The Ministry of Transport of the Russian Federation
Russian University of Transport
RUT (MIIT)

REGIONAL CONFERENCE ON TRANSPORT RESEARCH AND EDUCATION

Experience in training specialists in the field of construction for the countries of the Asia-Pacific region

22-23 September 2021
Institute of Railway Track, Construction and Structures
RUT (MIIT)

Experience in training specialists in the field of construction for the countries of the Asia-Pacific region

Director of Institute of Railway Track, Construction and Structures
Professor Taisiia V. Shepit’ko,
Doctor of Technical Sciences
The mission of RUT (MIIT) is a creation of the innovative university in transportation field integrated to the global community and holding a leading positions in transport education and science with an objective of scientific and human resources challenges complex solution.
RUT (MIIT) & IPSS structure

- RUT (MIIT) brings together 6 institutes, 6 academies, 1 Faculty, gymnasium, Railway School, Law School & Medical School.
- The oldest of the nine institutes is the Institute of Railway Track, Construction and Structures (IPSS) that brings together all the majors of constructional area.
- The education in IPSS is performed by 15 departments that train students in 9 majors.
- Among the faculty there are 6 Russian Academy of Science and Russian Academy of Architecture and Construction Science, 32 Doctor of Technical Science, 146 Associate Professors.
Specialties and Chairs of MIIT

- Construction of railways, track and track facilities
- Bridges and transport tunnels
Specialties and Chairs of MIIT

- Industrial and civil construction
- Roads and airfields
Specialties and Chairs of MIIT

- Automated design of transport objects
- Geoinformation technologies
Specialties and Chairs of MIIT

- Land Management and Cadastres (Real Estate Cadastre)
Specialties and Chairs of MIIT

- Quality management (in construction)
- Management (in construction)

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The contingent of IPSS students from the countries of the Asia-Pacific region

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students (specialists, bachelors, masters)</td>
<td>74</td>
<td>82</td>
<td>87</td>
<td>70</td>
</tr>
<tr>
<td>Number of PhD Students</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Number of participants in academic mobility programs for students</td>
<td>8</td>
<td>27</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Number of scientific and pedagogical workers who have completed international internships</td>
<td>32</td>
<td>29</td>
<td>33</td>
<td>4</td>
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</tbody>
</table>
Mobile testing laboratory nots, IPSS
Lab equipment of the IPSS Engineering Center

SPT System for asphalt compression tests

Servohydraulic testing machine UTM -100

From +4 to +60°C

Independent servohydraulic system with climate chamber for asphalt coating fatigue tests under the 4-point bending. Temperature range from +4 to +60°C.

from -40°C to +100°C
Freezing chamber INFROST

- internal sizes: 1,5 x 1,5 x 2,5m;
- temperature control accuracy from 0°C to -6°C – +/-0,2°C;
- thermal insulation thickness 120 mm;
- temperature control accuracy from -6°C to -30 °C – +/-0,5°C;
- freezing block
Servohydraulic testing System
FSTX-100 (GCTS, USA)

Static and dynamic ground compression tests; temperature range from -40°C to +100°C (The temperature could be lower when using the liquid nitrogen).
R&D: CREATION OF JOINT CENTERS AND LABORATORIES

MAIN IDEA
The main task of such joint structures is to provide an integrated approach to the interaction of a foreign partner with various scientific teams and departments of the university, as well as to integrate the educational and research components of cooperation for the most effective achievement of mutually beneficial results in several areas simultaneously:
- Science
- Applied research
- Education of students
- Retraining of specialists
- Work with talents

HOW IT IS IMPLEMENTED
DIRECTIONS OF JOINT ACTIVITY WITHIN THE CENTERS AND LABORATORIES:
- Development and implementation of educational programs
- Joint research projects
- Organization of scientific events: seminars, conferences, symposia, etc.
- Conducting competitions among students, graduate students and young scientists
- Selection of talents in the framework of internships and practices
Cooperation of RUT (MIIT) and IPSS with foreign universities and companies

➢ Students from Mongolia, Indonesia; master students from Vietnam, Myanmar, China; Ph.D. students from China, Vietnam, Myanmar, Kazakhstan study in IPSS
➢ There are annual exchange programs between IPSS and Beijing University of Transport (China), Regular Internships under the RF President grants
➢ IPSS concluded an agreement with Southwest Jiaotong University (Chengdu, China) to establish the Permafrost Research Center
➢ IPSS concluded an agreement with Ho Chi Minh City Institute of Transport (Vietnam) within the framework of the Agreement on the implementation of the joint project «Russian-Vietnamese Institute of Transport»
➢ IPSS concluded an agreement with Tashkent Institute for the Design, Construction and Operation of Highways, Republic of Uzbekistan
Signing of an agreement with the Institute of Civil Engineering of the Southwestern University (Chengdu, China)
Opening of the cooperative Permafrost Research Center, RUT (MIIT), April 2017

Meeting with colleagues from the Southwest Jiaotong University (Chengdu, China) RUT (MIIT)

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Regional Conference on Transport Research and Education
Since 2010, the department has been preparing masters for the Republic of Myanmar Regional Conference on Transport Research and Education
In 2019 For the first time in Russia, a graduate student of the SAP Department, **JO ZIN AUNG**, defended a candidate's thesis dissertation on the introduction of BIM technologies in bridge construction «**Information modeling technology of operated bridges in the Republic of Myanmar**»

*Scientific supervisor: O. V. Smirnova*
Internship of lecturers and students of the IPSS RUT (MIIT) at the Ho Chi Minh City University of Transport within the framework of the Agreement on the implementation of the joint project "Russian-Vietnamese Institute of Transport"
Double diploma: Graduation-2021 in the area of «Industrial and civil construction»

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THE MAIN IDEA

of the creation of summer schools in the IPSS RUT (MIIT): A marketing tool for attracting foreign students, creating an image and promoting the university on the international market of educational services

• Internal internationalization
• Development of international cooperation and academic mobility
Transport Engineering Summer School
2018, 2019

Building Information Modeling;
Computational Mechanics
Application programming in Autocad;
Numerical programming methods
Project Management in Construction
Design of Bridges Using Finite Element Analysis
Earthquake Engineering: Theory and Implementation for Transport Infrastructures
Mechanics of Materials. Axial tension or compression of rods
Application of Innovative Materials for the Structural Elements of Bridges
Training of specialists in the construction of railways, bridges and transport tunnels from Guinea
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The elements of highly qualified construction engineering specialists education.

- **Targeted training**
- **Summer schools**
- **Internships on real construction objects and student construction brigades**
- **Field trips to the construction objects, exhibitions, participations in conferences, seminars and symposiums.**
- **Regular meetings of students and professors with companies CEOs.**
- **Establishment of department branches in construction companies**
- **University procurement development**
Establishment of department branches in construction companies

➢ «Transport Tunnels» at the Russian Tunnel association

➢ «Transport construction in extreme conditions» at the «Yamaltranstroy» company

➢ «Design, construction and maintenance of transport and civil structures» at «RZHDstroy»

➢ «State building control and selfregulation in construction» at the Spetsstroy company
➢ «Metro» – at the «Moscow metro»

➢ «Certification in construction» at the Railway Engineers Union.
Summary

Highly qualified construction engineering specialists education in ESCAP countries is a complicated system. It’s success is determined by cooperative efforts in the development of the global educational workspace and transport connectivity.

The main criteria of progress on this route is development and realization of cooperative educational programs. Thus:

➢ Consider the practical component of the engineering education as a priority one and create and support large experimental platforms, labs and centers.

➢ Create a interregional system of faculty internships and exchange programs to provide a high level of connective engineering education in relevant areas.

➢ Develop the mechanisms of simple cooperative grant implementation for faculty and staff.

➢ Note that the engineering educational system determines not only the level of transport education, but also the level of transportation and economy in ESCAP countries in general.
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Thank you for attention!