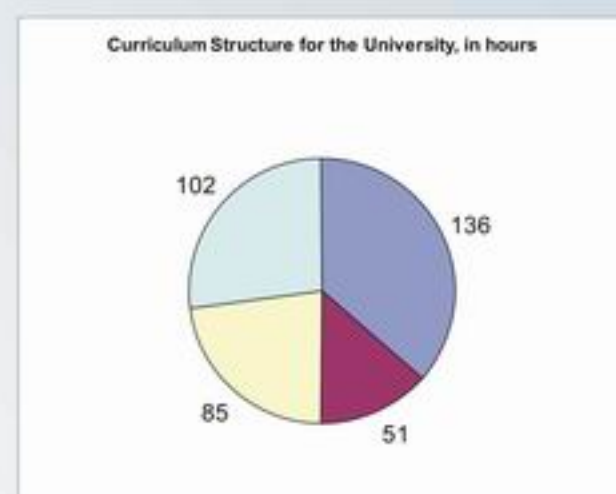


CONFERENCE





<p><b>PHYSICS BASIC COURSE</b> THE SAME FOR ALL DEPARTMENTS</p> <p>2nd,3rd,4th semesters</p>	<p><b>APPLIED PHYSICS</b> FOR ALL DEPARTMENTS</p> <p>5th, 6th semesters</p>	<p><b>SELECTED CHAPTERS OF PHYSICS</b> ORDERED BY CHAIRS</p>
<p>2nd semester The Mechanics, The Molecular Physics, The Thermodynamics</p> <p>3rd semester The Electromagnetism, The Wave Optics.</p> <p>4th semester The Quantum Mechanics, The Solid State Physics, Physics of the Atomic Nucleus and Elementary Particles</p>	<p>The Thermodynamics and Electrodynamics of Continuous Media,</p> <p>The Electronics Physical Base,</p> <p>The Mathematical Physics etc.</p>	<p>The Physical processes in micro structures, The High Temperature Process Physics, The Experimental Methods of Physical Research etc.</p>
<p><u>Bachelor's degree</u></p>		<p><u>Master's degree</u></p>



UNIVERSITY

- how to extract a physical content from formulae,
- how to find physical laws for phenomena descriptions

The diagram illustrates the process of mathematical modeling as a continuous cycle. It begins with a **Phenomenon**, which leads to a **Model** through the step of **Studying: Setting Phys. Problem**. From the **Model**, the process moves to **Physical Law** via **Model selecting**, then to **Model Physical Problem** through **Selecting law**. This is followed by **Formulating Phys. Model Problem**, which leads to a **Mathematical Problem**. The next steps are **Setting Mathematical Problem** and **Selecting of Solution Method**, leading to the **Solution Method of Math Problem**. Finally, **Finding solution** leads to the **Solution (Formula)**, which then leads back to the **Phenomenon** through **Thinking solution**. A central Venn diagram shows the intersection of **Knowledge of Problem Set** and **Studying: Setting Phys. Problem** at the **Phenomenon**.

The mental actions set:

- analyzing, synthesizing, comparing, classifying, systemizing, generalizing, abstracting, concretizing etc.

Activities on physical laws base

Activities on mathematic rules base

**DEAF LEARNERS DON'T KNOW HOW TO DO ACTIONS, JUST MENTAL ACTIONS IN PHYSICS**

The diagram illustrates a learning cycle for deaf learners, centered around the text: **DEAF LEARNERS DON'T KNOW HOW TO DO ACTIONS, JUST MENTAL ACTIONS IN PHYSICS**.

The cycle consists of the following steps and transitions:

- Phenomenon** (Knowledge of Problem Set / Studying Setting Phys. Problem) -> **Model** (Model selecting)
- Model** -> **Physical Law** (Selecting law)
- Physical Law** -> **Model Physical Problem** (Formulating Phys. Model Problem)
- Model Physical Problem** -> **Mathematical Problem** (Setting Mathematical Problem)
- Mathematical Problem** -> **Solution Method of Math Problem** (Selecting of Solution Method)
- Solution Method of Math Problem** -> **Solution (Formula)** (Finding solution)
- Solution (Formula)** -> **Thinking solution** -> back to **Phenomenon**

Each step is represented by a circle, with some being solid and others dashed. Transitions are marked with dashed lines and small icons of a person climbing a ladder.

```

graph LR
    CP[Curriculum On Physics] --> T((TEACHER))
    SK[Scientific knowledge] --> T
    T -- "TRANSFERRING ACTIONS WITH KNOWLEDGE" --> L((LEARNER))
    L -- "LEARNING ACQUIRING" --> B[Elements and structures of actions are acquired. Notions needed for these actions are formed.]
    B -- "TESTING" --> T
    B -- "CORRECTING ACTIONS" --> T
  
```

The diagram shows a cycle of interaction between a **TEACHER** (pink oval) and a **LEARNER** (green oval). The cycle is defined by four stages of interaction:

- AT CLASS**: A solid arrow points from the Teacher to the Learner, labeled "DISCUSSING PHYSICAL PROBLEM IN WRITTEN AND ORAL FORM".
- BEFORE CLASS**: A dashed arrow points from the Teacher to the Learner, labeled "RECOMMENDS KIND OF ORIENTATION".
- HOME TASK WITH DIFFICULTY INDIVIDUALLY INCREASED, CONSULTATION**: A solid arrow points from the Learner back to the Teacher.
- SELF-STUDIES ORIENTATION**: A solid arrow points from the Learner back to the Teacher, labeled "SELF-STUDIES ORIENTATION".

## SUPPORT SYSTEMS





# BAUMAN MOSCOW STATE TECHNICAL UNIVERSITY CENTER FOR THE DEAF

Development of Network Educational System for the Deaf  
on basis of the PEN-International experience



RUSSIA



In Russia about 12% of population are hearing impaired  
Over 600 000 children are hearing impaired  
There are 177 special schools for hearing impaired  
(90 - for the deaf, 87 - for the hard-of-hearing)  
20 200 hearing impaired children study there  
About 20 000 hearing impaired children study in common schools

- Federal Head Education and Methodic Center for the Deaf (Bauman University, Moscow)
- Centers of Higher Education, in which the deaf are studying (3 Universities)
- Schools and colleges for the deaf (189 Schools)

Bauman University is an Education Methodic Association (EMA) that provides standards for higher professional education for the deaf in Russia. EMA coordinates, controls and develops contents of all education and rehabilitation programs for all universities educating deaf students.