

ПОЛИТЕХ

# XX INTERNATIONAL NUCLEAR FORUM

## Training of specialists in the Master's degree program "Emergency preparedness and Response", taking into account international requirements. The experience of Peter the Great St. Petersburg Polytechnic University "

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“Emergency Preparedness and Response”
MS Program Coordinator

# Practical agreements

**2020** - Signing the memorandum between Technical Academy of Rosatom, Emergency Response Center of Rosatom and SPbPU

**2021** - Signing the practical arrangements between the IAEA and SPbPU on the implementation of the international master's program "Emergency Preparedness and Response"

**September 1st, 2021** - the educational process was launched and the first students began their studies










https://www.iaea.org/newscenter/news/new-masters-programme-on-emergency-preparedness-and-response-commences-in-st-petersburg

https://www.spbstu.ru/media/news/international_activities/politekh-i-magate-novyy-shag-v-razvitii-sotrudnichestva/

https://www.spbstu.ru/media/news/international_activities/polytech-rosatom-joint-international-program-technosphere-safety/?sphrase_id=2156348

POLYTECH |

# International Masters Degree Program "Emergency Preparedness and Response"

As of 2026, **Peter the Great St. Petersburg Polytechnic University** is among the **Top 10** Russian universities in terms of the number of international students (6th place). The university has over 33,000 students, of whom **more than 5,000 are international students from 107 countries around the world.**

TECHNICAL ACADEMY ROSATOM

EMERGENCY RESPONSE CENTRE ROSATOM

RUSATOM SERVICE ROSATOM

POLYTECH
Higher School of Technosphere Safety

- Industrial Safety
- Civil Defense and Emergency Protection
- Ooccupational Safety and Health
- Fire Safety
- Eenvironmental Safety

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# Our Applicants

Education / work experience in the field of:

- Technosphere Safety
- Fire Safety
- Industrial Safety
- Emergency Protection
- Technological Processes Safety
- Environmental Engineering
- Environmental Safety
- Radiation Safety
- Physics
- Chemistry
- Nuclear Energy
- Nuclear Power Plants Engineering
- Nuclear Reactors and Materials
- Radioactive Waste Management
- Operation of nuclear power facilities

Countries:
Algeria, Argentina, Bangladesh, Cameroon, Jordan, India, Mexico, Nigeria, Pakistan, Russia, Rwanda, Saudi Arabia, Senegal, Turkey, Zambia

Age: 22 – 50 years old

Gender: 85% - male 15% - female

# Key points of the program

- ✓ **Program duration:**

  2 years (4 semesters)

- ✓ **Mode of study:**

  Full-time at SPbPU

- ✓ **Total workload:**

  120 ECTS

- ✓ **Degree awarded:**

  Master of Science

- **The world's first nuclear and radiological EPR MS program!**
- **The program was developed in accordance with the IAEA safety requirements**
- **Representatives of ROSATOM participate in the implementation of the program**
- **Practical exercises on the basis of the Emergency Technical Center of ROSATOM**
- **Research activities, participation in seminars, conferences, forums for students**

POLYTECH | # Program structure

| № | Discipline | Size, ESTS | Semester |
|---|---|---|---|
| **Scientific module** | | | |
| 1 | Foreign language in professional communication | 3 | 1 |
| 2 | Digital resources in scientific research | 3 | 1 |
| 3 | History and methodology of science | 3 | 1 |
| **Basic module** | | | |
| 4 | Security monitoring and expertise | 5 | 1 |
| 5 | Technosphere safety legislation | 4 | 1 |
| 6 | Risk management, systems analysis and modeling | 5 | 1 |
| 7 | Safety and security training | 5 | 1 |
| 8 | Statistics | 4 | 2 |
| 9 | Project management in technosphere safety | 4 | 2 |

POLYTECH | # Program structure

| № | Discipline | Size, ESTS | Semester |
|---|---|---|---|
| | **Professional module** | | |
| 10 | EPRC0. Concepts of radiation and common practices | 6 | 2 |
| 11 | EPRC1. Introduction to EPR. General requirements for EPR | 6 | 2 |
| 12 | EPRC2: Functional requirements for EPR | 6 | 3 |
| 13 | EPRC3. Infrastructure for EPR | 6 | 3 |
| 14 | Elective courses (5 courses) | 20 | 3-4 |
| | **Project/Practice** | | |
| 15 | Practical exercises | 6 | 2 |
| 16 | Internship | 6 | 4 |
| 17 | Undergraduate practice | 9 | 4 |
| 18 | Research work | 13 | 1,2,3,4 |
| | **State final examination** | | |
| 19 | MSc Thesis | 6 | 4 |

# POLYTECH | Program structure: 5 Elective Courses

**5 elective courses:**

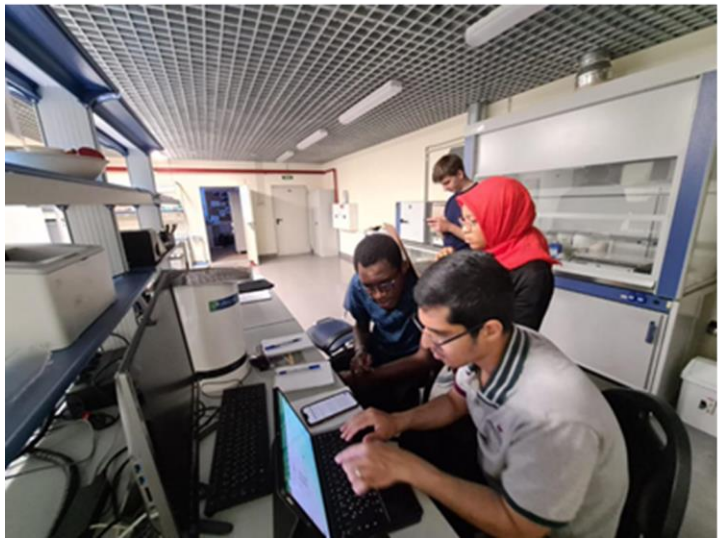
- ✓First response to a nuclear or radiological emergency
- ✓Combined emergencies
- ✓Development and use of emergency action levels (EALs) and operational intervention levels (OILs)
- ✓Hazard assessment
- ✓Development of emergency plans
- ✓Dose assessment
- ✓Lessons learned from response to the past nuclear and radiological emergencies
- ✓EPR aspects of transport of radioactive materials
- ✓Protection and decontamination of personnel
- ✓Radioactive waste management
- ✓Emergency medicine radiation injury. Response and treatment
- ✓Advanced monitoring technique

# Internship at the Emergency Response Center of ROSATOM

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EMERGENCY
RESPONSE CENTRE
ROSATOM

- **During the internship students learned how to:**
- Apply dosimetry equipment and estimate doses
- Prepare samples for laboratory analysis
- Apply spectrometers
- Act during the first response

# Off-site Practical Training

- Research Institute of Industrial and Marine Medicine of the Federal Medical and Biological Agency is the leading organization of Russia in the system of scientific research in the field of medical and hygienic provision of radiation safety

- The students got introduction to laboratories and equipment used in scientific and practical research to ensure radiation safety and working conditions for personnel of marine transport, shipbuilding and mining enterprises.







# Participation in international forums and conferences

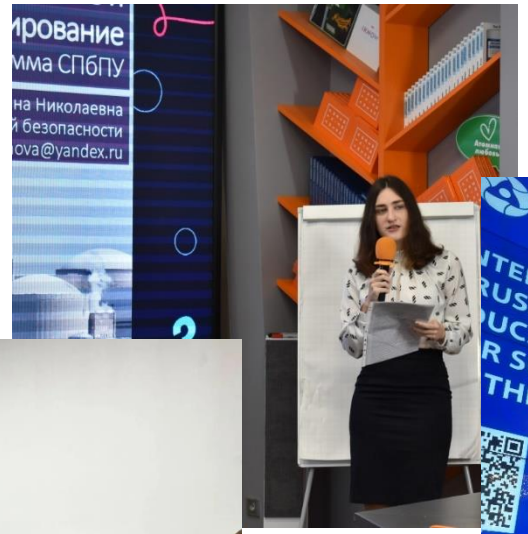
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- Participation in the International Nuclear Forum (annual)
- Participation in the International Youth Forum “Russia – Africa: Nuclear Education as a Potential for the Successful Development of the Region”

TECHNICAL ACADEMY ROSATOM

Students participate in the plenary session, take part in the work of the youth section, and deliver presentations as part of the youth roundtable.











# The IAEA Marie Skłodowska-Curie Fellowship Program




## Ms Anna Stepanova:

1) International School on Nuclear Security for the Students of the Marie Sklodowska-Curie Fellowship Program (2021)

2) Seminar on the Physical Protection of Nuclear Material and its Amendment for the Students of the Marie Sklodowska-Curie Fellowship Program (2021)

# The IAEA Marie Skłodowska-Curie Fellowship Program








## Ms Hauwa'u Bala:

1) International School on Nuclear Security for the Students of the Marie Sklodowska-Curie Fellowship Program (2023)

2) IAEA event "For More Women in Nuclear" (2024)

3) TC Sponsored Participation at the World Nuclear University Summer Institute 2024 (Brazil)

# Final Thesis Defense

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| | Title |
|---|---|
| 1 | APPLICATION OF BEST ESTIMATE PLUS UNCERTAINTY APPROACH AND GENE EXPRESSION PROGRAMMING IN DOSE ASSESSMENT FOR A POSTULATED VVER-1000 REACTOR ACCIDENT |
| 2 | DEVELOPMENT OF A PROGRAM OF THE RADIOACTIVE ZONE TRACER IN CASE OF AN ACCIDENT OR INCIDENT AT THE NPP USING DRONES |
| 3 | STATE OF THE ART DEVELOPMENT TRENDS IN UNCERTAINTY SAFETY ANALYSIS OF DOSE ASSESSMENT FOR NUCLEAR ACCIDENTS |
| 4 | THE RADIOLOGICAL IMPACTS ON SAUDI ARABIA FROM A POSTULATED NUCLEAR ACCIDENT AT EL-DABAA NUCLEAR POWER PLANT |
| 5 | MONTE CARLO N-PARTICLE TRANSPORT CODE (MCNP) -BASED SENSITIVITY AND UNCERTAINTY ANALYSIS ASSESSMENT FOR MIXED -SOURCES LABORATORY DOSE ASSESSMENT |

# Graduates Career

- “Atomenergoproekt”
- 3rd category engineer
- Development of a fire hazard analysis methodology for the Paks 2 NPP
- Continue studying as PHd student

- Nuclear and Radiological Regulatory Commission (NRRC)
- Senior Engineer
- Contribution in national emergency preparedness initiatives and collaboration with international partners

- Emergency Division of the NNRA, Regulatory Office 1
- Liaison officer on the Incident and Emergency Centre (IEC) USIE platform of the IAEA
- Got an Internship in the Incident and Emergency Centre of the IAEA

- Nuclear Emergency General Department at Nuclear and Radiological Regulatory Commission (NRRC)
- Nuclear Emergency Specialist
- Acting Manager of the Nuclear Emergency Center

# Gap Analysis

| Year | Enrollment Possess | Number of Applications | Applications Exactly to EPR | Number of Students | Funding |
|---|---|---|---|---|---|
| **2021** | on | 18 | 15 | 2 | 1- MSCFP<br>1- IAEA Grant |
| **2022** | on | 7 | 5 | 4 | 1- MSCFP<br>1- Rosatom quota<br>2 -self funding |
| **2023** | on | 3 | 1 | 0 | - |
| **2024** | on | 4 | 3 | 3 | 3 - Rosatom quotas |
| **2025** | pause | - | - | 0 | - |

- Constant participation in educational events, university open days and international webinars to promote the program is carried out
- The most frequently asked question from applicants is: “Is there any scholarship?”
- The announcement of the IAEA grant increased the number of applications, but the education and experience of the applicants was not relevant to nuclear technology in general and to EPR in particular
- Targeted financial support is most effective

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University

THANK YOU FOR YOUR ATTENTION!