ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Mathematics
Physics

Master's Degree Programme
Mathematics
Physics

Provided by
Fergana State University

Version: 26 June 2026

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
60530500-Fizika	60530500-Physics	ASIIN	License OT № 5000030 (01.04.2021-01.04.2026) State inspection of quality control of Education under the Cabinet of Ministers of the Republic of Uzbekistan	TC 13
70530501-Fizika (yoʻnalishlar boʻyicha)	70530501-Physics (by directions)	ASIIN		TC 13
60540100-Matematika	60540100-Mathematics	ASIIN		TC 12
70540101- Matematika	70540101-Mathematics	ASIIN		TC 12
Date of the contract: 16.05.2025 **Submission of the final version of the self-assessment report:** 25.12.2025 **Date of the onsite visit:** 8-9 April 2026 **at:** Fergana				
Expert panel: Prof. Dr. Volker Bach, TU Braunschweig Prof. Dr. Jürgen Nolting, Aalen University of Applied Sciences Prof. Dr. Florian Zaussinger, Hochschule Mittweida – University of Applied Sciences Dr. Khimmatali Juraev, Physical-Technical Institute				

[1] ASIIN Seal for degree programmes.

[2] TC: Technical Committee for the following subject areas: TC 01 - Mechanical Engineering/Process Engineering; TC 02 - Electrical Engineering/Information Technology; TC 03 - Civil Engineering, Geodesy and Architecture; TC 04 - Informatics/Computer Science; TC 05 - Materials Science, Physical Technologies; TC 06 - Engineering and Management, Economics; TC 07 - Business Informatics/Information Systems; TC 08 - Agriculture, Forestry, Food Sciences, and Landscape Architecture; TC 09 - Chemistry; TC 10 - Life Sciences; TC 11 - Geosciences; TC 12 - Mathematics; TC 13 - Physics; TC 14 - Medicine.

Abduazimov Doniyor, Master's Student, Tashkent State Technical University named after Islam Karimov	
Representative of the ASIIN headquarter: Dr. Natalia Vega	
Responsible decision-making committee: Accreditation Commission for Degree Programmes	
Criteria used: European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of March 28, 2023 Subject-Specific Criteria of Technical Committee 12 – Mathematics as of December 9, 2016 Subject-Specific Criteria of Technical Committee 13 – Physics as of March 20, 2020	

B Accreditation Status

Result Overview

The most recent decision for the ASIIN Seal was made by the ASIIN Accreditation Commission on 26.06.2026.

Degree Programmes	ASIIN Seal	Validity
Ba Mathematics	Accredited with requirements	26.06.2026 - 17.07.2027
Ba Physics	Accredited with requirements	26.06.2026 - 17.07.2027
Ma Mathematics	Accredited with requirements	26.06.2026 - 17.07.2027
Ma Physics	Accredited with requirements	26.06.2026 - 17.07.2027

Fulfilment of the Accreditation Criteria

ASIIN General Criteria / Subject-Specific Criteria	Ba Mathematics	Ba Physics	Ma Mathematics	Ma Physics
1 Degree programme: Concept, Content & Implementation				
1.1 Objectives and learning outcomes (intended qualification profile)	Fulfilled	Fulfilled	Fulfilled	Fulfilled
1.2 Title of the degree programme	Fulfilled	Fulfilled	Fulfilled	Fulfilled
1.3 Curriculum	Fulfilled	**Not fulfilled** **A3, A4**	Fulfilled	Fulfilled
1.4 Admission requirements	Fulfilled	Fulfilled	Fulfilled	Fulfilled

ASIIN General Criteria / Subject-Specific Criteria	**Ba Mathematics**	**Ba Physics**	**Ma Mathematics**	**Ma Physics**
1.5 Workload and credits	Fulfilled	Fulfilled	Fulfilled	Fulfilled
1.6 Didactics and teaching methodology	Fulfilled	Fulfilled	Fulfilled	Fulfilled
2 Exams: System, Concept and Organisation				
2 Exams: System, Concept and Organisation	**Not fulfilled** **A5**	**Not fulfilled** **A5**	Fulfilled	Fulfilled
3 Resources				
3.1 Staff and staff development	Fulfilled	Fulfilled	Fulfilled	Fulfilled
3.2 Student support and student services	Fulfilled	Fulfilled	Fulfilled	Fulfilled
3.2 Funds and equipment	Fulfilled	Fulfilled	Fulfilled	Fulfilled
4 Transparency and Documentation				
4.1 Module descriptions	**Not fulfilled** **A1**	**Not fulfilled** **A1, A4**	**Not fulfilled** **A1**	**Not fulfilled** **A1**
4.2 Diploma and Diploma Supplement	**Not fulfilled** **A2**	**Not fulfilled** **A2**	**Not fulfilled** **A2**	**Not fulfilled** **A2**
4.3 Relevant rules	Fulfilled	Fulfilled	Fulfilled	Fulfilled

ASIIN General Criteria / Subject-Specific Criteria	Ba Mathematics	Ba Physics	Ma Mathematics	Ma Physics
5 Quality Management: Quality Assessment and Development				
5 Quality Management: Quality Assessment and Development	Fulfilled	Fulfilled	Fulfilled	Fulfilled

Requirements

For all programmes

A 1. (ASIIN 4.1) The module descriptions need to be fully reviewed and updated. The updated version needs to be published on the website.

A 2. (ASIIN 4.2) Ensure that the Diploma Supplement includes the programme learning outcomes and information on the classification of the degree programme with regard to the national education system. In addition to the final mark, statistical data about the student's GPA relative to the cohort as set forth in the ECTS Users' Guide need to be included.

For the Bachelor's programme Physics

A 3. (ASIIN 1.3) The module Quantum Mechanics has to be made compulsory. A compulsory module, in which fundamentals of Solid State Physics (Condensed Matter Physics) are taught, needs to be introduced in the curriculum.

A 4. (ASIIN 1.3, 4.1) The module description of module "Molecular Physics" (MolFM106) has to be revised. Title, content, module objectives and prerequisites have to be consistent.

For the Bachelor's programmes

A 5. (ASIIN 2) Ensure that the programme includes a mandatory final thesis or project demonstrating the student's ability to independently undertake an academic task at an appropriate level (EQF 6).

Accreditation History

The programmes have not been previously accredited by ASIIN.

C Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double /Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
60530500-Physics	Fizik muhandis, dasturchi, fizika o'qituvchisi(UZB)/ Physical engineer, programmer, physics teacher (ENG)		Level 6	Full time Full-time education	-	4 years / 8 semesters	240 ECTS	Every year since 2024
70530501-Physics (by directions)	Fizik,pedagog-tadqiqotchi (UZB)/ Physicist, educator-researcher(ENG)		Level 7	Full time	-	4 semesters	120 ECTS	Every year since 2024
60540100-Mathematics	Matematik. Matematika fani o'qituvchisi (UZB)/ Mathematician. Mathematics teacher(ENG)		Level 6	Full time	-	4 years / 8 semesters	240 ECTS	Every year since 2024
70540101-Mathematic	Matematik, pedagog tadqiqotchi (UZB)/ Mathematician, educator-researcher		Level 7	Full time	-	4 semesters	120 ECTS	Every year since 2024

[3] EQF = The European Qualifications Framework for lifelong learning

C Characteristics of the Degree Programmes

Name (English translation)	Final degree (original/English translation)	Areas of Specialisation (if compulsory)	Corresponding level of the EQF[4]	Mode of Study	Double/Joint Degree
60530500-Physics	Autumn/annual	166	81	81	8 semesters/4 years
70530501- Physics (by directions)	Autumn/annual	22	17	17	4 semesters/2 years
60540100-Mathematics	Autumn/annual	312	133	135	8 semesters/4 years
70540101-Mathematics	Autumn/annual	40	23	23	4 semesters/2 years

[4] EQF = The European Qualifications Framework for lifelong learning

Introduction

Fergana State University (FSU) is a public higher education institution located in Fergana City, Uzbekistan. Founded in 1930 as the Fergana State Pedagogical Institute, the institution was reorganized as Fergana State University on March 1, 1991.

Today, Fergana State University comprises 12 faculties, 49 departments, and offers bachelor's, master's, doctoral, and evening programs. The university provides 60 bachelor's programs, 34 master's specialties, and doctoral training in 36 specialties, including 9 advanced doctoral fields. More than 26,900 students are currently enrolled.

The Faculty of Physics and Mathematics is one of the oldest academic units of Fergana State University, with its origins dating back to 1930. It operated as a single faculty until 1962, was later reorganized several times, and was re-established in its current integrated form in 2024. The faculty offers undergraduate and master's programs in mathematics, applied mathematics, physics, computer science, information systems, and technological education. It contributes to the university's broader mission of training highly qualified specialists for science, education, and industry.

Summary experts' assessment

The programmes were considered academically solid and comparable to international standards. The auditors particularly appreciated the well-equipped teaching laboratories, the strong sense of community within the university, the enthusiasm of the students, and the supportive attitude of the teaching staff. Examinations and theses were found to be of a high scientific standard, and the university's progress in internationalization, English-language development, and gender balance was also viewed positively.

At the same time, several improvements were recommended. A mandatory Bachelor's thesis should be introduced in all programmes. The Diploma Supplement and module descriptions should be revised and published consistently on the university website. In Bachelor Physics study programme, Solid State Physics and Quantum Mechanics should become mandatory subjects. In addition, the programmes should further strengthen internationalization, regulate the use of AI in teaching and assessment, and expand content in numerical mathematics, optimization, programming, and modern software tools such as MATLAB, Octave, and Python, especially in the mathematics programmes.

For the Bachelor's degree programme Physics (BPP), the institution has presented the following profile in the SAR:

“The main goal of the physics education program is to train competitive, qualified and highly professional physics specialists who, along with in-depth teaching of fundamental and applied physics knowledge to students, have deep theoretical knowledge of classical and modern branches of physics, skills in organizing laboratory work and analyzing and drawing scientifically based conclusions based on experience, skills in the effective use of physics knowledge in technical, engineering and production fields, mastering the methodology of teaching physics, and skills in effectively organizing the educational process.”.

For the Master’s degree programme Physics (MPP) the institution has presented the following profile in the SAR:

“The main goal of the educational program in this master's degree specialty is to train highly qualified and competitive physics specialists who have deep theoretical and practical knowledge based on fundamental and modern physical laws, are able to independently conduct scientific research, are able to find solutions to existing scientific problems based on an innovative approach, and have thoroughly mastered modern technologies.”.

For the Bachelor’s degree programme Mathematics (BPM), the institution has presented the following profile in the SAR:

“The program is designed to prepare competent and competitive specialists capable of teaching mathematics-related disciplines at general secondary, secondary specialized, and vocational education institutions”.

For the Master’s degree programme Mathematics (MPM), the institution has presented the following profile in the SAR:

“In the Master’s programme in Mathematics, advanced knowledge, research and pedagogical competencies are developed, as well as the training of highly qualified specialists capable of applying mathematical methods in science, education, and practice in accordance with international standards.”.

D Expert Report for the ASIIN Seal

1. The Degree Programme: Concept, Content & Implementation

Criterion 1.1 Objectives and Learning Outcomes of a Degree Programme (Intended Qualifications Profile)

Evidence:

- Self-Assessment Report (SAR)
- Learning outcomes of each study programme
- SSC-based Objective-Module Matrix
- Module descriptions for each programme
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Qualification Requirements
- Samples Student Surveys and Results
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The university provides an overview of the relationship between ILOS and ASIIN SSC to demonstrate that the objectives align with the specified exemplary learning outcomes in the relevant SSC. Furthermore, the module descriptions for each course details the learning outcomes of each module, which outline the knowledge, skills and competencies that will be acquired in the individual modules.

As stated by the university, programme learning outcomes are presented in a consistent manner in the official "Qualification Requirements of Higher Education of the Republic of Uzbekistan " for each study programme which are also available at the university's website. That document is recognised as the official regulatory and methodological guide. Each educational programme is specified by general and professional competencies, and the connection with academic disciplines and practical training is outlined.

According to the SAR, the learning outcomes of each programme are defined by a dedicated working group composed of students, parents, stakeholder representatives, and academic staff from higher education institutions. Once drafted, the programme's proposal is submitted for review following a recommendation by the Faculty Council. Based on the experts' evaluations, the programme is then forwarded to the Coordinating Council of the Republic for further discussion. Upon receiving the recommendation of the Republican Coordinating Council and the approval of the University Board, the programme is endorsed by the Rector and subsequently implemented.

The experts assess the objectives and intended professional outcomes of the programmes under review and observe that the programmes are designed to qualify graduates both for teaching and for scientific research.

The competence profile of the Bachelor's and Master's Physics programmes combines two distinct professional orientations within a single curriculum:

- a scientific orientation, including research, modelling, and application of physics in technical and industrial contexts, and
- an educational orientation, including teaching methodology, lesson planning, and pedagogical competences.

The Bachelor's programme Mathematics is designed to prepare competent and competitive specialists capable of teaching mathematics-related disciplines at general secondary, secondary specialized, and vocational education institutions. The areas of professional activity also include conducting scientific research at the Academy of Sciences of the Republic of Uzbekistan and branch research institutes; engaging in work in state administration bodies; and working in state and non-state institutions of general secondary and secondary specialized vocational education in areas involving complex professional tasks.

The Master's programme Mathematics encompasses the teaching of related subjects in all educational institutions, conducting research at the Academy of Sciences of the Republic of Uzbekistan and network research institutes, as well as engaging in activities within state and economic management bodies, joint-stock companies, and complexes of manufacturing enterprises.

Over the last five academic years, the tracer study data provided by the university in the SAR show that graduate employment outcomes for the Bachelor's and Master's programmes in Physics and Mathematics were predominantly concentrated in the public education system, which remained the main employment destination across all four programmes. The Bachelor's programme in Physics produced 427 graduates, of whom 289

entered public education, while smaller numbers were employed in vocational and higher education, other sectors, or continued to master's studies; 26 graduates were on childcare leave and 28 were unemployed. The Bachelor's programme in Mathematics had the largest number of graduates, with 730 in total, including 554 employed in public education, while others were distributed across vocational education, service-related activities, business, construction, postgraduate study, and other categories; 42 were on childcare leave and 23 were unemployed. The Master's programme in Physics recorded 90 graduates, the majority of whom, 67, were employed in public education, with others entering vocational or higher education and a small number on childcare leave. Similarly, the Master's programme in Mathematics was completed by 106 graduates, of whom 67 entered public education, while a considerable share continued in higher education or course-related activity, and only one graduate was recorded as unemployed. Overall, the data indicate that all four programmes are strongly oriented toward employment in the education sector, with Mathematics showing the largest graduate output and the Master's programmes demonstrating relatively favourable employment outcomes.

During the on-site discussions, the experts requested additional clarification regarding this dual orientation and asked the programme coordinators whether the programmes are primarily scientific or pedagogical in orientation and how this distinction is reflected in their structure. The programme coordinators explained that the programmes are intended to offer both orientations, allowing students to choose a pathway that matches their interests and career goals. They emphasized that students can already choose among four types of internships—pedagogical, production, graduation, and educational—and within these formats they are able to follow either a scientific or a teaching-oriented path. At the same time, it was noted that the current structure is largely based on the framework proposed by the Ministry, although the university has the possibility to submit proposals for further development or differentiation of the programmes.

In discussions with industry partners and representatives of the educational sector, it became evident that external stakeholders are already involved in the development of the programmes, as the university regularly seeks their advice. Employers and school representatives confirmed that labour-market needs and especially the rapidly growing educational sector are reflected in the curriculum, including through elective courses aligned with current requirements. They also highlighted the importance of transversal competences such as communication skills, teamwork, and the ability to apply knowledge in practice.

Alumni assessed their employability positively, stating that they had encountered no major difficulties in entering professional life and that their studies had prepared them well for their current roles.

It is noteworthy that most of the students interviewed during the on-site visit expressed a strong interest in pursuing a career in teaching.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The objectives and learning outcomes of the programmes under review reflect the targeted academic qualification level, are feasible and equivalent to the relevant exemplary learning outcomes specified in the applicable Subject-Specific Criteria of the relevant Technical Committees. In the opinion of the experts, the intended competence profile represents the level of qualification according to the European Qualifications Framework. The experts further remark that the relevance of the objectives and learning outcomes are reviewed on a regular basis involving relevant stakeholders and considering the demand on the labour market and the society.

Nevertheless, the experts note that industry demand for graduates in mathematics and physics is expected to increase. In response to this development, the study programmes should be revised in order to provide clearly differentiated profiles that reflect both scientific/industrial and pedagogical competences. To this end, two distinct and formally recognised pathways should be developed in the future, clearly emphasised and made transparent in line with international standards of comparability. In addition, the experts conclude that the intended learning outcomes for each programme should be explicitly included in the Diploma Supplement (see below **4.2**).

Criterion 1.2 Name of the Degree Programme

Evidence:

- Self-Assessment Report (SAR)
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Qualification Requirements
- Discussion during the audit

Preliminary assessment and analysis of the experts:
According to the SAR, the names of the programmes under review are consistent with the "Classifier" approved by the Ministry of Higher Education in Uzbekistan.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The experts consider that the names of the programmes correspond to the intended programme and learning outcomes, as well as to the main language of the course. The experts agree that the teaching and learning content and the competence profile are consistent with the names of the programmes.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report (SAR)
- Study Plan of each programme
- Module descriptions for each programme
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Qualification requirements
- Regulations Internships
- Statistics on Student Mobility
- Student Surveys and Results
- Discussion during the audit

Preliminary assessment and analysis of the experts:

Content and structure of the programmes

In the SAR, the university states that the curriculum is structured into compulsory courses, university-wide courses, and elective courses. The list of compulsory courses is defined by the qualification requirements established by the Ministry, whereas the list of elective courses is proposed by the department and selected by the students. The university compiles a catalogue of elective courses on an annual basis.

In addition to the subject-specific compulsory modules, the bachelor's programmes include mandatory general courses in the first two years of study. These courses include "Modern history of Uzbekistan", "Uzbek (Russian) Language", "Philosophy" and "Religious Studies" as well as "General Psychology" and "General Pedagogy". From the fifth to the seventh semester of the bachelor's programmes, students choose elective courses each semester.

In addition, the eighth semester includes the Final State Certification, in which students choose either a final state examination or a thesis.

The Bachelor's programme in Physics (BPP) is a full-time programme with a duration of eight semesters and 240 ECTS. It covers the theoretical foundations of both classical and modern physics as well as their applied aspects. From the first to the seventh semester, the programme includes a Physics Practicum in a specific field. This course comprises experimental work in laboratories and the application of contemporary experimental methods in areas such as mechanics, atomic physics, electricity and magnetism as well as optics. The seventh semester also includes the module "Foreign Languages for Professional Purposes" and pedagogical courses such as "Trends and Modern Approaches in Lifelong Education" as well as "Inclusive Education".

The Bachelor's Programme in Mathematics (BPM) is a full-time programme with a duration of eight semesters. In addition to the core areas of mathematics, it includes pedagogical courses such as "Trends and Modern Approaches in Lifelong Education", "Trigonometric Examples and Problems in School Mathematics", and "Inclusive Education". Furthermore, a Qualification Practice Internship is integrated into the fourth, sixth, and eighth semesters.

Following table describes the contain and scope of the qualification internship in the BPM:

Type of internship	**1st course**	**2nd course**	**3rd course**	**4th course**	**Expected result**
Qualified training internship		2 weeks 3 ECTS			Consolidate and expand theoretical knowledge of mathematics, enhance professional teaching skills and competencies, apply modern pedagogical technologies in solving mathematical problems, and gain exposure to contemporary scientific and technological advancements during the internship.

Pedagogical internship / Qualified training internship			4 week 4ECTS		Demonstrate the ability to integrate theoretical knowledge with practical experience through observing and analyzing mathematics lessons, applying modern pedagogical technologies, conducting assessments, and actively engaging in both educational and upbringing activities during the internship.
Pedagogical internship/ Qualified training internship				17 week 22 ECTS	As a result of the internship, a creative, independent, and competent mathematics teacher capable of effectively applying theoretical knowledge in practice, organizing mathematics lessons and extracurricular activities, assessing learners' knowledge, and integrating advanced pedagogical practices will be developed.

Figure 1. Information about qualification practice of BD 60540100- Mathematics (Source: SAR)

The two-year Master's Programme in Physics (MPP) includes specialised courses in the field of physics. The module "Practice and Preparation of the Master's Thesis" is offered each semester, alongside additional specialised courses. The fourth semester comprises the module "Practice and Preparation of the Master's Thesis" including the defence of the Master's thesis accounting 20 ECTS.

The Master's Programme in Mathematics (MPM) is a four-semester programme comprising 120 ECTS credits and includes specialised courses in the field of mathematics. Each semester includes the course "Scientific-Pedagogical Practice and Qualification Internship; Scientific Research Work, Preparation and Defence of the Master's Thesis", which carries an increasing workload across the programme and accounts for 30 ECTS credits in the fourth semester. In addition, specialised mathematics modules are offered from the first to the third semester. A total of 8 weeks of internship is planned, which includes scientific-pedagogical work and qualification internship.

According to the SAR, the qualification internship enables master's students to strengthen their theoretical knowledge of mathematics through practical experience in research and pedagogical contexts. At the beginning of each academic year, the relevant internship agreements are concluded, after which students are assigned to internship institutions and

formally deployed in accordance with the Rector's order. A mandatory requirement for the internship is that its focus is aligned with the topic of the Master's thesis.

Both Master's programmes include elective courses in the second and third semester.

During the discussions, the experts seek clarification on several issues relating to the curriculum of Bachelor's programme in Physics (BPP). In particular, the experts asked whether Quantum Physics is currently offered only as an elective subject and whether Solid-State Physics (Condensed Matter Physics) is included in the Bachelor's curriculum. In response, the programme representatives explained that, according to the Ministry's requirements, these courses have previously been compulsory. The Council has already recommended returning Quantum Physics to the status of a compulsory course, and it was confirmed that this change will be implemented. Regarding Solid State Physics (Condensed Matter Physics), the coordinators stated that the subject is currently included in the curriculum of BPP under "Current Problems in Physics", which, according to the module descriptions, appears to be offered as an elective rather than a compulsory component.

Regarding Bachelor's Programme in Mathematics (BPM), the experts raised concerns about the choice of C++ in the course Fundamentals of Programming, noting that it may be unnecessarily complex for mathematical applications and asking why languages such as Python or MATLAB/Octave are not used instead. The programme coordinators noted that students have the opportunity to broaden their programming skills through computer clubs, where they can learn additional programming languages.

In addition, the experts observed that the curriculum documentation does not clearly demonstrate the inclusion of contents of Numerical Mathematics in BPM. The programme coordinators clarified that numerical content is addressed both within some modules such as Algebra, Analysis and Numerical Methodology. Furthermore, the experts pointed out that the topic Discrete Optimisation does not appear to form part of the mathematics curriculum and requested an explanation. The coordinators acknowledged that this is currently not offered; however, they indicated that its inclusion is being considered for future curriculum development.

The students expressed overall satisfaction with the programme and considered it to provide a solid basis for their future professional careers, including project work, further study, and scientific development. They were also satisfied with the sequence of courses and regarded the structure of the curriculum as appropriate. The students considered the range of electives to be adequate. They explained that elective choices are discussed with academic advisors, informed by industry needs, and supported by guidance from teachers. The BPP students also clarified that, although Quantum Mechanics is formally an elective,

it is chosen by most students. In addition, students noted that study groups and extra courses can be organised to pursue topics of particular interest.

The employers interviewed reported generally positive experiences with graduates and students from the reviewed programmes. Graduates were described as possessing solid subject knowledge, good teaching competences, and a strong reputation in the field, particularly in mathematics and physics education. Representatives from schools and private educational institutions emphasised that many of their staff members are graduates of the university and expressed satisfaction with their professional preparation, use of laboratory resources, and communication with pupils. Internship placements are organised in cooperation with partners, supervised by experienced staff, and in some cases serve as an important pathway into later employment. Employers noted that they often become familiar with students during internships and may subsequently recruit them. Feedback on student performance is therefore integrated informally through this cooperation. Overall, external stakeholders expressed a high degree of satisfaction with the collaboration with the university.

Alumni likewise assessed their employability positively, stating that they had encountered no major difficulties in entering professional life and that their studies had prepared them well for their current roles. Some alumni nevertheless pointed to the growing importance of digital tools and programming languages in professional practice.

Periodic Review of the Curriculum

As stated in the SAR, the curriculum is reviewed periodically, typically every three years, with the involvement of all relevant stakeholders and with due consideration given to developments in science, technology, culture, the economy, and society. New subjects are developed in response to the needs and proposals of employers. They are first reviewed at the departmental level and subsequently recommended to the University Scientific Council following discussion in the Faculty Council. Once approved by the University Council, the new subjects are incorporated into the educational programme and curriculum and subsequently implemented.

Detailed Information on the subjects that have been introduced into the curriculum in recent years on the basis of employers' requirements and proposals is presented in the SAR.

The university regularly conducts comprehensive evaluations of its educational programmes and student activities through surveys. In doing so, it builds on its strengths while also identifying areas that require further improvement. The quality of educational materials is regarded as an important factor in this process. In addition, the internal quality

assurance system ensures the regular review of educational programmes and supports the continuous improvement of both their content and implementation.

Student mobility

As stated in the SAR, Fergana State University provides students with opportunities to participate in academic mobility programmes, including short-term study visits and semester-long study periods at partner universities abroad.

The university states that it has concluded several cooperation agreements with institutions worldwide, in particular, in Kazakhstan, Azerbaijan, Russia, Turkey, Belarus, Hungary, Latvia, Slovakia, the Czech Republic, Germany, Belgium, USA, Japan, Vietnam, Iran, Indonesia, Georgia, Kyrgyzstan, and Tajikistan.

Regarding the Bachelor's programmes following statistics are provided:

BD 60530500- Physics

Summary of Student Mobility

Year[5]	Incoming Students (Total)	Outgoing Students (Total)
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	9	6
Total:	**9**	**6**

Figure 2. Statistics student mobility BPP (Source: SAR)

BD 60540100- Mathematics

Summary of Student Mobility

Year[6]	Incoming Students (Total)	Outgoing Students (Total)
2021	-	-
2022	-	-
2023	-	-
2024	-	1

2025	8	-
Total:	**8**	**1**

Figure 3. Statistics student mobility BPM (Source SAR)

As stated in the SAR, in the 2024/2025 academic year, the Faculty of Physics engaged in several academic mobility activities with partner universities in Kyrgyzstan and Kazakhstan. Overall, incoming and outgoing mobility was implemented with Osh State University and Batken State University, both in Kyrgyzstan, and Karaganda State University in Kazakhstan, thereby supporting regional academic cooperation and student exchange. There are also some foreign students in the programmes, especially from neighbouring countries.

The rectorate and university reported that both Master's programmes under review cooperate with a university in Kazakhstan. Within this arrangement, professors from both institutions co-supervise students, which supports academic exchange and collaboration. The rectorate further stated that credits earned in the context of the cooperation with the Kazakh partner university are recognized without difficulty, indicating that student mobility is facilitated institutionally.

During the audit, the rector referred to the university's strategic plan for 2026–2030, which places a strong emphasis on the further development of academic staff, the enhancement of scientific work, and the internationalisation of the university. A particular objective is to increase the number of academic staff in physics and mathematics with sufficient language proficiency in English by 2028. The overarching aim of the initiative will be to implement a teaching strategy in which the majority of modules are delivered in English from that year onwards. The rectorate further explained that internationalisation is being pursued through cooperation with universities in Asia and Europe, including existing partnerships in Kazakhstan, Russia, China, India, France, and Germany. These collaborations include student exchange, the development of joint degree initiatives, and the international mobility of academic staff. Overall, the rectorate presented international cooperation and staff development as key instruments for improving the quality and visibility of the programmes.

The recognition of credits earned during academic mobility is regulated through a formal procedure. Credits are awarded by the host institution and recognised by the sending university on the basis of the transcript, using established equivalencies between ECTS credits and the national grading scale. Recognition is formalised through approved lists of discipline and grade equivalencies and depends on the comparability of course content and workload. The process is supported by the academic advisor and the graduating department, which guide students in selecting suitable courses and in developing an individual study plan. After the mobility period, the transcript is submitted to the home

university, where the recognised results are entered into the student's academic record. The student then continues his or her studies in accordance with the previously approved individual learning trajectory.

The students reported a generally positive attitude towards studying abroad, with some already having participated in international mobility programmes, for example, in Kyrgyzstan. Students explained that mobility opportunities are currently focused mainly on neighbouring countries, although there is also interest in exchanges with European countries and South Korea. They stated that support is provided by the International Office, with the academic staff playing a pivotal role in encouraging and motivating participation. Information on mobility opportunities is communicated through e-mail and social media groups, including announcements on programmes such as Erasmus.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

With regard to the curriculum, the programmes under review are competitive and cover the fundamental subject areas of mathematics and physics. Overall, the auditors are satisfied with the curricula of all programmes. In their view, the programmes are well structured and enable students to achieve the intended learning outcomes effectively. Learning outcomes are also defined at module level. The experts further appreciate that the curricula are reviewed regularly and that any changes are properly documented.

The revision of the module descriptions has, however, revealed that Quantum Physics is included only as an elective subject. In addition, Solid State Physics (Physics of Condensed Matter) is not explicitly included in the curriculum of the Bachelor programme but only in the Master's Physics curriculum as elective. These findings are in contradiction to the ASIIN SSC for the Technical Committee 13 - Physics. Therefore, the experts conclude that the Bachelor's programme in Physics must be revised to include compulsory modules covering the fundamental principles of Solid-State Physics (Condensed Matter Physics) and Quantum Physics. In its current form, the curriculum does not sufficiently ensure that all graduates acquire knowledge in this essential area of physics.

With regard to the Bachelor's programme in Mathematics, the experts find that the current coverage of Numerical Mathematics and Optimisation is insufficient. In addition, Discrete Optimisation is not included yet. The curriculum should therefore be revised to provide broader and more systematic treatment of these subject areas, including the incorporation of Discrete Optimisation, for example, as part of an existing module. In addition, suitable elective modules should be established in order to allow for further specialisation.

For both the Bachelor's and Master's programmes in Mathematics, the experts also recommend to introduce elective courses in modern programming languages and software tools relevant to mathematical applications, in particular Python, MATLAB, and Octave. The provision of specialised programming courses within the elective area would significantly enhance the practical and professional relevance of the programmes.

Furthermore, the experts conclude that internationalization and mobility are developing positively in every reviewed study programme. At the same time, they consider it advisable to further strengthen the use of English in the study programmes in order to increase their attractiveness and to promote both incoming and outgoing student mobility. In this context, the experts encourage the institution to provide students with more opportunities to practise English, for example through guest lectures, academic presentations, and other forms of active use. Such measures would not only benefit students but could also contribute to improving the English proficiency of the teaching staff.

Criterion 1.4 Admission Requirements

Evidence:

- Self-Assessment Report
- Admission regulation Bachelor and Master programmes
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Statistics on Admission Rate and Academic Success
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The national regulation for admission of Bachelor and Master students to higher education institutions in Uzbekistan regulates the procedure. The university admits students based on quotas for state grants and tuition contracts, which are approved annually by a relevant decision of the President of Uzbekistan or the Cabinet of Ministers.

The candidates for Bachelors' programmes must have a general secondary, secondary specialized, or vocational education certificate (Grade 11 or equivalent) and has passed a standardized entrance test or exam. Admission is based on a centralised and standardised selection procedure ensuring equal rights for all applicants. Entry is granted on the basis of entrance examinations conducted through a rating system of accumulated points, with

places available both within state-funded quotas and fee-paying quotas. Applicants may apply for up to five undergraduate study fields.

The admission tests are organised by the Knowledge and Skills Assessment Agency under the Ministry of Higher Education, Science and Innovation. Since the 2021/2022 academic year, the test structure has consisted of three compulsory subjects for all applicants—native language, mathematics, and History of Uzbekistan—as well as two programme-specific subjects. For both Physics and Mathematics, the specialised subjects are mathematics and physics. The testing process is designed to ensure openness and transparency. In addition, certain admission privileges and quota regulations apply to specific applicant groups, including persons with disabilities. Foreign citizens are admitted based on the results of an interview.

Admission to the Master's programmes is carried out in accordance with the quotas established by the President of the Republic of Uzbekistan or the Cabinet of Ministers and takes place on the basis of state grants and fee-paying contracts. The process is organised by the State Commission for Admission to Educational Institutions and is based on a competitive selection procedure using a rating system of accumulated points. Admission to state higher education institution master's programmes is based on the grade point average (GPA) achieved by the applicant in the Bachelor's programme and national or international certificates determining the level of knowledge of a foreign language, not lower than level B2. Applicants must hold a bachelor's degree or a specialist diploma in a relevant or related field of study as defined by the competent ministry. Applicants holding an internationally recognised language certificate at the required level may be exempted from the foreign-language examination and receive the corresponding points automatically.

According to the university, the decline in the number of applicants to the Bachelor's programmes under review over the past two academic years can be explained by the increasing number of public and private higher education institutions in the Republic, as well as by the possibility for applicants to choose up to five study programmes at different higher education institutions within a single admission process. In order to attract applicants on a regular basis, the university organises open days for graduates of urban and rural schools, lyceums, and technical schools, as well as excursions, university Olympiads, and other outreach activities.

The representatives of the rectorate emphasize during the site discussions that female students and disabled students are free of tuition at state universities of Uzbekistan.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The admission rules for all programmes under review provide potential students with detailed information on the requirements and steps necessary to apply for admission to the programmes. As they are based on national official regulations, the experts consider them to be binding and transparent. The experts are of the opinion that the statistics on academic success suggest that the admission requirements are broadly effective in admitting students who are able to complete the programmes successfully. They acknowledge that drop-out numbers are very low. In addition, it is also highlighted that gender balance in the programmes examined is already at a high level and support structures are in place for women and students with special needs.

Criterion 1.5 Workload and Credits

Evidence:

- Self-Assessment Report (SAR)
- Study Plan of each programme
- Module descriptions for each programme
- Regulation "On the Procedure for Introducing the Credit-Module System into the Educational Process of Higher Education Institutions"
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Discussion during the audit

Preliminary assessment and analysis of the experts:
FSU uses a credit system based on student workload which is regulated by the rules on the credit-module system for higher education institutions in Uzbekistan. According to the regulations, the credit system used in Uzbekistan is fully compatible with ECTS and includes contact and independent study time.

As stated in the SAR, both Bachelor's programmes, BPP and BPM, have a duration of four years, during which 240 credits are earned in total. In both programmes, the largest share of the workload is allocated to theoretical and practical courses corresponding to 203 credits, i.e. just over half of the total study period. In addition, qualification practice forms an important part of the curriculum, accounting for 29 credits. The final phase of the programme includes the graduation qualification work and final state certification, corresponding to 8 credits.

Regarding both Master's programmes under review, the duration is of two years, comprising 120 credits. The main part of the workload is concentrated in theoretical education and scientific activity/internship, which accounts for 100 credits. The balance between compulsory and elective components is: 36 credits (60%) are compulsory, and 24 credits (40%) are elective. In addition, scientific-pedagogical work represents a substantial component of the programmes and comprises 20 credits.

The programme coordinators state that the workload is calculated on the basis of a 14-week semester and a total allocation of 900 academic hours per semester, divided between in-class instruction and independent study. They further report that an experimental student survey was conducted in 2019 to verify the plausibility of the workload assumptions. In this survey, students were asked how much time they needed to understand individual course topics, for example in quantum physics. According to the coordinators, the results of the survey led to adjustments in the workload calculations.

All students interviewed from the programmes under review consider their workload to be appropriate. They agree that there is sufficient time for exam preparation. In addition, they confirm that they can give feedback regarding workload of the courses.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The credit system is based on workload, which includes contact hours and self-study time. The workload data provided for the programmes under review appears internally consistent. The programme has been designed to ensure that all compulsory components are included, and credits are awarded for every module based on the respective workload. According to students' feedback, the workload is manageable and appropriate.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report (SAR)
- Study Plan of each programme
- Module descriptions for each programme
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The programmes under review use a variety of teaching methods and didactic tools to ensure the achievement of learning outcomes and support student-centred learning. The integration of traditional classroom activities and digital learning environments is a key aspect of the programmes.

The programme is described as providing an appropriate balance between contact hours and independent study, with independent scientific work forming an integral part of the curriculum. According to the information provided, the university regularly reviews whether the teaching and learning methods applied are suitable for achieving the objectives of the educational programme.

Teaching is organised in different formats depending on the intended learning outcomes. Lectures for the Bachelor's programmes in Physics and Mathematics are delivered in larger lecture halls, sometimes in combined groups, and make use of blackboard and other forms of presentation, video materials, and animated visualisations. Practical classes are conducted in smaller groups and are intended to consolidate theoretical knowledge through calculations and applied exercises. Laboratory work is organised in even smaller groups in order to support experimental learning and the development of empirical skills; students are required to document and submit their results in the form of reports.

The didactical concept also includes coursework, independent assignments, and research-related activities. Coursework topics are defined at departmental level and communicated to students in advance, while supervisors provide academic guidance. Independent study tasks are integrated into the subject syllabi and are submitted via the HEMIS electronic platform, in some cases combined with in-class presentations.

In addition, students are introduced to scientific work through research topics, seminars, conferences, and, at Master's level, through mandatory publication requirements and designated time for research and scientific-pedagogical work.

The university further reports that the effectiveness of teaching is supported by specialised laboratories, including the use of facilities at partner institutions where necessary. When new subjects are introduced into the curriculum, attention is also given to their didactical support, including the acquisition of relevant literature and the provision of audio-visual learning materials through the university's information resource centre.

With regard to the use of AI in courses, the teaching staff states that AI is increasingly being considered in teaching and learning. They reported that students generally do not experience difficulties in using AI-based tools, and that practical course work already provides opportunities to engage with such technologies. In addition, the Department of

Applied Mathematics is in the process of establishing an AI laboratory, which is intended to provide further resources and information for both students and teachers. The university highlighted plans to open a new AI centre for teaching and research, expand the use of AI across the university, and develop AI-related study programmes, including possible joint degrees. Key concerns included plagiarism in student work, security issues, and the use of AI-supported tools.

With regard to the development of oral communication competences, the teaching staff explained that these are fostered both in regular courses and through independent work. They emphasised the use of interactive teaching methods, such as brainstorming and presentation-based activities, often linked to real-life examples, in order to strengthen students' presentation and speaking skills.

For students preparing for the teaching profession, oral and pedagogical competences are also developed through the Teaching Methodology course and the pedagogical internship. During the internship, students are supervised both by a university representative and by a mentor at the internship institution. They receive guidance on lesson preparation and classroom management, and at the end of the internship they are required to deliver a demonstration lesson, which forms part of the evaluation.

During the discussions on-site, the students highlight supportive teaching practices related to learning beyond regular classes. Teachers recognize and support participation in extra classes and additional exercises are offered for students who wish to strengthen skills in specific subject areas.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The experts appreciate the diversity of teaching methods employed. In addition, they acknowledge the strong support provided for the development of individual projects, which are displayed in a dedicated room. Overall, the teaching methods and assessment instruments appear to be well suited to supporting students in achieving the intended learning outcomes. The experts recommend, however, to introduce written regulations for the adequate and efficient use of AI. The regulations should be made available on the website and communicated to students.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 1:

With regard to the curriculum of the Bachelor's programme in Physics, the university states that a proposal has been developed to remove the module "Quantum Mechanics" from

the elective course block and incorporate it into the compulsory component of the curriculum. In addition, it is planned to introduce the module “Solid-State Physics” as an independent compulsory module in the curriculum of the Bachelor’s programme in Physics. This proposal has been submitted to the relevant competent authorities for implementation. The change will be fully introduced from the 2026/2027 academic year onwards. The experts acknowledge these measures. However, they conclude that the requirements should be maintained, as the changes have not yet been implemented.

Regarding the curriculum of the Bachelor’s programme in Mathematics, the university explains in its statement that:

“In light of the role of Numerical Mathematics, computational methods, and optimisation problems in contemporary mathematics education, and on the basis of the ASIIN expert panel's conclusions and recommendations, the content of the module "Calculus of Variations and Optimisation" in the 60540100 — Mathematics Bachelor's degree curriculum was re-examined. As a result of this analysis, the module content was enriched with contemporary topics in Numerical Mathematics and Optimisation. Based on these updates, the revised content of the "Calculus of Variations and Optimisation" module will be fully introduced for students in the Mathematics programme from the 2026/2027 academic year”.

Furthermore, a proposal has been developed to incorporate Discrete Optimisation as a compulsory module into the Bachelor's Mathematics degree curriculum. This proposal has been submitted to the relevant competent authorities for implementation.

The university has also reviewed the integration of Python, MATLAB, and Octave into the Mathematics and Physics programmes in response to the ASIIN expert panel’s recommendations. For Mathematics, these tools are being considered as elective subjects, and related content has already been added to the compulsory module “Fundamentals of Programming”, with full implementation planned from the 2026/2027 academic year. For Physics, the module “Modelling of Physical Processes on the Computer” has also been revised to include Python, MATLAB, and Octave topics.

The experts appreciate that their recommendations have been taken into consideration and that measures are being planned. However, as these changes have not yet been implemented, the experts maintain the recommendations for inclusion in the future action plan.

In their response, the university also indicates that work to improve students’ proficiency in English is in progress. In order to support these efforts, the recommendation should be maintained.

Moreover, the university has developed a dedicated policy document establishing procedures for the use of AI technologies in educational, scientific research, and administrative activities. The university submitted the new policy as evidence. The experts commend this essential measure and consider the policy an important step towards ensuring the responsible, purposeful, and effective use of AI at FSU. They recommend making it publicly available on the university's website.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation

Evidence:

- Self-Assessment Report (SAR)
- Examination regulations
- Regulation on the Final State Certification of Graduates of Higher Educational Institutions of the Republic of Uzbekistan
- Module descriptions for each programme
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Samples of exams and final theses for each programme
- Statistics on Grade Distribution
- Discussion during the audit

Preliminary assessment and analysis of the experts:
In the programmes under review, various forms of examination are used including written and oral exams, presentations, and coursework defences as well as combined assessment methods. These are determined by the department's faculty members, primarily based on the characteristics of the respective subjects. Additionally, regular checks are conducted to ensure that exams truly measure the achievement of learning objectives through cross-checking of results and student surveys.

The grade system at Fergana State University is as follows:

American system (A- F) / (ball)	Evaluation system (grade)	Evaluation	Students' knowledge is evaluated according to the following criteria
"A+" / (91-100)	"5"	Excellent	The student can MDke independent decisions and conclusions, think creatively, observe independently, apply the acquired knowledge in practice, understand, know, and can express the essence of science (subject), and if he is considered to have a notion of science (excellent)
"A" / (86-90)			
"B+" / (81-85)	"4"	Good	The student observes independently, can apply the acquired knowledge in practice, can understand, know, express and say the essence of science (subjects) and if he is considered to have a notion of science (good)
"B" / (71-80)			
"C+" / (66-70)	"3"	Satisfying	Students apply the necessary knowledge in practice, can understand, know, say, and express the essence of the subject (topic and if he is considered to have an assumption of science (satisfying)
"C" / (60-65)			
«F» / (0-59)	"2"	Not satisfying	The student does not acquired science, does not understand the content of science and does not have an assumption about science (not satisfying)

Figure 4. Assessment system at FSU (Source: SAR)

As stated in the SAR, at the beginning of a course, students are informed about the requirements to be fulfilled, including coursework, assessment tasks, and examinations. Examination dates are arranged according to the academic calendar, and the system is described as being based on transparent assessment criteria and regular review of examination practices.

In practical terms, the assessment in each discipline is divided into two main stages.

- The first stage consists of current and midterm assessment, which together account for 50 points. In order to proceed to the second stage, the final examination, students must achieve at least 60 percent of these 50 points, which means a minimum of 30 points. This creates a threshold that students must reach before they are allowed to sit the final assessment in a subject.
- The second stage is the final examination, which is also graded on a 50-point scale. Depending on the nature of the discipline, the final examination may be oral, written, or test based. A student passes this final stage by achieving at least 60 percent of the available points. The overall result in a discipline is then calculated from the combined performance in current assessment, midterm assessment, and the final examination.

According to the SAR, the final assessment is carried out by another teacher, and the participation of specialists or experienced teachers from other higher education institutions or relevant stakeholder institutions is also possible. At the same time, the learning progress during the semester is monitored continuously by the course instructor through practical work, seminars, laboratory activities, and independent study tasks. These results are documented both in internal records and in the university's electronic system, HEMIS.

The examination rules also clearly define when a student is not allowed to successfully complete a course. If a student misses 25 percent or more of the scheduled classroom hours in a discipline without a valid reason, that student is excluded from the subject, is not admitted to the final examination, and cannot receive the corresponding credits. A student who is not admitted to the final examination or who fails the examination is classified as having an academic debt. The same status may also apply in situations where a student cannot complete the course within the required period. At the same time, the regulations distinguish between unjustified absence and valid reasons such as illness, accidents, family bereavement, marriage, or childbirth. In such cases, the student may be allowed to retake the discipline through arrangements approved by the academic administration.

For students with an academic debt, the university provides a formal re-study procedure. Subjects that have not been successfully completed may be retaken, usually during the summer vacation period, and this is generally done at the student's own expense.

Progression is based on grade point average (GPA). The SAR specifies that the required GPA at Fergana State University is 2.5. Students who do not reach this threshold remain in the relevant year and retake the required subjects.

The students interviewed express satisfaction with the number, format, and distribution of examinations. They confirm that they have two weeks to prepare for exams and regard this as sufficient. Students emphasized that exams are generally well-aligned with the topics taught in the courses. The most common forms of assessment are written examinations or tests, but there are also oral exams, which account for approximately 30%, especially in midterm assessments. Overall, students appear to be largely satisfied with the forms of examination. Exams are also conducted anonymously, which is positively perceived.

Final thesis

The Bachelor's degree programmes under review include a Final State Certification which can take the form of either a state exam ("Final State Attestation)", which includes at least four specialized disciplines, or the completion of a final qualifying thesis ("Final Qualification Work)", which requires independent research.

The Final State Attestation evaluates the level of knowledge, skills, and competencies of bachelor's graduates. It is conducted in written form and is assessed according to a five-point grading system. Each student is given a test paper consisting of four questions, and each answer is evaluated with a maximum score of five points. To conduct the attestation, a Final State Attestation Committee of no fewer than five faculty members and specialists is established. The task of the committee is to assess the graduates' level of knowledge, skills, and competencies.

The Final Qualification Work is a scientific and theoretical project completed by bachelor's degree students during the final year of their studies, serving as an assessment of the knowledge, skills, and competencies acquired by the graduate in the corresponding field of study. Topics are approved annually by the Academic Council of the higher education institution before the start of the final semester. The thesis is prepared in accordance with the academic standards of the programme and is defended at the end of the 8th semester.

All students enrolled on Master's programmes are required to complete a master's thesis in order to graduate. The Master thesis is a research work aimed at the solution of a specific scientific-practical problem related to the relevant speciality field. The curriculum includes a specific block devoted to scientific research activity, which covers the preparation of research papers, the development and defence of the master's dissertation, and scientific-pedagogical practice. Master thesis' topics are linked both to the curriculum and to broader

scientific or educational problems, and external specialists from research institutions may be involved as advisers when necessary.

Supervision of the master's dissertation is carried out by professors, doctors of science, associate professors, candidates of science working at higher education institutions, researchers from scientific institutions of the Academy of Sciences of the Republic of Uzbekistan, as well as highly qualified and experienced specialists from organizations, and foreign experts who hold master's, scientific, or academic degrees in accordance with the established procedure. If the appointed academic supervisor does not work at the higher education institution where the student is studying, an additional academic advisor from among the department's teaching staff is assigned to the student.

According to the regulations, for the organization of the thesis defence, the university establishes a final state attestation commission by rector's order under chairpersons approved by the Ministry, and the commission composition must be confirmed one month before the graduation semester begins. The thesis defence itself is conducted in an open meeting of the commission with the participation of at least two thirds of its members. In some cases, the defence may also take place at department branches with the involvement of leading field specialists.

The regulation further provides that the result of the thesis defence is determined according to the institutional rating system and must be announced on the same day after the commission protocol has been completed. Plagiarism is expressly prohibited, and if it is detected, the commission may assign an unsatisfactory grade or cancel a previously awarded positive result.

During the on-site discussions, the experts were informed that currently approximately 20% of students choose to complete a thesis. According to the statements made by the university management and the programme coordinators, however, the Ministry has already approved the introduction of a mandatory Bachelor's thesis for the Bachelor's programmes in Physics. This regulation will be implemented in the near future. For the Mathematics programmes, by contrast, the status of such approval remains uncertain.

Students reported that it is possible to approach teachers based on their personal interests in order to select a topic for the thesis. Many students appreciate the opportunity to continue working on a topic already developed during their Bachelor's studies. The theses are not purely theoretical, as they often include practical components as well. Students are also aware of the plan to reintroduce a mandatory Bachelor's thesis.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The experts observe that a variety of assessment methods is used and that these are aligned with the intended learning outcomes of the respective modules. In addition, the examinations are appropriate and are organised in a transparent manner. The students report that they are well-informed about examination regulations, requirements, and schedules. Compensation measures are also in place.

After reviewing sample examinations, the experts conclude that the assessment requirements are demanding and that students are expected not only to demonstrate knowledge, but also to analyse problems and apply what they have learned. The level of students' academic performance and the content of the modules are appropriate for the programmes under review. The Bachelor's and Master's theses submitted within the programmes are of a high standard and demonstrate that students are able to work independently. They acknowledge that exams and theses are mostly at a high internationally comparable level. The scientific standard is high and comparable with European standards. The experts conclude, however, that a bachelor's thesis needs to be a mandatory component of the programmes under review, as all students are required to demonstrate their ability to work independently at the level of the respective degree programme.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 2:

With regard to the Bachelor's thesis, the university states that:

"In accordance with the ministerial order and university council resolution referred to above, the defence of the Final Qualification Thesis (FQT) has been made 100% mandatory for graduates of the 60540100 — Mathematics and 60530500 — Physics programmes within the framework of the Final State Certification. Every student enrolled in these programmes is now required without exception to complete and defend an independent research project".

As evidence, the Order of the Minister of Higher Education, Science and Innovation of the Republic of Uzbekistan No. 499, dated 10 December 2025, and the Resolution of the University Council Meeting No. 9, dated 2 May 2026, were submitted.

The experts acknowledge these measures. However, the submitted documents are not fully clear. First, the ministerial regulation states that graduates may be allowed to write a diploma project or bachelor's thesis by decision of the University Council, based on their own preferences. The regulation also includes an annex listing full-time bachelor's degree programmes for which the defence of a diploma project or final qualification thesis is required. Physics is included in this list, but the Mathematics programme is not mentioned. Moreo-

ver, while the regulation refers to the writing of a bachelor's thesis, it does not clearly state that all graduates must write one.

In addition, the Resolution of the University Council Meeting is intended to provide evidence of the relevant decision for the Mathematics programme. It states that:

"Starting from the 2026/2027 academic year, all students of the Mathematics educational field shall be permitted to write and defend a graduation qualification work (GQW)."

The experts consider that this wording does not clearly indicate whether the two existing options remain available or whether the decision makes it mandatory for all Mathematics students to write and defend a bachelor's thesis from the 2026/2027 academic year onwards. In any case, as this measure is planned for the 2026/2027 academic year, it has not yet been implemented. Therefore, the requirement should be maintained.

Furthermore, with regard to Physics, the requirement has also not yet been implemented, as no programme-specific decision of the University Council of Fergana State University for Physics has been submitted.

The experts therefore consider that the regulation must explicitly establish the final thesis or project as a mandatory graduation requirement for all students of the respective programme, without alternative options.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report (SAR)
- Staff Handbook
- Module Handbook for each programme
- Regulation on recruitment
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Discussion during the audit

Preliminary assessment and analysis of the experts:

According to the data presented in the SAR, the Bachelor's programme Mathematics at Fergana State University is delivered by 33 professors and teaching staff. Of these, 4 hold the academic degree of Doctor of Science (DSc), 18 hold the degree of Doctor of Philosophy (PhD), and 11 are lecturers. The Master's degree Mathematics is staffed by 7 academic members, including one professor with a DSc degree, one associate professor with a DSc degree, one associate professor with a PhD degree, and four additional associate professors with PhD degrees.

The Bachelor's degree programme Physics is supported by 27 teaching staff members. Of these, four are professors with a Doctor of Science (DSc) degree, 16 hold a Doctor of Philosophy (PhD) degree, and seven a Master's degree. The Master's degree programme Physics has 9 faculty members, of whom four are professors holding a Doctor of Science (DSc) degree and five hold a Doctor of Philosophy (PhD) degree.

According to the order of the Rector of Fergana State University, professors and teaching staff participate in professional development and retraining courses once every three years at designated centres within the Republic. In addition, opportunities are available for the further development of professional, didactic, and pedagogical competencies and for participation in relevant training activities.

Newly appointed young teachers are assigned to experienced members of staff who have worked in the department for many years. For this purpose, a mentor-apprentice system

has been established. Within this system, new teachers are introduced to teaching activities and to the practical performance of their duties.

The university highlights that members of the academic staff publish scientific articles and monographs in internationally indexed databases, participate in national and international conferences, and are involved in scientific projects. The results of scientific work, including dissertations, projects, and research conducted under contractual arrangements, are used in the educational process and incorporated into the content of individual subjects.

The work of professors and teaching staff is reviewed at the end of each academic year. The basis for this process is a 110-point evaluation system. The areas covered include teaching, research, methodological work, work with young people, and public relations. In cases where a score below 50 points is obtained, the question of suitability for the position is considered by the University Council.

In addition, as stated in the SAR, specialists who have worked in the field of education for many years are involved in the teaching process on an extra-mural basis. Specialists from the continuing education system and representatives of partner institutions also participate in the educational process. Furthermore, leading scientists and professors from foreign higher education institutions, and scientific organizations are involved in academic activities e.g. from countries such as Kazakhstan and Russia.

During the discussions on-site, the rectorate reported that personnel bottlenecks are addressed through competitive employment conditions, transparent recruitment procedures, and targeted incentives for academic staff. The university seeks to attract qualified candidates from Fergana and other regions by offering comparatively high salaries, reliable payment, social security, and safe working conditions. Vacancies are publicly announced, and selection procedures are published on the university's website. In addition, the university supports staff development through research positions, publication incentives, scholarships for international research stays, and higher salaries for PhD holders. The recruitment of foreign academic staff and the provision of accommodation for visiting professors further contribute to strengthening the university's staffing capacity.

The teaching staff indicated that they generally have sufficient time to pursue their research interests. Their workload is based on a 36-hour working week and approximately 2,800 working hours per year, with around 50–60% of their time reserved for research. On average, lecturers reported spending about 10 hours per week on teaching.

With regard to further qualification opportunities, staff described the available support as positive. The university provides financial incentives for publications, supports research and teaching stays abroad by covering the associated costs, and offers access to summer

and winter schools as well as online training opportunities. Academic staff also have opportunities to participate in international conferences, for which institutional support is available. In addition, they benefit from access to international academic databases, including Springer and others. Financial incentives also exist for academic advancement: staff with a PhD receive 30% higher salaries, while those holding a Doctor of Science degree receive 60% higher salaries.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The composition, scientific orientation and qualification of the teaching staff team are suitable for sustaining the degree programmes under review. Furthermore, the quantity of the teaching staff appears to be adequate according to the experts. They highlight that the teaching staff is very engaged. The faculty's support mechanisms and opportunities for developing personal skills and the further qualification offers for new teachers are considered to be adequate by the experts. The experts recommend, however, to create more opportunities for lecturers to improve their English proficiency through structured language training, participation in international activities, and regular guest lectures with international speakers.

Criterion 3.2 Student Support and Student Services

Evidence:

- Self-Assessment Report
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Discussions during the onsite visit

Preliminary assessment and analysis of the experts:
Student support is organised through a combination of academic mentoring, tutoring, centralised administrative services, library services, and digital systems. Each professor is assigned to a small group of students and provides regular consultations, seminars, and research-related guidance. For students in the first to third years, tutors monitor academic progress, coordinate extracurricular activities, provide academic guidance, and support the development of individual learning trajectories. Students also receive methodological support for the preparation of articles and theses and may participate in seminars and scientific-practical conferences.

Administrative student services, including registration, grades and results, schedules, and applications, are managed centrally through the Registrar's Office. The Information Resource Centre supports teaching and learning through access to printed and electronic resources in Uzbek and foreign languages and provides assistance with the use of information technologies, source use, and scientific writing. The library infrastructure includes more than 200 computers, 4 computer rooms, a BookCafe with 40 Android tablets, and reading rooms with 1,575 seats.

Student dormitories are also available through an online application system used for dormitory placement. Academic and administrative processes are additionally supported through the HEMIS information system.

During the discussion on-site, students expressed a high level of satisfaction with their teachers, academic advisors, and administrative staff. Students highlighted the role of advisors as especially important. Advisors help students organize their workload and plan their studies, acting as an effective bridge between the university administration and the student body. Students also highlighted supportive teaching practices related to learning beyond regular classes. Teachers recognize and support participation in extra classes and additional exercises are offered for students who wish to strengthen skills in specific subject areas.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The experts are of the opinion that the university's support system helps students to achieve the intended learning outcomes, completing their studies successfully and without delay. Students are well-informed about the services available to them. The system for guidance and mentoring is considered to be adequate by the experts' team. They commend the engagement of teaching staff which is flexible and open to offer extra-classes and continuous support and advice.

Criterion 3.3 Funds and equipment

Evidence:

- Self-Assessment Report
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Visitation of the institution

- Discussions during the audit

Preliminary assessment and analysis of the experts:
As state university, FSU's main sources of funding are government funding and the university's own funds, raised from tuition fees, the implementation of scientific research work, etc. The university describes the funds distribution in the SAR and emphasizes that over the past five years, the amount allocated for the purchase of laboratory equipment has increased from 508 million to 2 billion UZS (i.e. to 100%).

The university reports 14 educational buildings and an auditorium and classroom area of 37,963 m², including 18,600 m² allocated to classrooms and 14,412 m² to laboratories. The teaching infrastructure includes 126 classrooms, 79 lecture rooms, and 47 laboratories, and the university also operates 10 student dormitories. In the area of digital and technical infrastructure, the university lists 1,524 computers, 231 video projectors, 87 interactive panels, 211 smart TVs, 99 Wi-Fi routers, and 4 E-MINBAR complexes. Of the total number of computers, 793 are used in teaching, with 30 computer classrooms containing 558 computers, 133 computers in the Information Resource Centre, and 73 computers in student dormitories. In 2024, the university added 20 Wi-Fi routers, 20 network devices, 125 computer units, and 10 interactive panels.

During the audit, regarding financial governance, the rectorate emphasizes strong control over finance and budgeting. It is emphasized that the university's funding structure is predominantly self-generated, with around 20% of the budget provided by the state, while the remaining 80% comes from student tuition fees and externally funded projects. This funding model necessitates regular alignment of staffing levels with available resources and enrolment trends.

Students confirmed that the infrastructure and equipment are sufficient. Regarding access to resources, students reported no difficulties. They emphasized that learning materials are easily accessible through institutional systems. Both electronic and printed learning materials are available, and faculty leadership provides support in obtaining printed books when needed.

During the site visit, the experts inspect the facilities, lecture rooms, and the library as well as computer rooms and Physics laboratories for teaching and research such as the Mechanics and Molecular Physics Laboratory, Optics Laboratory, Laboratory of Nuclear Physics etc. All relevant fundamental areas of physics are adequately covered. The experts found a well-equipped library with helpful, competent staff. It features numerous workstations, each equipped with a computer They also visited students' seminars and found students, assistants and professors together in the same room involved lively

discussion of research topics. The facilities in the rooms are of international standard. Students are provided with ample space for group work and discussions.

In the labs, multilingual experiment instructions could be downloaded via QR codes. During the visit, the expert group was also able to observe the students at work in the laboratories and engage with them. Overall, the impression gained was that the students demonstrated a high level of technical proficiency and strong motivation. Their ability to engage in technical discussions in English was also noted positively. Another positive feature worth highlighting is a laboratory where students can carry out their own hardware and software projects.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The available funds and facilities provide a robust foundation for the degree programmes under review according to the experts. They are of the opinion that the equipment in the laboratories is in good condition and adequate for teaching, resulting in a good experimental level. The experts highlight that task descriptions via QR code in three languages are available in the educational labs. Furthermore, the computer rooms and software are sufficient for teaching and research purposes.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 3:

The university established a Language Centre to improve foreign language skills among staff and students. It offers flexible, tailored training in general and academic English, including research reading and IMRAD-based article writing. Staff courses began in 2025/2026, with wider student and postgraduate participation planned from 2026/2027. In addition, The faculty is gradually expanding English-medium instruction and strengthening the use of academic English. Current efforts include adapting curricula, improving teachers' capacity to teach in English, increasing access to foreign-language academic resources, and organizing lectures, seminars, and presentations with international professors and guest experts. Physics already has English-taught groups, and English-medium groups in Mathematics are planned.

The experts commend the efforts made by the university and encourage it to continue taking measures to enhance the internationalization of its staff.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions

Evidence:

- Self-Assessment Report (SAR)
- Module descriptions
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The experts found that the module descriptions for the programmes under review contain, in general, all the required information for each one.

During the discussion on-site, they learn that the syllabuses of the programmes under review are entered as a resource by teachers onto the HEMIS portal. All professors, students and users registered on the system are eligible to access these. This includes control tables, syllabuses and the curriculum.

The experts note, however, several inconsistencies in the module descriptions of both study programmes. In addition, not all mandatory and elective courses are included.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The module descriptions need to be comprehensively reviewed and updated. Any inconsistencies should be eliminated. The ASIIN logo must be removed. All modules including electives and internships need to be included. After revision, the module descriptions including the English version need to be made accessible to the public on the faculty's/department/programme website (see below **4.3**).

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report (SAR)
- Sample Diploma Supplement for each study programme

- Sample Graduation Certificate for each study programme

Preliminary assessment and analysis of the experts:
The university provides samples of diploma certificates and diploma supplements for each programme under review. The Diploma supplement is issued in Uzbek and English and contains curriculum description, a detailed list of modules with grades and educational credits obtained, the form of education, its duration, qualifications, and types of professional activities and its objects.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The diploma supplement needs to contain the required information according to the ECTS-Users' guide for each programme under review.

The programme learning outcomes need to be included as well as information on the classification of the degree programme with regard to the national education system. In addition to the final mark, statistical data about the student's GPA relative to the cohort as set forth in the ECTS Users' Guide need to be included.

Criterion 4.3 Relevant Rules

Evidence:

- Self-Assessment Report
- All relevant regulations
- University's website: https://www.fdu.uz

Preliminary assessment and analysis of the experts:
The university explains that all relevant rules including students' and university staff's rights and responsibilities are included in the internal regulations of the university as well as in the "Rules of Etiquette".

The students interviewed confirm that they can find all relevant information on the website or through the HEMIS system.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The rights and duties of both the university and the students are clearly defined and binding. All rules and regulations are available to all stakeholders. In addition, the students receive all relevant course material in the language of the degree programme at the

beginning of each semester. The experts identify, however, a need for improvement only with regard to the publication of module descriptions. They note that module descriptions are currently not publicly available on the programme websites. While students receive the necessary information internally, this does not ensure transparency for all relevant stakeholders and information for interested candidates. The experts therefore state that it must be ensured that module descriptions including the English version for each programme under review are publicly available on the official website and accessible to all stakeholders.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 4:

Fergana State University states that the module descriptions for all degree programmes have been comprehensively reviewed and, together with their English-language versions, published on the official university website and are accessible to the public. The ASIIN logo has been removed from all module description documents.

The experts acknowledge the immediate action taken by the university and consider that the issue regarding the publication of the module descriptions on the website has been resolved. However, following their review of the newly published versions of the module descriptions, they find that these are still not fully satisfactory.

For example, the module “Mathematical Analysis”, taught in semesters 1 and 2 of the Bachelor’s programme in Physics, still lists Ordinary Differential Equations (ODEM111), Differential Geometry (DiffGeoM112), and Partial Differential Equations (PDEM113) as required and recommended prerequisites. Since these courses are not part of the Physics curriculum, they should not be included here. In addition, revision dates are not included in the module descriptions. Consequently, the requirement should not be removed..

With regard to the diploma supplement, the university explains in its comments on the report that the graduate diploma and diploma supplement are generated through the HEMIS system administered by the Ministry. Therefore, the university has formally proposed that the Ministry enrich the diploma supplement in line with international standards by including the graduate’s comparative GPA within the cohort, programme learning outcomes, and the classification of the degree within the national qualifications framework, in addition to the final grade.

The experts understand that this requires a decision and approval by the Ministry, and they appreciate the university's efforts to fulfil this requirement. However, as the proposal has not yet been approved by the Ministry, the requirement should be maintained.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Student Surveys and Results
- Results Survey Employers
- Faculty of Physics and Mathematics: https://fdu.uz/site/sahifa/2864f5cb9c6906164be1041e508b1bcadd666d5170a4bfce
- University's website: https://www.fdu.uz
- Discussion during the audit

Preliminary assessment and analysis of the experts:
Fergana State University has established an internal quality management structure in line with national regulations of the Republic of Uzbekistan. Within this framework, the Department for Quality Control of Education was created as a structural unit of the university's administrative system. The department is responsible for monitoring compliance of student learning outcomes with state educational standards, overseeing the quality of personnel training, organizing internal and international certification procedures, identifying factors affecting education quality, and supporting corrective and preventive measures. The university also uses the HEMIS system as an instrument to support quality assurance and educational monitoring.

A central element of the quality management system is the regular collection of stakeholder feedback through surveys. Questionnaires are conducted among students, professors and teachers, and employers.

At the end of each academic semester, student surveys are carried out in order to improve the efficiency of the educational process and the quality of education. According to the SAR, 220 students participated in the most recent survey round, representing around 30% of the student body surveyed. Anonymous student surveys are also used to assess

satisfaction with teaching, evaluation procedures, and the environment of the institution. These surveys are analysed by the relevant departments and faculties.

Feedback from academic staff is also incorporated into the quality management process. The results of the surveys are discussed at department, faculty, and university levels. Based on the collected information, the Department for Quality Control of Education prepares an analytical report and submits its conclusions to the Rector and the Vice-Rector for Academic Affairs within 20 days. Survey outcomes may also be presented in summarized form to the University Council. These results can be used in decisions related to employment contracts, retraining, and professional development.

Employer feedback forms another part of the university's quality assurance system. Employer surveys are conducted at the end of each academic year, and their suggestions regarding teaching and practice are considered in the development of measures to improve internal educational quality. The most recent survey was completed by 100 employers, covering 22 manufacturing enterprises, 58 educational institutions, and 20 other organizations, based on graduates of the 2024–2025 academic year. The stated purposes were to assess the professional preparation of graduates, gather employers' opinions, and develop proposals for improving personnel training. The university also reports that feedback is used in the review and renewal of the programmes. In this process, external specialists from industry, research institutes, and other higher education institutions may be involved.

In addition, the Department of Marketing and Student Practice conducts annual analyses of employers' needs and labour market demand, and this information is compiled by the university's marketing department.

During the audit, teaching staff of the programmes under review reported that anonymous online surveys are conducted using Google Forms and through the HEMIS platform. They confirm that the survey results are analysed by the Quality Management Department. According to the staff, the collected feedback is used to review teaching practices, and where necessary, efforts are made to adapt or change teaching methodology in response to the findings. They also indicated that, after the analysis of suggestions and survey results, relevant information is communicated to students and published online.

Students reported that feedback on the results of these surveys is communicated both through the HEMIS system and through direct face-to-face discussions. In addition to the formal survey process, students appear to have several channels through which they can raise concerns and communicate their views on academic and organisational matters.

With regard to whether their feedback is taken into account, students expressed the view that there are established procedures for addressing student concerns. In most cases, students first approach their student representatives rather than contacting the dean or rector directly. Problems and concerns may then be discussed in meetings with faculty members, who actively ask about issues affecting students. Furthermore, students reported that they have the opportunity to meet with the rector once per semester, which provides an additional forum for discussing academic or administrative matters. Depending on the nature of the issue, students may also address the responsible persons directly. During meetings with the rector, faculty members are also present, which appears to support communication between students and the academic leadership.

Beyond the survey instruments, students confirmed that there are regular opportunities for open dialogue. Meetings with faculty and with the rector function as important forums for student participation and communication. Students also noted that when learning difficulties arise, additional support measures may be introduced, such as extra classes. This also applies to laboratory-related issues, where comparable support arrangements are provided. Overall, the student perspective suggests that the institution has established several formal and informal mechanisms for collecting feedback, discussing concerns, and responding to student needs.

In their summative evaluation of this criterion, the ASIIN expert team comes to the following conclusions:

The study programme is subject to periodic internal quality assurance, a process which engages all relevant stakeholders. It has been demonstrated that the outcomes of these procedures form a part of the ongoing improvement of the programme. A framework of processes and responsibilities has been established to guide the ongoing development of the programme. The results of the surveys are communicated and made available to teachers and students. In addition, there is a direct feedback system and open environment in place.

E Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

No additional documents needed.

F Comment of the Higher Education Institution (08.06.2026)

The following quotes the comment of the institution:

REQUIRED IMPROVEMENT Criterion 1.1

Programme learning outcomes have not been included in the Diploma Supplement.

Response of the Institution:

We hereby inform the ASIIN expert panel that the graduate diploma and diploma supplement are generated through the HEMIS system administered by the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan. In view of this institutional arrangement, the university has formally submitted a proposal to the Ministry requesting that, in addition to the graduate's final grade, the diploma supplement reflect the student's GPA in comparative statistical terms relative to the cohort, in accordance with the requirements set forth in the ECTS Users' Guide. The university is committed to ensuring that the content of the diploma supplement is enriched to international standards, incorporating programme learning outcomes, the classification of the degree within the national qualifications framework, and comparative statistical data on the student's academic performance.

REQUIRED IMPROVEMENT Criterion 1.1

The scientific and pedagogical orientations of the programmes have not been presented as two formally distinct and separately recognised profiles.

Response of the Institution:

The qualification requirements for the Bachelor's degree programmes 60540100 — Mathematics and 60530500 — Physics have been approved by the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan. These qualification requirements constitute an official regulatory and methodological document developed on the basis of the State Educational Standard of Higher Education, the Classifier of Fields and Specialisations of Higher Education, the national and sectoral qualifications frameworks of the Republic of Uzbekistan, professional standards, and the proposals of employers. They define the professional competencies, learning outcomes, fields of professional activity,

qualification requirements, and the structural composition of the course catalogue for graduates of these Bachelor's programmes.

The current qualification requirements for the 60540100 — Mathematics and 60530500 — Physics Bachelor's programmes do not formally distinguish between separate scientific and pedagogical orientations. The qualification for the 60540100 — Mathematics Bachelor's programme is designated as "Mathematician, Teacher of Mathematics," while the qualification for the 60530500 — Physics Bachelor's programme is designated as "Physicist, Teacher of Physics and Astronomy." This reflects the intention that degree programmes within these fields simultaneously encompass both fundamental scientific preparation and pedagogical-methodological training.

In practice, the existing degree programmes integrate subject-specific theoretical foundations with modules related to the organisation of the educational process. This approach is designed to ensure that graduates are prepared for both scientific-research activity and pedagogical professional practice. At the same time, analytical work is currently under way to examine the feasibility of formally differentiating the 60540100 — Mathematics and 60530500 — Physics Bachelor's programmes into distinct scientific and pedagogical tracks. The primary purpose of this initiative is to provide students in the mathematics and physics fields with more clearly defined professional trajectories, to refine the content for candidates oriented toward scientific research, and to further strengthen the preparation of teaching professionals for the general secondary, secondary specialised, and higher education sectors. Proposals being developed in this regard are grounded in a comparative analysis of the existing qualification requirements, degree programmes, workforce needs, labour market demands, and international best practice. It is planned to submit these proposals to the relevant competent authorities with full scientific-methodological and regulatory foundations.

Criterion 1.3 — Curriculum

REQUIRED IMPROVEMENT Criterion 1.3 (Physics)

Quantum Mechanics is currently offered only as an elective subject; the experts require that it be converted into a compulsory module.

Response of the Institution:

The Faculty fully accepts this requirement. Quantum Mechanics constitutes one of the foundational areas of modern physics and must be mastered as a compulsory subject by all students enrolled in the Bachelor's degree programme in Physics. Accordingly, a proposal

has been developed to remove the module "Quantum Mechanics" from the elective course block and incorporate it into the compulsory component of the 60530500 — Physics Bachelor's degree programme. This proposal has been submitted to the relevant competent authorities for implementation. The change will be fully introduced from the 2026/2027 academic year onwards.

REQUIRED IMPROVEMENT Criterion 1.3 (Physics)

Solid-State Physics (Condensed Matter Physics) is not present as an independent compulsory module in the Bachelor's degree programme in Physics.

Response of the Institution:

The Faculty acknowledges, in accordance with the ASIIN requirements, that Solid-State Physics constitutes a fundamental component of physics education at Bachelor's level. In the current curriculum, the core knowledge of this subject area has been taught within the module "Current Problems in Physics." Accordingly, a proposal has been developed to incorporate Solid-State Physics as an independent compulsory module in the 60530500 — Physics Bachelor's degree programme. This proposal has been submitted to the relevant competent authorities. The change will be introduced from the 2026/2027 academic year onwards.

REQUIRED IMPROVEMENT Criterion 1.3 (Mathematics)

The coverage of Numerical Mathematics and Optimisation topics in the curriculum is insufficient.

Response of the Institution:

In the process of improving the content and structure of academic modules within the Mathematics department, international educational experience, contemporary scientific developments, and accreditation requirements are consistently taken into account. In particular, the department's participation in the "DIGIMATH4.0" project, aimed at establishing a Master's degree specialisation in Numerical Mathematics, has been secured. This project is currently under review by international experts.

In light of the role of Numerical Mathematics, computational methods, and optimisation problems in contemporary mathematics education, and on the basis of the ASIIN expert panel's conclusions and recommendations, the content of the module "Calculus of Variations and Optimisation" in the 60540100 — Mathematics Bachelor's degree

curriculum was re-examined. As a result of this analysis, the module content was enriched with contemporary topics in Numerical Mathematics and Optimisation. Based on these updates, the revised content of the "Calculus of Variations and Optimisation" module will be fully introduced for students in the Mathematics programme from the 2026/2027 academic year.

REQUIRED IMPROVEMENT Criterion 1.3 (Mathematics)

Discrete Optimisation is entirely absent from the current degree programme.

Response of the Institution:

On the basis of the ASIIN expert panel's conclusions and recommendations, and following a review of leading international practices in mathematics education, a proposal has been developed to incorporate Discrete Optimisation as a compulsory module into the 60540100 — Mathematics Bachelor's degree curriculum. This proposal has been submitted to the relevant competent authorities for implementation.

The scientific and methodological rationale for this proposal is grounded in the significant role of Discrete Optimisation in contemporary mathematics, mathematical modelling, computational methods, operations research, and the optimal resolution of applied problems. In the interim, it is planned to teach the core topics of Discrete Optimisation within the expanded content of the module "Discrete Mathematics and Mathematical Logic," integrating the theoretical foundations of discrete mathematics with applied optimisation problems, algorithmic approaches, graph-theory-based models, and elements of mathematical logic. A dedicated course syllabus for this module has been developed accordingly. The updated content of "Discrete Mathematics and Mathematical Logic" will be fully introduced for students in the Mathematics programme from the 2026/2027 academic year.

Criterion 1.6 — Didactic and Teaching Methodology

RECOMMENDATION Criterion 1.6

The experts recommend the development and publication of written regulations governing the adequate and efficient use of Artificial Intelligence, to be made available on the website and communicated to students.

Response of the Institution:

With the aim of providing a regulatory framework for the use of Artificial Intelligence technologies, Fergana State University has developed a dedicated policy document

establishing the procedures for the use of AI technologies in educational, scientific-research, and administrative activities. This document defines the organisational, legal, ethical, and methodological principles governing the use of AI tools within the higher education institution, and is directed toward ensuring the responsible, purposeful, and effective deployment of such technologies across all areas of university activity.

This policy document was adopted pursuant to the Minutes of the University Council of Fergana State University No. 6, dated 25 February 2026, and is directed at ensuring the responsible, purposeful, and effective use of Artificial Intelligence technologies in the university's operations. (Supporting documentation attached.)

Criterion 2 — Examination System, Concept and Organisation

REQUIRED IMPROVEMENT Criterion 2

The experts conclude that a Bachelor's thesis must be a mandatory component across all Bachelor's degree programmes under review, as all students are required to demonstrate their ability to work independently at the level of the respective degree.

Response of the Institution:

The Faculty fully endorses the expert panel's conclusion regarding the importance of a mandatory final research project in all Bachelor's degree programmes.

In implementation of the Order of the Rector of Fergana State University and in pursuance of the Order of the Minister of Higher Education, Science and Innovation of the Republic of Uzbekistan No. 499, dated 10 December 2025, and the Resolution of the University Council Meeting No. 9, dated 2 May 2026, the following systemic measures are being carried out at the faculty level:

1) In accordance with the ministerial order and university council resolution referred to above, the defence of the Final Qualification Thesis (FQT) has been made 100% mandatory for graduates of the 60540100 — Mathematics and 60530500 — Physics programmes within the framework of the Final State Certification. Every student enrolled in these programmes is now required without exception to complete and defend an independent research project.

2) The teaching staff of the respective departments are currently expanding a dedicated "FQT Topic Bank" for students. This 100% mandatory FQT system will be fully introduced for final-year students from the 2026/2027 academic year onwards. The revised topic bank

currently being compiled will be announced and made available to students at the commencement of the forthcoming academic year. (Supporting documentation attached.)

Criterion 3.1 — Staff and Development

RECOMMENDATION Criterion 3.1

The experts recommend creating more opportunities for lecturers to improve their English proficiency through structured language training, participation in international activities, and regular guest lectures with international speakers.

Response of the Institution:

The faculty community fully acknowledges that a high level of English proficiency constitutes the primary instrument for ensuring not only academic mobility but also effective engagement with international academic databases (Scopus, Web of Science) and the successful mastery of contemporary scholarly literature. Practical steps have already been taken at the university level to systematically and continuously develop the foreign language competencies of both teaching staff and students:

1) In direct response to the need identified by the expert panel, a dedicated Language Centre has been established within the university. Specialist staff of the Centre have developed bespoke training programmes and modules tailored to the current language proficiency levels of teaching staff and students.

2) A mechanism has been created to organise language learning sessions in a manner that does not interfere with regular teaching and professional duties. At present, departmental academic staff are actively participating in Language Centre sessions in accordance with a schedule adapted to their individual timetables and work plans.

3) Language Centre instruction is directed not only toward general English proficiency but also toward academic English. Specifically, researchers and teaching staff are being equipped with skills in reading and analysing foreign-language scholarly literature and in preparing research articles in accordance with the international IMRAD standard.

The Language Centre has commenced full operations and the first cohorts of teaching staff are currently enrolled in courses during the 2025/2026 academic year. From the 2026/2027 academic year onwards, it is planned to expand the Centre's coverage to include students and postgraduate candidates on a broader basis.

RECOMMENDATION Criterion 3.1

The experts encourage the institution to provide students with more opportunities to practise English through guest lectures, academic presentations, and other forms of active use, in order to increase the programmes' attractiveness and promote incoming and outgoing student mobility.

Response of the Institution:

Systematic efforts are being implemented to gradually increase the share of English-medium instruction and to promote the active use of English through guest lectures and academic presentations. At present, the Physics programme already includes academic groups taught in English, and this experience is serving as an important practical foundation for the delivery of subject-specific instruction in a foreign language, the development of students' academic English competency, and adaptation to international educational standards. The establishment of English-medium groups in the Mathematics programme is also planned.

In this regard, work is under way to progressively adapt curricula and course syllabi, to strengthen the capacity of teaching staff to deliver instruction in English, and to expand access to foreign-language scholarly literature and e-learning resources. Furthermore, with the aim of intensifying the use of English in the academic environment of the faculty, it is planned to organise lectures, seminars, research-practical meetings, and academic presentations with the participation of professors from partner universities abroad, international experts, and guest lecturers.

Criterion 4 — Transparency and Documentation

REQUIRED IMPROVEMENT Criterion 4.1

Module descriptions (including the English-language version) are not publicly available on the university website; they are accessible only to registered users of the internal HEMIS system.

Response of the Institution:

This deficiency has been duly noted. The module descriptions for all degree programmes have been comprehensively reviewed, and the necessary work to prepare both Uzbek-language and English-language versions has been completed. The module descriptions, together with their English-language versions, have now been published on the official university website and are accessible to the public. Furthermore, the university is committed to continuing systematic work to regularly update the module descriptions and

to align them with international accreditation requirements, programme learning outcomes, and labour market needs.

Documentation available at:

https://fardu.aqllishahar.uz/talabalar_talim_dasturlari

https://drive.google.com/drive/folders/1tKkgxjkUwCVdqz6bLFE4q5CdCR1BhWVb

https://drive.google.com/drive/folders/1asrCntaA-NZ0w-ZKBbrV5A2vQ0GG2m6-

REQUIRED IMPROVEMENT Criterion 4.1

Module descriptions are incomplete: elective courses and internship modules have not been included, and inconsistencies are present across the documentation.

Response of the Institution:

This deficiency has been duly noted. The module descriptions for all degree programmes have been comprehensively reviewed, and the required revisions pertaining to elective courses and internship modules have been carried out. The module descriptions, together with their English-language versions, have now been published on the official university website and are accessible to the public. The university is committed to continuing systematic work to regularly update the module descriptions and to align them with international accreditation requirements, programme learning outcomes, and labour market needs. (Supporting documentation attached.)

REQUIRED IMPROVEMENT Criterion 4.1

The ASIIN logo has not been removed from the module description documents.

Response of the Institution:

The ASIIN logo has been removed from all module description documents. The revised documents have been reviewed and updated accordingly, and have been published on the official university website in their corrected form.

Documentation available at:

https://fardu.aqllishahar.uz/talabalar_talim_dasturlari

https://drive.google.com/drive/folders/1tKkgxjkUwCVdqz6bLFE4q5CdCR1BhWVb

https://drive.google.com/drive/folders/1asrCntaA-NZ0w-ZKBbrV5A2vQ0GG2m6-

REQUIRED IMPROVEMENT Criterion 4.2

The Diploma Supplement must contain programme learning outcomes in accordance with the ECTS Users' Guide for each programme under review.

Response of the Institution:

We hereby inform the ASIIN expert panel that the programme learning outcomes for graduates are now included in the diploma supplement.

REQUIRED IMPROVEMENT Criterion 4.2

The Diploma Supplement does not include information classifying the degree within the national education system.

Response of the Institution:

The university is committed to ensuring that the content of the diploma supplement is enriched to meet international standards, incorporating programme learning outcomes, the classification of the degree within the national qualifications framework, and comparative statistical data on the student's academic performance.

REQUIRED IMPROVEMENT Criterion 4.2

Comparative GPA statistics relative to the student cohort, as required by the ECTS Users' Guide, have not been included in the Diploma Supplement.

Response of the Institution:

We hereby inform the ASIIN expert panel that, given that the graduate diploma and diploma supplement are generated through the HEMIS system administered by the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan, the university has formally submitted a proposal to the Ministry requesting that, in addition to the graduate's final grade, the diploma supplement reflect the student's GPA in comparative statistical terms relative to the cohort in accordance with the requirements set forth in the ECTS Users' Guide, and that the diploma supplement include the classification data for the degree within the national education system.

Section II: Institutional Responses to Recommendations

Recommendations — Curriculum Development

RECOMMENDATION Criterion 1.3 (Mathematics & Physics)

The experts recommend the introduction of elective courses in modern programming languages and software tools relevant to mathematical applications — in particular Python, MATLAB, and Octave.

Response of the Institution:

On the basis of the ASIIN expert panel's conclusions and recommendations, the possibility of introducing teaching courses in modern software tools — specifically the Python, MATLAB, and Octave environments — as elective subjects within the Mathematics programme is currently being examined from a scientific-methodological perspective. This process includes analysis of the opportunities for integrating contemporary programming and mathematical modelling tools into academic and practical activities, and of their didactic significance.

In this connection, the current content of the compulsory module "Fundamentals of Programming" in the Mathematics programme curriculum has been reviewed and its alignment with contemporary requirements assessed. As a result of this analysis, topics relating to work in the Python, MATLAB, and Octave software environments have been incorporated into the module content. Based on the planned improvements, the revised content of the "Fundamentals of Programming" module will be fully introduced for Mathematics students from the 2026/2027 academic year.

In the Physics programme, the current content of the module "Modelling of Physical Processes on the Computer" was reviewed and its alignment with contemporary requirements assessed. Following this analysis, topics relating to work in the Python, MATLAB, and Octave environments have been incorporated into the module. (Supporting documentation attached.)

RECOMMENDATION Criterion 1.3

The experts recommend further differentiation of the programmes with a view to enhancing transparency and comparability with international standards.

Response of the Institution:

This recommendation has been accepted. With a view to enhancing transparency and comparability with international standards, the distinctive characteristics, professional orientation, and competencies to be acquired by graduates of the degree programmes are currently being reviewed.

Comparative Analysis — Physics Programme:

Table 2. Comparative Analysis of the Bachelor's Degree Programme in Physics

Comparison Criterion	FSU (Physics)	MIT	University of Cambridge	Conclusion
Programme Objective	Provide theoretical and applied knowledge in physics	Oriented toward scientific research and innovation	Specialised in fundamental physics	Objectives consistent with international requirements
Duration	4 years	4 years	3–4 years	Consistent
Credit Volume	240 ECTS	240 ECTS equivalent	180–240 ECTS equivalent	Consistent
Laboratory Work	Present	High share	High share	Laboratory components may be further expanded
Scientific Research	Final Qualification Thesis	Research projects and investigations	Research projects	Strengthening of research component recommended
Digital Technologies	Modelling elements	Python, MATLAB, AI tools	Computer modelling	Expansion of digital skills is possible
Graduate Competencies	Teaching and research	Research, industry, and innovation	Scientific research	Competencies broadly consistent

Table 3. Comparative Analysis of the Bachelor's Degree Programme in Mathematics

Comparison Criterion	FSU (Mathematics)	University of Oxford	ETH Zurich	Conclusion
Programme Objective	Fundamental mathematical preparation	Deep theoretical and applied analysis	Scientific and applied mathematics	Consistent
Duration	4 years	3–4 years	3 years (Bachelor's)	Consistent
Credit Volume	240 ECTS	180–240 ECTS	180 ECTS	Consistent
Analytical Skills	High level	High level	High level	Fully consistent
Programming	Included in core modules	Widely applied	Widely applied	Programming components may be strengthened
Research Work	Final Thesis	Research projects	Research projects	Number of research projects may be increased
Fields of Application	Education, analysis	Finance, data analysis, AI	Industry and research	Integration with applied fields may be strengthened

G Summary: Expert recommendations (12.06.2026)

Taking into account the additional information and the comments given by the Fergana State University, the experts summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation
Ba Mathematics	With requirements for one year	30.09.2031
Ma Mathematics	With requirements for one year	30.09.2031
Ba Physics	With requirements for one year	30.09.2031
Ma Physics	With requirements for one year	30.09.2031

Requirements

For all programmes

A 1. (ASIIN 4.1) The module descriptions need to be fully reviewed and updated.

A 2. (ASIIN 4.2) Ensure that the Diploma Supplement includes the programme learning outcomes and information on the classification of the degree programme with regard to the national education system. In addition to the final mark, statistical data about the student's GPA relative to the cohort as set forth in the ECTS Users' Guide need to be included.

For the Bachelor's programme Physics

A 3. (ASIIN 1.3) Compulsory modules in which the fundamentals of Solid State Physics (Condensed Matter Physics) as well as of Quantum Mechanics are taught need to be introduced in the curriculum.

For the Bachelor's programmes

A 4. (ASIIN 2) Implement a mandatory Bachelor´s thesis for all students.

Recommendations

For all programmes

E 1. (ASIIN 1.3) It is recommended to establish clearly differentiated and internationally comparable pathways that reflect the growing demand for graduates in both scientific/industrial and pedagogical fields. These pathways should be made explicit in the curriculum and qualification profiles in order to ensure greater transparency, recognition, and alignment with labour market needs.

E 2. (ASIIN 1.3) It is recommended to increasing opportunities for students to practice English within the courses, for example through presentations in English and stronger international academic environment through guest lectures and seminars with invited international speakers.

E 3. (ASIN 1.6) It is recommended to made available on the website the new policy for the proper and efficient use of AI and clearly communicate it to the students.

E 4. (ASIIN 3.1) It is recommended to further strengthen internationalization by creating more opportunities for lecturers to improve their English proficiency through structured language training, participation in international activities, and regular guest lectures with international speakers.

For the Bachelor's programme Mathematics

E 5. (ASIIN 1.3) It is recommended to broaden the coverage of numerical mathematics and optimization.

E 6. (ASIIN 1.3) It is recommended to include discrete optimization in the curriculum, for example, as part of an existing module.

For the Bachelor's and Master's programme Mathematics

E 7. (ASIIN 1.3) It is recommended to introduce content on modern programming languages (e.g. MATLAB, Octave, Python) as an elective course.

H Comment of the Technical Committees

Technical Committee 12 – Mathematics (01.06.2026)

Assessment and analysis for the award of the ASIIN seal:

The TC follows the experts' assessment without changes.

The Technical Committee 12 – Mathematics recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation
Ba Mathematics	With requirements for one year	30.09.2031
Ma Mathematics	With requirements for one year	30.09.2031

Technical Committee 13 – Physics (16.06.2026)

Assessment and analysis for the award of the ASIIN seal:

Ms. Vega reports on the procedure. The TC members particularly consider requirement A3, noting that the current wording may lead to misunderstandings. They propose revising the text by separating it into two distinct sentences for each topic not included in the curriculum. In addition, they suggest adding in requirement A1 that the updated module descriptions should be published on the website.

In addition, based on their experience with other accreditation procedures in Uzbekistan, the members question whether the content of the course "Molecular Physics" truly corresponds to its title. Typically, this course covers what is internationally referred to as thermodynamics. Following the revision, the "Module Objectives" section of the module description refers to molecular physics, while the "Content" section describes topics related to thermodynamics. The reading list also corresponds to thermodynamics. Therefore, the members decide to introduce a new requirement (A4) in this regard. The

university should take this into account when revising the module descriptions proposed in A1.

The Technical Committee 13 – Physics recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation
Ba Physics	With requirements for one year	30.09.2031
Ma Physics	With requirements for one year	30.09.2031

Requirements

For all programmes

A 1. (ASIIN 4.1) The module descriptions need to be fully reviewed and updated. The updated version needs to be published on the website.

A 2. (ASIIN 4.2) Ensure that the Diploma Supplement includes the programme learning outcomes and information on the classification of the degree programme with regard to the national education system. In addition to the final mark, statistical data about the student's GPA relative to the cohort as set forth in the ECTS Users' Guide need to be included.

For the Bachelor's programme Physics

A 3. (ASIIN 1.3) The module Quantum Mechanics has to be made compulsory. A compulsory module, in which fundamentals of Solid State Physics (Condensed Matter Physics) are taught, needs to be introduced in the curriculum.

A 4. (ASIIN 1.3, 4.1) The module description of module "Molecular Physics" (MolFM106) has to be revised. Title, content, module objectives and prerequisites have to be consistent.

For the Bachelor's programmes

A 5. (ASIIN 2) Implement a mandatory Bachelor´s thesis for all students.

Recommendations

For all programmes

E 1. (ASIIN 1.3) It is recommended to establish clearly differentiated and internationally comparable pathways that reflect the growing demand for graduates in both scientific/industrial and pedagogical fields. These pathways should be made explicit in the curriculum and qualification profiles in order to ensure greater transparency, recognition, and alignment with labour market needs.

E 2. (ASIIN 1.3) It is recommended to increase opportunities for students to practice English within the courses, for example through presentations in English and stronger international academic environment through guest lectures and seminars with invited international speakers.

E 3. (ASIN 1.6) It is recommended to make available on the website the new policy for the proper and efficient use of AI and clearly communicate it to the students.

E 4. (ASIIN 3.1) It is recommended to further strengthen internationalization by creating more opportunities for lecturers to improve their English proficiency through structured language training, participation in international activities, and regular guest lectures with international speakers.

For the Bachelor's programme Mathematics

E 5. (ASIIN 1.3) It is recommended to broaden the coverage of numerical mathematics and optimization.

E 6. (ASIIN 1.3) It is recommended to include discrete optimization in the curriculum, for example, as part of an existing module.

For the Bachelor's and Master's programme Mathematics

E 7. (ASIIN 1.3) It is recommended to introduce content on modern programming languages (e.g. MATLAB, Octave, Python) as an elective course.

I Decision of the Accreditation Commission (26.06.2026)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The accreditation commission discusses the procedure and follows the suggestions of the Technical Committee 13 - Physics regarding changes of the requirements. It is recommended that the standard formulation be used in requirement A5.

The Accreditation Commission decides to award the following seals:

Degree Programme	**ASIIN Seal**	**Maximum duration of accreditation**
Ba Mathematics	With requirements for one year	30.09.2031
Ma Mathematics	With requirements for one year	30.09.2031
Ba Physics	With requirements for one year	30.09.2031
Ma Physics	With requirements for one year	30.09.2031

Requirements

For all programmes

A 1. (ASIIN 4.1) The module descriptions need to be fully reviewed and updated. The updated version needs to be published on the website.

A 2. (ASIIN 4.2) Ensure that the Diploma Supplement includes the programme learning outcomes and information on the classification of the degree programme with regard to the national education system. In addition to the final mark, statistical data about the student's GPA relative to the cohort as set forth in the ECTS Users' Guide need to be included.

For the Bachelor's programme Physics

A 3. (ASIIN 1.3) The module Quantum Mechanics has to be made compulsory. A compulsory module, in which fundamentals of Solid State Physics (Condensed Matter Physics) are taught, needs to be introduced in the curriculum.

A 4. (ASIIN 1.3, 4.1) The module description of module “Molecular Physics” (MolFM106) has to be revised. Title, content, module objectives and prerequisites have to be consistent.

For the Bachelor’s programmes

A 5. (ASIIN 2) Ensure that the programme includes a mandatory final thesis or project demonstrating the student’s ability to independently undertake an academic task at an appropriate level (EQF 6).

Recommendations

For all programmes

E 1. (ASIIN 1.3) It is recommended to establish clearly differentiated and internationally comparable pathways that reflect the growing demand for graduates in both scientific/industrial and pedagogical fields. These pathways should be made explicit in the curriculum and qualification profiles in order to ensure greater transparency, recognition, and alignment with labour market needs.

E 2. (ASIIN 1.3) It is recommended to increase opportunities for students to practice English within the courses, for example through presentations in English and stronger international academic environment through guest lectures and seminars with invited international speakers.

E 3. (ASIN 1.6) It is recommended to make available on the website the new policy for the proper and efficient use of AI and clearly communicate it to the students.

E 4. (ASIIN 3.1) It is recommended to further strengthen internationalization by creating more opportunities for lecturers to improve their English proficiency through structured language training, participation in international activities, and regular guest lectures with international speakers.

For the Bachelor’s programme Mathematics

E 5. (ASIIN 1.3) It is recommended to broaden the coverage of numerical mathematics and optimization.

E 6. (ASIIN 1.3) It is recommended to include discrete optimization in the curriculum, for example, as part of an existing module.

For the Bachelor's and Master's programme Mathematics

E 7. (ASIIN 1.3) It is recommended to introduce content on modern programming languages (e.g. MATLAB, Octave, Python) as an elective course.

Appendix: Programme Learning Outcomes and Curricula

According to the SAR, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's programme Physics:

Learning Outcome Matrix-Subjects to EP BD 60530500 – Physics

Learning Outcomes	Discipline	
LO 1. As a result of studying the subject, the basics of mechanics are understood, mathematical modeling is applied to solve motion and robotics problems, experiments are conducted and results are interpreted, and mechanics is integrated with electronics to design simple robotic systems.	MexM106 NazMM206 FizpM126 RAT405	Mechanics Theoretical Mechanics Physics Practicum (Mechanics) Fundamentals of Robotics
LO 2. Through studying this subject, knowledge of molecular, atomic, and nuclear structures is gained, theoretical principles are used to examine microscopic processes, experiments are performed and results are analyzed, and experimental findings are connected with theoretical models in microcosm physics.	MolFM106 FizpM126 AtFM306 AYEZFM306 FizpM126	Molecular Physics Physics Practicum (Molecular Physics) Atomic Physics Physics of Atomic Nuclei and Elementary Particles

	MFET304 FizpM126	Physics Practicum (Atomic Nucleus) Elements of Microcosm Physics Physics Practicum (Atomic Physics)
LO 3. As a result of studying the subject, the principles of quantum mechanics and their applications are understood, quantum processes in atoms, electronics, and high-energy phenomena including black holes are analyzed, and quantum theories are applied in quantum electronics and modern technologies.	KvMT306 KvElT306 QTFT407	Quantum Mechanics Quantum Electronics Physics of Black Holes
LO 4. Through knowledge of the laws of electromagnetism and electrodynamics, fields and waves applied in electronics and signal processing are thoroughly analyzed, experiments in electricity and magnetism are conducted, and theoretical and experimental knowledge is applied to solve practical problems in physics and engineering.	ElMM206 ElDinM306 ElSQIM306 FizpM126	Electromagnetism Electrodynamics Electronics and Signal Processing Physics Practicum (Electricity and Magnetism)
LO 5. Through this subject, geometrical and wave optics are fully understood, optical phenomena are analyzed, experiments with precise measurements are conducted, and applied optics is utilized in science and technology.	OptM206 AOpT304	Optics Applied Optics

	FizpM126	Physics Practicum (Optics)
LO 6. Program participants will understand the principles of statistical physics and thermodynamics, use statistical methods for many-particle systems, analyze thermodynamic laws, and link microscopic behavior to macroscopic properties.	SFTT407	Statistical Physics and Thermodynamics
LO 7. As a result of in-depth study of the subject, the basics of astronomy, astrophysics, and atmospheric physics are fully understood, celestial and atmospheric phenomena are analyzed through physical models, knowledge of natural processes is applied to alternative energy studies, and scientific understanding of the universe and atmosphere is connected to practical applications.	AAM304 AtFT304 NEMT304	Astronomy and Astrophysics Atmospheric Physics Alternative Energy Sources
LO 8. Through intensive study of this subject, skills are acquired to solve physics problems using analytical and computational methods, methodological approaches are applied to problem-solving in the learning process, current challenges are analyzed through experiments and demonstrations, and numerical modeling and simulations are effectively used to study physical processes.	EFMT304 FMYMT304 FDMT405 OlMYT304 FNTYT405	Elementary physics problems Methodology of Solving Physics Problems Current problems of physics Solving Olympiad Problems Creating Demonstration

	FMSMOT304 FJKM204	Experiments in Physics Solving Physics Problems through Numerical Modeling Modeling of Physical Processes on the Computer
LO 9. By mastering this course, the concepts of linear algebra, analytic geometry, and mathematical analysis are understood, mathematical methods are applied to solve physics and engineering problems, differential equations for natural and technological processes are formulated and solved and analytical thinking is developed for conducting advanced research in physics and related fields.	ChAAGM110 MatAnM110 DifTM206	Linear Algebra and Analytical Geometry Mathematical Analysis Differential Equations
LO 10. Learners gain knowledge of pedagogy, inclusive education, and lifelong learning, apply diverse strategies in teaching physics and astronomy, design adaptive learning environments, and adopt innovative practices to improve teaching quality.	FAO‘MM204 UmPedM208 ITGPM404	Physics and Astronomy Teaching Methodology General Pedagogy Inclusive education. Hospital pedagogy

	UTTZM404	Trends and Modern Approaches in Lifelong Education
LO 11. As a result of thoroughly studying the subject, the key ideas of philosophy, religion, history, and psychology are understood to cultivate a broad view of society; analytical thinking is applied to cultural and historical issues; proficiency in Uzbek, Russian, and foreign languages is developed for academic and professional purposes; media literacy is practiced to evaluate information and prepare official documents; and respect for cultural heritage, ethics, and effective communication is strengthened.	FalM104 DinM204 O‘EYTM104 UmPsiM106 O‘RTM104 KSXTIT405, KSXTNT405 MAMM204 DTIYT405	Philosophy Religious study The modern history of Uzbekistan General Psychology Uzbek (Russian) language (for Uzbek and Russian groups) Languages (English/Deutsch) for Professional Purposes Media literacy and information culture study Office Work in the State Language

LO 12. By mastering all subjects well, commitment to lifelong learning is demonstrated, readiness for self-education is shown, and continuous professional development in physics and related fields is pursued.		All modules (1–43)

The following **curriculum** is presented for the Bachelor's programme Physics:

1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester	7th semester	8th semester
MexM106 Mechanics 4 lectures 2 practical sessions 6 ECTS	MolFM106 Molecular Physics 4 lectures 2 practical sessions 6 ECTS	DinM204 Religious study 2 lectures 2 seminars 4 ECTS	FAO'MM204 Physics and Astronomy Teaching Methodology 2 lectures 2 seminars 4 ECTS	AtFM306 Atomic physics 2 lectures 2 practical sessions 6 ECTS	AYEZFM306 Physics of Atomic Nuclei and Elementary Particles 2 lectures 2 practical sessions 6 ECTS	UTTZM404 Trends and Modern Approaches in Lifelong Education 2 lectures 2 practical session 4 ECTS	
FizpM126 Physics Practical (Mechanics) 4 lab. 4 ECTS	FizpM126 Physics Practical (Molecular Physics) 4 lab. 4 ECTS	DifTM206 Differential Equations 2 lectures 2 practical sessions 6 ECTS	FJKM204 Modeling of Physical Processes on the Computer 2 lectures 2 practical session 4 ECTS	FizpM126 Physics Practical (Atomic Physics) 4 lab. 4 ECTS	FizpM126 Physics Practical (Atomic Nucleus) 4 lab. 4 ECTS	ITGPM404 Inclusive education. Hospital pedagogy 2 lectures 2 seminars 4 ECTS	
ChAAGM110 Linear Algebra and Analytical Geometry 2 lectures 2 practical sessions 5 ECTS	ChAAGM110 Linear Algebra and Analytical Geometry 2 lectures 2 practical sessions	ElMM206 Electromagnetism 4 lectures 2 practical sessions. 6 ECTS	UmPedM208 General Pedagogy 4 lecture 4 seminars session 8 ECTS	ElDinM306 Electrodynamics 2 lectures 2 practical sessions 6 ECTS	KvMT306 Quantum Mechanics. 2 lectures 4 practical sessions. 6 ECTS	SFTT407 Statistical Physics and Thermodynamics 2 lectures 4 practical session 7 ECTS	

	5 ECTS						
MatAnM110 Mathematical Analysis 2 lectures 2 practical sessions 5 ECTS	MatAnM110 Mathematical Analysis 2 lectures 2 practical sessions 5 ECTS	MAMM204 Media literacy and information culture study 2 lecture 2 practical session 4 ECTS	NazMM206 Theoretical Mechanics 2 lecture 2 practical session 6 ECTS	Alternative Energy Sources 2 lectures 2 seminars. 4 ECTS	AtFT304 Atmospheric Physics 2 lectures 2 seminars. 4 ECTS	RAT405 Fundamentals of Robotics 4/3 lectures 8/3 practical session 5 ECTS	
O'EYTM104 The modern history of Uzbekistan 2 lectures 2 seminars 4 ECTS	FalM104 Philosophy 2 lectures 2 seminars 4 ECTS	UmPedM208 General Pedagogy 4 lecture 4 seminars session 8 ECTS	OptM206 Optics 4 lecture 2 practical session 6 ECTS	ElSQIM306 Electronics and Signal Processing 2 lectures 4 lab. 6 ECTS	EFMT304 Elementary physics problems 4/3 lectures 8/3 practical sessions. 4 ECTS	FDMT405 Current problems of physics 2 lecture 2 seminars session 5 ECTS	
UmPsiM106 General Psychology 2 lectures 2 seminars 6 ECTS	O'RTM104 Uzbek (Russian) language (for Russian groups) 4 practical session 4 ECTS	FizpM126 Physics practicum (electricity and magnetism) 4 lab. 6 ECTS	FizpM126 Physics practicum (optics) 4 lab. 4 ECTS	FMYMT304 Physics problem solving methodology 2 lectures 2 practical sessions. 4 ECTS	AAM304 Astronomy and Astrophysics 2 lectures 2 practical sessions. 4 ECTS	KSXTIT405 Foreign Languages (English/Deutsch) for Professional Purposes 4 practical session 5 ECTS	

12 lectures + 6 practical session + 4 seminar + 4 lab = 26 hours in a week	12 lectures + 6 practical sessions + 4 seminar + 4 lab = 26 hours in a week	14 lecture + 6 practical session + 6 seminar + 4 lab = 30 hours in a week	14 lecture + 6 practical session + 6 seminar + 4 lab = 30 hours in a week	10 lectures + 6 practical session + 2 seminar + 8 lab = 26 hours in a week	28/3 lectures + 32/3 practical sessions +2 seminar + 4 lab = 26 hours in a week	28/3 lecture + 38/3 practical session + 4 seminar = 26 hours in a week	
6 exams	6 exams, Practice Report	6 exams, Practice Report	6 exams, Practice Report	6 exams, Practice Report	6 exams, Practice Report	6 exams, Practice Report	
30 ECTS	28 ECTS	30 ECTS	28 ECTS	30 ECTS	28 ECTS	30 ECTS	
Total:204							
ALTERNATIVE OPTIONAL DISCIPLINES							
Optional Discipline: N/A	Optional Discipline: N/A	Optional Discipline: N/A	Optional Discipline:	Optional Discipline: 8 ECTS (26.6%)	Optional Discipline: 14 ECTS (50%)	Optional Discipline: 22 ECTS (73.3%)	
-	-	-	-	Alternative Energy Sources 2 lectures 2 seminars. 4 ECTS	KvMT306 Quantum Mechanics. 2 lectures 4 practical sessions. 6 ECTS	SFTT407 Statistical Physics and Thermodynamics 2 lectures 4 practical session 7 ECTS	
-	-	-	-	FMYMT304 Physics problem solving methodology 2 lectures 2 practical sessions. 4 ECTS	AtFT304 Atmospheric Physics 2 lectures 2 seminars. 4 ECTS	RAT405 Fundamentals of Robotics 4/3 lectures 8/3 practical session 5 ECTS	

-	-	-	-		EFMT304 Elementary physics problems 4/3 lectures 8/3 practical sessions. 4 ECTS	FDMT405 Current problems of physics 2 lecture 2 seminars session 5 ECTS	
-	-	-	-			KSXTIT405 Foreign Languages (English) for Professional Purposes 4 practical session 5 ECTS	

According to the SAR, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's programme Physics:

Learning Outcome Matrix-Subjects to *EP MD 70530501 – Physics (by directions)*

Learning Outcomes	Discipline	
LO 1. Demonstrate advanced knowledge in condensed matter physics, quantum electronics, band theory of crystals, and semiconductor kinetics, and apply this expertise in independent research and problem-solving.	KDFM106 KZNT104	Physics of condensed matter Quantum Electronics

	KZAT205 YKJT205	Band theory of crystals Kinetic Processes in Semiconductors
LO 2. Demonstrate knowledge of nonlinear oscillations, wave theory, and electromagnetic interactions with matter, and apply this understanding to analyze and address current problems in physics.	NTTNM106 ENTMM106 FDMT105	Theory of Nonlinear Oscillations and Waves Interaction of Electromagnetic Radiation with Matter Current problems of physics
LO 3. Conduct independent scientific research, apply modern physical methods in practice, and demonstrate competence in teaching methodologies for specialized subjects.	ITMM106 FZTUM106 MFOMM106	Methodology of scientific research Modern Research Methods in Physics Methodology of teaching specialized subjects
LO 4. Acquire knowledge of energy transformation devices, radio electronic equipment, fundamentals of nanotechnology, physical principles of photovoltaics, and materials science of solar energy, and apply it in research and practice.	YAFTI105 RQJT104	Energy Transformation Devices

	NanoAT205 FFAT205 QEMT205	Radio Electronic Devices and Equipment Fundamentals of Nanotechnology Physical Fundamentals of Photovoltaics Materials Science of Solar Energy
LO 5. Utilize mathematical modeling of physical processes to analyze and solve theoretical and practical problems.	FJMMT205	Mathematical modeling of physical processes
LO 6. Employ modern research methods, mathematical modeling, and computational tools to simulate physical processes and solve advanced problems in physics.	FZTUM106 FJMMT205	Modern Research Methods in Physics Mathematical modeling of physical processes Scientific-Pedagogical Practice and Qualification Internship

LO 7. Develop and apply educational strategies for teaching fundamental physics in higher education, using modern pedagogical approaches.	MFOMM106	Methodology of Teaching Specialized Subjects Scientific-Pedagogical Practice and Qualification Internship
LO 8. Contribute effectively to research teams and foster the development of collaborative projects at national and international levels.	ILTM1106	Research Methodology Scientific-Pedagogical Practice and Qualification Internship Scientific Research Work, Preparation and Defense of Master's Thesis
LO 9. Critically analyze scientific literature and integrate relevant findings into their own research.	ILTM1106	Research Methodology Introduction to Homology Theory Scientific Research Work, Preparation

		and Defense of Master's Thesis
LO 10. Show readiness for lifelong learning and continuous professional development in physics and related fields.		All modules (1–16)

The following **curriculum** is presented for the Master's programme Physics:

1st semester	2nd semester	3rd semester	4th semester
Scientific Activity (54.5%)			
SPW, SRW, Practice and preparation of MTh 6 ECTS	SPW, SRW, Practice and preparation of MTh, Course Paper 9 ECTS	SPW, SRW, Practice and preparation of MTh 15 ECTS	SPW, SRW, Practice and preparation of MTh 20 ECTS
ITMM106 Methodology of scientific research 2 lectures 2 practical sessions 6 ECTS	ENTMM106 Interaction of Electromagnetic Radiation with Matter 2 lectures 2 seminars 6 ECTS	FJMMT205 Mathematical modeling of physical processes 2 lectures 2 seminars 5 ECTS	-
FZTUM106 Modern Research Methods in Physics 2 lectures 2 seminars 6 ECTS	KDFM106 Physics of condensed matter 2 lectures 2 seminars 6 ECTS	KZAT205 Band theory of crystals 2 lectures 2 seminars 5 ECTS	-
MFOMM106	FDMT105 Current problems of physics	YKJT205 Kinetic Processes in Semiconductors	-

Methodology of teaching specialized subjects 2 lectures 2 seminars 6 ECTS	2 lectures 2 seminars 5 ECTS	2 lectures 2 seminars 5 ECTS	
NTTNM106 Theory of Nonlinear Oscillations and Waves 2 lectures 2 seminars 6 ECTS	KZNT104 Quantum Electronics 2 lectures 2 seminars 4 ECTS		-
8 lectures + 2 practical session + 6 seminars= 16 hours in a week	8 lectures + 8 seminars = 16 hours in a week	6 lectures + 6 seminar = 12 hours in a week	
4 exams, 2 reports	5 exams, 2 reports	3 exams, 2 reports	2 reports Defence of MTh
30 ECTS	30 ECTS	30 ECTS	30 ECTS
TOTAL: 120 ECTS			
Optional Discipline: N/A	Optional Discipline: 9 ECTS (30%)	Optional Discipline: 15 ECTS (50%)	Optional Discipline: N/A
ALTERNATIVE OPTIONAL DISCIPLINES			
-	FDMT105 Current problems of physics 2 lectures 2 seminars 5 ECTS	FJMMT205 Mathematical modeling of physical processes 2 lectures 2 seminars 5 ECTS	-
-	KZNT104 Quantum Electronics 2 lectures 2 seminars	KZAT205 Band theory of crystals 2 lectures 2 seminars	-

	4 ECTS	5 ECTS	
---		YKJT205 Kinetic Processes in Semiconductors 2 lectures 2 seminars 5 ECTS	-

Comment: SPW - Scientific pedagogical work; SRW - Scientific research work; MTh - MDster's Thesis.

According to the SAR, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's programme Mathematics:

Learning Outcome Matrix-Subjects to *EP BD 60540100 – Mathematics*

Learning Outcomes of the Study Programme	**Corresponding Modules**	
LO 1. Understand key issues of civil society, adopt an active civic stance in line with Uzbekistan's Development Strategy, acquire philosophical knowledge, conduct independent analysis, and apply these in professional practice	FalM204; O'EYTM104;	Philosophy; The latest history of Uzbekistan
LO 2. To know the history of the homeland, to express and scientifically substantiate opinions on spiritual, national, and universal values, and to have an active life position based on the idea of national independence	O'EYTM104; DinM104;	The latest history of Uzbekistan;

		Religious Studies;
LO 3. To understand the essence of professional documents and tasks in the native language and in one foreign language, to acquire the necessary knowledge in the exact sciences, and to apply them on a modern scientific basis in life and professional activity.	O'RTM104; DTIYT405	Uzbek (Russian) Language; Official Correspondence in the State Language;
LO 4. To effectively use information technologies in professional activities, to acquire methods of collecting, storing, processing, and utilizing information, and to make independent, well-founded decisions in professional practice	MAMM204	Media Literacy and Information Culture;
LO 5. Understand pedagogical sciences and apply them in teaching mathematical disciplines. Demonstrate readiness for professional teaching of mathematics at various educational levels	UmPedM208 UmPsiM106	General Pedagogy; General Psychology
LO 6. To effectively conduct theoretical and practical classes in subjects related to professional training at general secondary, secondary specialized, and vocational education institutions.	ITGPM404; UTTZYM404	Inclusive Education. Hospital Pedagogy; Modern Trends in Continuous Learning
LO 7. To continuously improve self-development in teaching subjects and pedagogical practices through independent learning and creative inquiry	UTTZYM404	Modern trends in continuous education

	MFO'IT304	Advanced foreign experience in mathematical education
LO 8. To acquire fundamental general-professional knowledge necessary for mastering specialized subjects and to develop practical skills and competencies.	MO'MM204	Methodology of Teaching Mathematics; School Trigonometric Problems
LO 9. Acquire knowledge of limits, continuity, differential and integral calculus, multivariable functions, and series; solve related problems, apply theory to practice, and use mathematical analysis to justify experimental results.	MatAM124 FunkAM310	Mathematical Analysis; Functional Analysis
LO 10. To acquire basic concepts of linear algebra, including systems of linear equations, matrices, determinants, and polynomials, and on this basis to study linear spaces, linear operators, and Jordan matrices, as well as to apply this knowledge in solving practical problems.	AlgM118 FunkAM310	Algebra; Functional Analysis;

LO 11. Apply analytical and coordinate methods in studying geometric objects, use vector algebra for conic sections and quadratic surfaces, analyze curves and surfaces defined by algebraic functions, and solve algebraic equations and systems using analytical and numerical methods	AnGeoM110 DGTM209 GFNAT304 ZamGT304	Analytical geometry Differential Geometry and Topology; Theoretical Foundations of Geometry; Modern Geometry
LO 12. To demonstrate knowledge of the fundamental concepts of abstract algebra — semigroups, monoids, groups, rings, fields, and their homomorphisms and isomorphisms — to apply these concepts in rigorous proofs of fundamental theorems and in solving problems, as well as to explore their applications	AlgM118 SNUTT304 GXNT304 AQBT304	Algebra; Number Theory; Group and ring theory; Addition chapters of algebra

LO 13. To classify differential equations, apply integration methods, establish conditions for existence, uniqueness, and stability of solutions, construct mathematical models of physical, biological, and other processes, and solve boundary value problems for higher-order differential equations.	DTengM209 XHDTT404 ODTTT404 MFMOT405	Differential Equations; Partial Differential Equations; Inverse Boundary Value Problems for Ordinary Differential Equations; Special Functions and Special operators;
LO 14. To apply methods of solving differential equations to physical and mechanical problems by constructing their models, and to use differential equations in studying fundamental laws of electrical engineering.	MFUT404 VHOM404	Mathematical physics methods Calculus of Variations and Optimization;

LO 15. Apply topological and differential methods to study geometric objects, understand topological mappings and Tychonoff's theorems, determine metrizability conditions, and parametrize geometric objects	DGTM209 GFNAT304 ZamGT304	Differential Geometry and Topology; Theoretical Foundations of Geometry; Modern Geometry;
LO 16. Solve linear equations and systems of equations using both analytical and numerical methods, and apply these solutions to practical problems.	VHOM404	Calculus of Variations and Optimization
LO 17. Apply probabilistic and statistical reasoning to analyze empirical data and evaluate uncertainty	ENMSM208 ENMSTBT304	Probability Theory and Mathematical Statistics;

		Selected chapters on probablity theory and mathematical statistics
LO18. Conduct independent research on a defined mathematical problem, from formulating hypotheses to presenting results.		Bachelor Thesis; Research Methods in Mathematics

The following **curriculum** is presented for the Bachelor's programme Mathematics:

BSc in Mathematics

CURRICULUM

FIRST YEAR

Autumn Semester

Course Name	Credit
Recent History of Uzbekistan	4
Uzbek (Russian) language	4
General psychology	6
Analytical geometry	4
Mathematical analysis	6
Algebra	6

Spring Semester

Course Name	Credit
Philosophy	4
Religious Studies	4
Analytical Geometry	6
Programming Basics	4
Mathematical Analysis	6
Algebra	6

SECOND YEAR

Autumn Semester

Course Name	Credit
General Pedagogy	4
Media literacy and information culture	4
Mathematical analysis	6
Algebra	6
Differential Geometry and Topology	5
Differential Equations	5

Spring Semester

Course Name	Credit
General Pedagogy	4
Mathematical analysis	6
Differential Geometry and Topology	4
Differential Equations	4
Mathematics Teaching Methods	5
Probability Theory and Mathematical Statistics	4
Qualification Practice / Professional Practice	3

THIRD YEAR

Autumn Semester

Course Name	Credit
Theoretical mechanics	4
Probability theory and mathematical statistics	4
Equations of mathematical physics	4
Theory of functions of complex variables	5
Functional analysis	5
Number theory and its applications / Graph theory and its applications	4
Theoretical foundations of geometry/ Modern geometry	4
Trigonometric examples and problems in school	4

mathematics/ Methods for solving non-standard problems in school mathematics	

Spring Semester

Course Name	Credit
Mathematical physics equations	4
Theory of functions with complex variables	5
Functional analysis	5
Selected chapters of probability theory and mathematical statistics / Applications of probability theory and mathematical statistics to fields	4
Advanced foreign experiences in teaching mathematics / Project method in teaching mathematics	4
Additional Chapters in Algebra / Group and ring theory	4
Foreign languages in the professional sphere (English) / Foreign languages in the professional sphere (German)	4
Qualification Internship / Professional Practice	4

mathematics	
Inclusive Education. Hospital Pedagogy	4
Trends and Modern Approaches in Continuing Education	4
Problems for differential equations with particular derivatives / Methods of mathematical physics	4
Boundary Problems for Ordinary Differential Equations / Boundary Value Problems for Ordinary Differential Equations	4
Special functions and special operators / Conducting business in the state language	5

FOURTH YEAR

Autumn Semester

Course Name	Credit
Calculus of Variations and Optimization	4
Trigonometric Examples and Problems in School Mathematics / Methods for solving non-standard problems in school	

Spring Semester

Course Name	Credit
Qualification Internship / Professional Practice	22
Final State Examination / Final Qualification Assessment	8

According to the SAR, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's programme Mathematics:

Learning Outcome Matrix-Subjects to EP MD 70540101- Mathematics

Learning Outcomes	Discipline	
LO 1. Demonstrate advanced knowledge of fundamental and specialized areas of mathematics, including functional analysis, operator theory, measure and integration, and differential equations of various types.	UINM1106	Theory of Measures and Integrals
	BFONM1106	Operator Theory in Banach Spaces
	InTT105	Integral Equations
	DOSNT105	Spectral Theory of Differential Operators
	ETBDT207	Degenerate Elliptic-Type Differential Equations
LO 2. Formulate, analyse, and solve complex mathematical problems using advanced theoretical methods, computational tools, and modern mathematical models.	MFZUM1106	Modern Methods of Mathematical Physics Special Functions and Special Operators
	MFMOT105	Fractional-Order Differential Operators and Equations

	KTDOT105 GTBDT107 MFTMT207	Degenerate Hyperbolic-Type Differential Equations Inverse Problems of Mathematical Physics
LO 3. Conduct independent scientific research in pure and applied mathematics, from problem formulation through to the presentation of results, in compliance with academic integrity standards.	ILTM1106	Research Methodology Scientific Research Work, Preparation and Defense of Master's Thesis
LO 4. Apply mathematical methods to interdisciplinary problems, particularly in mathematical physics, engineering, and other applied sciences.	MFZUM1106 MFTMT207 ADTDT207 YDTUT107	Modern Methods of Mathematical Physics Inverse Problems of Mathematical Physics Mixed-Type Differential Equations Loaded Differential Equations and Their Applications

LO 5. Utilize specialized mathematical software and computational techniques for modelling, simulation, and solving high-level mathematical problems.	KTDOT105 GATNT207	Fractional-Order Differential Operators and Equations Harmonic Analysis and Theory of Distributions Scientific-Pedagogical Practice and Qualification Internship
LO 6 Communicate complex mathematical concepts and research findings effectively in oral and written form, in both academic and professional contexts, in at least one foreign language.	ILTM1106	Research Methodology Methodology of Teaching Specialized Subjects Scientific-Pedagogical Practice and Qualification Internship
LO 7. Critically evaluate scientific literature and integrate relevant findings into their own research.	ILTM1106	Research Methodology Introduction to Homology Theory Scientific Research Work, Preparation and Defense of Master's Thesis

LO 8. Design and implement educational strategies for teaching advanced mathematics in higher education institutions, applying modern pedagogical methodologies.	MFOMI106	Methodology of Teaching Specialized Subjects Scientific-Pedagogical Practice and Qualification Internship
LO 9. Collaborate effectively in research teams and contribute to the development of joint projects at national and international levels.	ILTM1106	Research Methodology Scientific-Pedagogical Practice and Qualification Internship Scientific Research Work, Preparation and Defense of Master's Thesis
LO 10. Demonstrate readiness for lifelong learning and professional development in mathematics and related fields.		All modules (1–18)

The following **curriculum** is presented for the Master's programme Mathematics:

MSc in MATHEMATICS

CURRICULUM

FIRST YEAR

Autumn Semester

Course Name	Credit
Research Methodology	6
Teaching Methods of Specialized Subjects	6
Theory of Measures and Integrals	6
Theory of Operators in Banach Spaces	6
Scientific and Pedagogical Practice	2
Scientific Research Work, Preparation and Defense of the Master's Thesis	4

Spring Semester

Course Name	Credit
Modern Methods of Mathematical Physics	6
Introduction to Homology Theory	6
Special Functions and Special Operators	4
Fractional-Order Differential Operators and Equations	
Integral Equations	4
Spectral Theory of Differential Operators	
Scientific and Pedagogical Practice	4
Scientific Research Work, Preparation and Defense of the Master's Thesis	6

SECOND YEAR

Autumn Semester

Course Name	Credit
Degenerate Differential Equations of Hyperbolic Type	6
Differential Equations with Deviating Arguments and Their Applications	
Degenerate Differential Equations of Elliptic Type	6
Inverse Problems of Mathematical Physics	
Differential Equations of Mixed Type	4
Harmonic Analysis and Distribution Theory	
Scientific and Pedagogical Practice	4
Scientific Research Work, Preparation and Defense of the Master's Thesis	10

Spring Semester

Course Name	Credit
Scientific and Pedagogical Practice	10
Scientific Research Work, Preparation and Defense of the Master's Thesis	20