Federal State Autonomous Educational Institution for Higher Education
Peoples' Friendship University of Russia named after Patrice Lumumba
(RUDN University)
Engineering Academy

(educational division (faculty/institute/academy) as programme developer)

Base Department "Power Engineering"

(department realizing the PhD program)

INTERNSHIP SYLLABUS

Pedagogical Training

(internship type)

Scientific specialty:

2.4.5 Energy Systems and Complexes

(scientific speciality code and title)

The PhD student's internship is implemented within the PhD programmes:

Energy Systems and Complexes

(PhD program title)

2026

1. INTERNSHIP GOALS

The purpose of the discipline is to form the basic knowledge and skills of scientific research among graduate students, their practical use in real pedagogical activity, as a necessary basis for the formation of a comprehensively developed, socially active, creatively thinking personality.

The main objectives of the discipline are:

The development of graduate students' habits of searching for pedagogical information in new conditions, and the ability to analyze pedagogical situations and perform "composition tasks";

to form graduate students ' willingness to independently develop methodological support for the implementation of modern goals of professional education in higher education;

mastering the design and implementation of the pedagogical process, evaluating the effectiveness of its results;

to prepare graduate students to use a set of methods and forms of organization of the educational process at the university;

to foster mobility, activity, initiative, independence.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Conducting a "Pedagogical practice" is aimed at mastering the following competencies:

to know:

the content of the subject being taught;

basic methods and methods of teaching in higher education; modern technologies for collecting processing and presenting information;

be able to:

use theoretical knowledge in the pedagogical process; interact with the international student audience, considering its peculiarities;

to design the educational process using modern

technologies;

to make a practice report.

Own:

the necessary theoretical foundations of the discipline taught; basic information processing methods; communication tools in professional teaching; skills of self-assessment and self-control.

3. INTERNSHIP WORKLOAD

The total labor intensity of " Pedagogical Practice" is 5 credits (180 academic hours).

4.. INTERNSHIP CONTENTS

*Table 4.1. Internship content**

Stages of internship	Content of the units (topics)	Workload, acad. hours
Section 1. Organizational and preparatory	Receipt individual tasks on practice from leader.	1
	Safety training at the workplace (in the laboratory and / or in production). Setting the goal and objectives of the practice. Review And analysis information according to assigned disciplines.	1
Section 2. Main	Conducting various types of training sessions. The study of regulatory documents, the structure of the educational process, the programs of courses taught.	70
	Attendance at teachers' classes; independent preparation of plans and abstracts of classes in academic disciplines; selection and analysis of basic and additional literature.	60
	Participation in scientific and practical n, seminars and meetings of methodological sections; participation in the activities of the department for the development of work programs for the disciplines of the department.	20
	Current control passing practices from the side leader.	7
	Doing diary passing practices.	3
Section 3. Reporting .	Preparation of a practice report	9
	Preparation for defense and defense of the practice report	9
	TOTAL:	**180**

* - the content of practice by sections and types of practical training is FULLY reflected in the student's report on practice.

5. INTERNSHIP EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Laboratories, auditoriums, specially equipped classrooms, and living rooms that comply with current sanitary and fire safety standards, as well as safety requirements for educational and scientific-industrial work.

• computer class for carrying out calculation work;
• Multimedia projector;
• IDT and UIT research propulsion systems;
• fuel test bench for high-pressure fuel pumps test bench for electromagnetic injectors

Table 5.1. Logistics of discipline

Audience type	Audience equipment	**Specialized educational / laboratory equipment, software and materials for mastering the discipline** (if necessary)
Lecture	An auditorium for lecture-type classes,	projector, screen,

Audience type	Audience equipment	Specialized educational / laboratory equipment, software and materials for mastering the discipline (if necessary)
	equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentations.	computer, chalkboard
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and technical means for multimedia presentations.	projector, screen, computer, chalkboard
For independent work of students	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the EIOS.	projector, screen, computer, chalkboard

6. INTERNSHIP LOCATION AND TIMELINE

"Pedagogical practice" can be carried out both in the structural divisions of the RUDN University or in organizations in Moscow (stationary), and at bases located outside of Moscow (exit).

Conducting an internship on the basis of an external organization (outside the RUDN University) is carried out on the basis of an appropriate agreement, which specifies the terms, place and conditions for conducting an internship in the base organization.

The terms of the practice correspond to the period indicated in the calendar study schedule of the postgraduate program. The timing of the internship can be adjusted upon agreement with the Department of Educational Policy and the Department for Organizing Practices and Employment of Students at RUDN University.

7. RESOURSES RECOMMENDED FOR INTERNSHIP

Main readings:

1. Modern computer technologies: textbook / R.G. Khismatov , R.G. Safin, D.V. Tuncev , N.F. Timerbaev ; Ministry of Education and Science of Russia, Federal State Budgetary Educational Institution of Higher Professional Education "Kazan National Research Technological University". - Kazan: KNRTU Publishing House, 2014. - 83 p.: schemes. - Bibliography . in book. - ISBN 978-5-7882-1559-4; Access mode: http://biblioclub.ru/index.php?page=book&id=428016
2. Shatalov I.K., Antipov Yu.A. Laboratory workshop on the course "Technical operation and repair of steam and gas turbine plants". For students of III-IV courses studying in the direction of "Power Engineering". - M.: Publishing House of UDN, 2009.- 24\12
3. Shatalov I.K., Antipov Yu.A. Calculation of characteristics of single-shaft gas turbines. For students of III-IV courses studying in the direction of "Power Engineering". - M.: Publishing House of UDN, 2016. - 26 p.

4. Trukhniy A.D., Lomakin B.V. Cogeneration steam turbines and turbine plants. Tutorial. M. MEI Publishing House, 2002, 540 p.
5. Shatalov I.K. Heat pump installations driven by heat engines: Uch. allowance. Moscow: RUDN University, 2009
6. Shatalov I.K., Barsky I.A. Regulating characteristics of gas turbine plants, schemes and determination of the main parameters of the CCGT. M. RUDN University, 2003, 124 p.
7. Sharipov , F.V. Pedagogy and psychology of higher education: textbook / F.V. Sharipov . - Moscow: Logos, 2012. - 448 p. - (New University Library). - ISBN 978-5-98704-587-9; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=119459
8. Kavdangalieva , M.I. Pedagogy and psychology of higher education. Electronic course [Electronic resource]: study guide / M.I. Kavdangaliev . — Electron. Dan.
9. St. Petersburg: IEO SPBUTUiE , 2010. - 184 p. - Access mode: https://e.lanbook.com/book/63896
10. Fedotov, B.V. General and professional pedagogy. Theory of learning: textbook / B.V. Fedotov. - Novosibirsk: Novosibirsk State Agrarian University, 2011. - 215p.; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=230538

Additional readings:

1. Fundamentals of scientific research and patent science : teaching aid / comp. V.A. Valkov, V.A. Golovatyuk, V.I. Kochergin, S.G. Schukin. - Novosibirsk: Novosibirsk State Agrarian University, 2013. - 228 p. Access mode: http://biblioclub.ru/index.php?page=book&id=230540
2. Erofeev, V. L. Heat engineering in 2 volumes. Volume 1. Thermodynamics and the theory of heat transfer: a textbook for undergraduate and graduate studies / V. L. Erofeev, A. S. Pryakhin, P. D. Semenov; edited by V. L. Erofeev, A. S. Pryakhin. - Moscow: Yurayt Publishing House , 2019. - 308 p. — (Bachelor and Master. Academic course). - ISBN 978-5-534-01738-0. — Text: electronic // EBS Yurayt [website].
a. URL : https://www.biblio-online.ru/bcode/433336
3. Erofeev, V. L. Heat engineering in 2 volumes. Volume 2. Energy use of heat: a textbook for undergraduate and graduate studies / V. L. Erofeev, A. S. Pryakhin, P. D. Semenov; edited by V. L. Erofeev, A. S. Pryakhin. - Moscow: Yurayt Publishing House , 2019. - 199 p. — (Bachelor and Master. Academic course). - ISBN 978-5-534-01850-9. - Text: electronic // EBS Yurayt [website].
a. URL : https://www.biblio-online.ru/bcode/434256
4. Energy saving in heat energy and heat technologies : textbook. for universities. Ed. A.V. Klimenko. - M .: MPEI, 2010. - 424 p.
5. Andrizhnevsky A.A., Volodin V.I. Energy saving and energy management. Minsk: Higher School, 2005
6. Ametistov E.V. (ed.). Fundamentals of modern energy. M. MPEI Publishing House, 2004, in 2 parts.
7. Tsanev S.V. and other Gas-turbine and steam-gas installations of thermal power plants. M. MPEI Publishing House, 2009, 584p.
8. Antipov Yu.A. et al. “Methodological guide to the laboratory work “Testing a centrifugal compressor”. M. RUDN, 2019.
9. Stolyarenko, A.M. General pedagogy: textbook / A.M. Stolyarenko. - Moscow:

Unity -Dana, 2015. - 479 p. - Bibliography . in book. - ISBN 5-238-00972-0; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=436823

Periodic editions:

1. gas turbine technologies.
2. Chemical And oil and gas mechanical engineering.
3. Thermal power engineering.
4. Engine building.
5. Automotive industry.
6. Automotive transport on alternative fuel.

Resources of the information and telecommunications network "Internet":

1. RUDN ELS and third-party ELS, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System - RUDN EBS http://lib.rudn.ru/MegaPro/Web
- ELS "University Library Online" http://www.biblioclub.ru
- EBS Yurayt http://www.biblio-online.ru
- ELS " Student Consultant" www.studentlibrary.ru
- EBS "Lan" http://e.lanbook.com/
- EBS "Trinity Bridge"

2. Databases and search engines:

- electronic fund of legal and normative-technical documentation http://docs.cntd.ru/
- Yandex search engine https:// www .yandex.ru/

Google search engine https://www.google.ru/

- abstract database SCOPUS http:// www .elsevierscience.ru/ products / scopus /

*Educational and methodological materials for internship, filling out a diary and preparing an internship report *:*

1. Safety rules for the passage of Pedagogical practice (initial briefing).
2. The general arrangement and principle of operation of technological production equipment used by students during their internship; flow charts and regulations, etc. (if necessary).
3. Guidelines for filling in a diary by students and preparing a practice report.

* - all educational and methodological materials for internship are posted in accordance with the current procedure on the internship page in TUIS!

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM FOR EVALUATION OF PHD STUDENTS' COMPETENCES LEVEL AS INTERNSHIP RESULTS

Assessment toolkit and a grading system to evaluate the level of competences (competences in part) formation as the course results are specified on the TUIS platform.

* - OM and BRS are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / procedure).

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