ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Chemistry-Biology Education
Informatics Education
Mathematics Education
Physics Education

Provided by
SDU University, Kazakhstan

Version: 12 December 2025

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]
Химия-биология бойынша білім беру бакалавры	Bachelor Chemistry-Biology Education	ASIIN	IAAR[3], 28.01.2022 - 27.01.2027	12
Информатика саласындағы білім бакалавры	Bachelor Informatics Education	ASIIN	-	4
Математика саласындағы білім бакалавры	Bachelor Mathematics Education	ASIIN	IAAR 28.01.2022 - 27.01.2027	13
Физика бойынша білім беру бакалавры	Bachelor Physics Education	ASIIN	IAAR 28.01.2022 - 27.01.2027	09, 10
Date of the contract: 14.11.2024 **Submission of the final version of the self-assessment report:** 13.08.2025 **Date of the audit (online):** 07.10. – 09.10.2025				
Expert panel: Prof. Dr. Jörg Desel, FernUniversität Hagen Prof. Dr. Angelika Loidl-Stahlhofen, Westphalian University of Applied Sciences Dr. Angela Fösel, FAU Erlangen Zhanar Nyshanbayeva M.A., Auezov South Kazakhstan State University Darya Kan, Al Farabi Kazakh National University, student				

[1] ASIIN Seal for degree programmes;
[2] TC: Technical Committee for the following subject areas: TC 04 – Informatics/Computer Science, TC 09 – Chemistry, Pharmacy, TC 10 – Life Sciences; TC 12 – Mathematics; TC 13 – Physics
[3] IAAR: Independent Agency for Accreditation and Rating

Representative of the ASIIN headquarter: Rainer Arnold	
Responsible decision-making committee: Accreditation Commission	
Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 04 – Informatics/Computer Science as of 29.03.2018 Subject-Specific Criteria of Technical Committee 09 – Chemistry as of 29.03.2019 Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28.06.2019 Subject-Specific Criteria of Technical Committee 12 – Mathematics as of 09.12.2016 Subject-Specific Criteria of Technical Committee 13 – Physics as of 20.03.2020	

B Characteristics of the Degree Programmes

a) Name	Final degree (original)	b) Areas of Specialization	c) Corresponding level of the EQF[4]	d) Mode of Study	e) Double / Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Bachelor Chemistry-Biology Education	Химия-биология бойынша білім беру бакалавры / Bachelor of Education in Chemistry-Biology	-	6	Full-time	-	8 semester	240 ECTS	Annually, 2017
Bachelor Informatics Education	Информатика саласындағы білім бакалавры / Bachelor of Education in Informatics	-	6	Full-time	-	8 semester	240 ECTS	annually, 2023
Bachelor Mathematics Education	Математика саласындағы білім бакалавры / Bachelor of Education in Mathematics	-	6	Full-time	-	8 semester	240 ECTS	annually, 2019
Bachelor Physics Education	Физика бойынша білім беру бакалавры / Bachelor of Education in Physics	-	6	Full-time	-	8 semester	240 ECTS	annually, 2023

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

Introduction

SDU University, also known as Suleyman Demirel University, is a private higher education institution located in Kaskelen, just outside Almaty, Kazakhstan. Founded in 1996 through a collaboration between Kazakhstan and Turkey, it is named after the former Turkish president Süleyman Demirel. SDU features three main faculties: Education and Humanities, Information Technology and Applied Mathematics, Social Sciences Business, and Law.

As one of the first universities in Kazakhstan to teach in English, SDU offers 61 educational programmes, including 29 undergraduate programmes, 24 master's programmes and 8 doctoral programmes. SDU has a trilingual education system according to which 80% of the courses are taught in English and 20% are available in Kazakh or Russian.

Currently, SDU has a staff of 456 teachers and over 8932 students. 20% of the teachers are candidates in science and 36% hold PhDs. In 2020, 59 researchers participated in research projects, resulting in 52 scientific papers being published in journals indexed in the international databases Scopus and Web of Science, respectively. In addition, the university's scientific department publishes four scientific journals.

Summary

The experts positively notice the following aspects:

- Dedicated and motivated teaching staff.
- International teaching staff and incoming international students.
- Students are satisfied with the degree programmes.
- Most of the courses are taught in English.
- Modern facilities with several meeting places and small group areas.
- Comprehensive students' clubs and social life.
- Employers are satisfied with the graduates' qualifications.
- Good job perspectives and career support service.
- Office for Inclusive Education.
- Comprehensive quality assurance system with the involvement of all stakeholders.
- Advisory boards with external stakeholders and students on faculty and programme level.

In the following areas, the experts see room for improvement:

- Introduce a compulsory final project (Bachelor's thesis) for all students. If the final project is done by a group of students together, the individual contribution of each students needs to be made transparent, and each student needs to be graded individually.
- The awarded ECTS points need to comply with the students' total workload and need to be verified for each course.
- There need to be separate module descriptions for each course, some module descriptions are missing (final project in Mathematics, Physics)
- The module descriptions of the laboratory courses should make transparent what experiments are conducted and if the experiments are only shown as demonstrations or if the experiments are actually conducted by the students.
- The workload calculation and the awarded ECTS points as mentioned in the module descriptions needs to be consistent.
- Courses on essential subjects such as cell biology, immunology, bioinformatics, green chemistry, circular economy, and chemical analytics should be offered. This could be done, for example, in cooperation with other universities in Almaty. In general, the scientific education in the educational programmes should be strengthened.
- Basic equipment for applied chemistry and cellular biology should be available in the laboratories.
- Especially in informatics education it should be transparent how students are taught to convey informatics subjects to high school students without going too deep too fast.
- There is no micro-teaching laboratory at SDU, where teachers and fellow students can observe and review demonstration teaching sessions.
- The library should provide more scientific literature on modern science topics and science education. There should be a distinction between science and fiction books.
- It would be useful to provide more financial support for students who want to study abroad.
- It is necessary to automatically issue a Diploma Supplement, which is aligned with the European template, to all graduates.

C 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
- Study plans of the degree programmes
- Module descriptions
- Homepage SDU: https://sdu.edu.kz/en/
- Homepage School of Education and Humanities: https://sdu.edu.kz/en/education-and-humanities
- Homepage Ba Chemistry-Biology Education: https://sdu.edu.kz/en/chemistry-biology
- Homepage Ba Informatics Education: https://sdu.edu.kz/en/informatics/
- Homepage Ba Mathematics Education: https://sdu.edu.kz/en/mathematics/
- Homepage Ba Physics Education: https://sdu.edu.kz/en/physics/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
The experts base their assessment of the learning outcomes on the information provided in the module descriptions and in the Self-Assessment Report of all four degree programmes under review. For all programmes, SDU has described Learning Outcomes (LO), which cover a number of specific competences students should acquire in their respective degree programme.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 09 – Chemistry, Pharmacy and to the to the Subject-Specific Criteria (SSC) of the Technical Committee 10 – Life Sciences as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Chemistry-Biology Education as defined by SDU correspond with the competences as outlined by the SSC.

The Bachelor's degree programme Chemistry-Biology Education aims at training future teachers with a strong foundation in chemistry and biology, along with the teaching skills needed to effectively deliver these subjects. This programme emphasises a deep understanding of core concepts and innovative teaching methods. By blending theoretical knowledge with practical experience, the programme fosters critical thinking, problem-solving, and innovative teaching methodologies. Students are trained in innovative teaching strategies, including the use of technology-enhanced tools and interactive learning experiences. Additionally, students should learn to apply scientific concepts to real-world situations, be able to design and perform experiments in chemistry and biology learning to collect, analyse, and interpret data to solve chemical and biological issues.

To this end, students should acquire relevant scientific knowledge in the different chemical and biological areas, be able to conduct independent laboratory and fieldwork, plan, implement, assess, and follow up the educational learning process. Finally, students should be qualified to conduct life-long learning and work effectively, both individually and in a team, to demonstrate scientific, critical, and innovative attitude in chemistry and biology learnings, laboratory works, and environmental care.

Graduates of the Bachelor's programme Chemistry-Biology Education have broad career prospects and include high school and college teaching, tutoring and coaching in educational centres, curriculum development, and school administration. The programme's interdisciplinary nature also opens doors to opportunities in related industries, such as biotechnology, chemical industry, and environmental science.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 04 – Informatics/Computer Science as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Informatics Education, as defined by SDU, correspond with the competences as outlined by the SSC.

The goal of the Bachelor's degree programme Informatics Education is to prepare qualified specialists who possess deep knowledge of computer science and informatics, combined with skills in creative thinking, pedagogical methods, and research activities. The programme focuses on conveying the ability to independently formulate new goals and teaching strategies, as well as assess the educational and innovative potential of technological and scientific developments. The programme aims to prepare competent participants in the educational and research process, equipping future teachers with innovative problem-solving skills and preparing them to pursue advanced degrees in applied or theoretical informatics or computer science education.

Graduates are trained to analyse and apply computational and software solutions in educational settings, formulate and address pedagogical and technological challenges, and utilize professional literature to enhance their teaching competence. They should be able to communicate effectively in both oral and written forms within educational and professional settings. To reach this goal, students should acquire fundamental knowledge in the respective areas such as in programming, data structures, algorithms, operating systems, database systems, computer networks, web technologies, data science, educational software design, and robotics, and be familiar with pedagogical approaches. This prepares graduates for impactful careers as computer science teachers and educators capable of fostering technological and critical thinking skills among students.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 12 - Mathematics as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Mathematics Education, as defined by SDU, correspond with the competences as outlined by the SSC.

The Bachelor's degree programme Mathematics Education is aimed at developing graduates with a strong foundation in mathematical theory, practical teaching skills, and the ability to inspire and engage students in the learning process. By integrating advanced mathematical knowledge with contemporary educational practices, the programme strives to produce educators who can foster critical thinking, problem-solving, and analytical skills in their students. The programme focuses on conveying scientific and educational methods for observing, understanding, analysing, and solving mathematical problems. To this end, students should develop a mathematical and logical reasoning and be familiar with the different areas of mathematics such as analysis, algebra, applied mathematics, computational mathematics, elementary mathematics, and statistics. Finally, graduates should be able to work with and manipulate mathematical properties and have an understanding of the underlying mathematical concepts. This should enable them to develop critical thinking skills and the ability to use modern mathematical learning and teaching methods. In addition, graduates should be capable to apply and evaluate modern methods and instruments of mathematics learning and teaching by using information and communication technology.

Graduates of the Bachelor's degree programme Mathematics Education are prepared for careers as mathematics teachers, researchers, or further academic study, supported by a solid foundation in both mathematics and educational practice.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 13 - Physics as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Physics Education, as defined by SDU, correspond with the competences as outlined by the SSC.

The intended learning outcomes of the Bachelor's degree programme Physics Education has the goal to produce educators with a deep understanding of core physics principles, advanced pedagogical strategies, and the communication skills necessary for effective teaching in diverse and multilingual classrooms. The programme focuses on conveying scientific and educational methods for observing, understanding, analysing, and solving physical phenomena and problems. This includes that graduates should acquire fundamental physics-relevant knowledge of mathematics, computer sciences, and natural sciences. They should understand the concepts, laws, and theories of physics and their application in studying natural processes and phenomena. Furthermore, graduates need to know how to conduct and prepare experiments, including the application of scientific methods, for learning or research purposes. They should also apply the principles of learning safety in physics laboratories and be able to use instruments, teaching aids, calculators, and computer software to improve physics learning in the classroom, laboratory, and field. In addition, graduates should be capable to apply and evaluate modern methods and instruments of physics learning and teaching by using information and communication technology as well as digital media.

Graduates usually follow a career in science education and related fields. They can pursue roles as high school or college-level instructors, science education researchers, curriculum developers, or science communicators. Additionally, this programme prepares graduates for diverse careers in education, research, and industry as scientists and educators.

Supplementing the subject-related qualification objectives, all Bachelor's students should acquire adequate competences in oral and written communication skills, be capable of working autonomously as well as in a team-oriented manner and be able to conduct research activities. Furthermore, they should have trained their analytical and logical abilities, be able to apply information and communication technology, and show a social and academic attitude. Finally, students should acquire language skills and should develop a strategy for life-long learning.

As the experts learn during the audit, several graduates (60% in Mathematics, about 40% in Physics, 30% in Chemistry/Biology, 15 % in Informatics) continue with a Master's programme either at SDU or other Kazakh universities or abroad. Most Bachelor's graduates are employed in private schools, which also teach in English.

In summary, the experts are convinced that the intended qualification profiles of all programmes under review allow graduates to take up an occupation, which corresponds to their qualification. The degree programmes are designed in such a way that they meet the goals set for them. The objectives and intended learning outcomes of all degree pro-

grammes under review are reasonable and well founded. Additionally, they adequately reflect the intended level of academic qualification (EQF 6) and correspond sufficiently with the respective ASIIN Subject-Specific-Criteria (SSC).

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the experts:
SDU awards a Bachelor of Education as a degree to the graduates of all four undergraduate programmes.

The names of the degree programmes properly reflect the respective focus and content of the undergraduate programmes, which is on education in the respective scientific area.

The experts confirm that the English names of all four Bachelor's degree programmes correspond with the intended aims and learning outcomes as well as the main teaching language (English).

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Homepage SDU: https://sdu.edu.kz/en/
- Homepage School of Education and Humanities: https://sdu.edu.kz/en/education-and-humanities
- Homepage Ba Chemistry-Biology Education: https://sdu.edu.kz/en/chemistry-biology
- Homepage Ba Informatics Education: https://sdu.edu.kz/en/informatics/
- Homepage Ba Mathematics Education: https://sdu.edu.kz/en/mathematics/
- Homepage Ba Physics Education: https://sdu.edu.kz/en/physics/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
All four Bachelor's programmes are offered by the School of Education and Humanities of SDU University. Each semester is equivalent to 14 weeks of learning activities. Besides these learning activities, there is one week for the midterm break and three weeks for exams. The odd semester starts in August and ends in January of the following year, while the even semester last from February to July. The programmes are designed for four years with 240 ECTS points and are offered as a full-time programmes.

The Bachelor's degree programme Chemistry-Biology Education at SDU provides a foundation in both chemistry and biology, with an emphasis on subject specific knowledge, pedagogical skills, practical competences, interdisciplinary understanding, and technology integration. Students are trained in critical thinking as well as didactic and scientific methods, enabling them to design, conduct, and analyse experiments – mostly for classroom settings - in chemistry and biology. The experts see that the Bachelor's degree programme Chemistry-Biology Education offers a comprehensive curriculum for aspiring chemistry and biology educators. It covers a wide range of core subjects in both sciences, including fundamental chemistry courses like inorganic, organic, analytical, and physical chemistry, and essential biology courses such as botany, zoology, physiology, microbiology, and genetics with a strong emphasis on organismal biology. The programme also delves into advanced topics like cytology, histology, and molecular biology (elective courses). The subject courses provide fundamental knowledge of chemistry and biology sciences.

The Bachelor's degree programme Chemistry-Biology Education also focuses on preparing future teachers by incorporating pedagogical courses in areas like educational psychology, curriculum development, and assessment. These courses are designed to equip students with the skills to design effective lesson plans, measure student learning, and provide meaningful feedback. In addition to scientific and pedagogical training, the program fosters critical thinking, problem-solving, and ethical reasoning through courses in social sciences like history, philosophy, sociology, and political science. Foreign language courses promote intercultural understanding and global citizenship.

Additionally, the curriculum covers the relationship among science, technology, society, and the environment, and develops communication and collaboration skills, including the use of language and information technology. It further encourages students to stay abreast of new developments in the fields of chemistry and biology, apply scientific research methods, and use modern tools such as computer technologies for laboratory work.

Practical experience is a key element of the curriculum of the Bachelor's degree programme Chemistry-Biology Education, with an emphasis on hands-on learning. Laboratory work al-

lows students to conduct experiments, analyse data, and gain practical insights into chemical and biological phenomena. However, the experiments that students conduct themselves in the lab are fairly simple and basic.

Additionally, teaching practicums and internships at partner schools provide invaluable real-world teaching experience, allowing students to apply their knowledge and refine their teaching skills in authentic classroom settings.

The Bachelor's degree programme Informatics Education originates from the “Physics-Informatics Education” programme initiated in 2017 and aims to produce highly competent and adaptable informatics teachers capable of teaching in English. Originally intended to train educators skilled in both disciplines, the programme has evolved to address the increasing need for specialized, subject-focused teacher preparation. Following the establishment of a separate Physics Education programme in 2024, the Informatics Education programme, which formally began in 2023, has concentrated entirely on computer science education.

The Bachelor's degree programme Informatics Education covers both theoretical and practical aspects of computer science and digital technology. Students study programming, software engineering, web development, and database management, building strong technical foundations for work in IT and education. The curriculum also includes modules on computer architecture, electronics, robotics, and computer networks, ensuring deep understanding of digital systems and hardware. To address the rapid pace of technological change, the program also explores artificial intelligence, cybersecurity, data science, web and mobile development, and user interface design.

Alongside technical disciplines, the programme integrates educational psychology, curriculum design, and modern STEM teaching methods to prepare future teachers in informatics and related areas. Students learn to apply innovative digital tools and criteria-based assessment and take part in internships and practical projects for real-world experience. Throughout their studies, students participate in internships and practical projects to gain hands-on experience, and may choose electives in areas like data science, machine learning, multimedia, and the Internet of Things, expanding their expertise and career options. The course structure is designed to foster advanced skills in data science, machine learning, graphics, multimedia, and the Internet of Things, enabling graduates to work as developers, educators, or technical specialists in IT companies and high schools.

Beyond technical and pedagogical training, the Bachelor's degree programme Informatics Education fosters critical thinking, ethical reasoning, and problem-solving through courses in social sciences, including philosophy of technology, digital ethics, and social implications

of computing. Foreign language courses and modules on intercultural communication promote global awareness, collaboration, and inclusivity in diverse educational settings.

The Bachelor's degree programme Mathematics Education offers comprehensive training in both mathematical theory and teaching methodologies. Students learn the principles of mathematical analysis, algebra, statistics, number theory, differential equations, and applied mathematics, building deep subject knowledge over eight semesters. The curriculum blends core mathematics courses with pedagogical modules focused on teaching skills, curriculum design, assessment, and classroom management, preparing graduates for effective teaching in secondary or higher education. Courses in educational psychology, research methods, and STEM teaching are included to ensure modern, inclusive instructional practices. Students also develop proficiency in mathematical modelling, Python programming, and multimedia technologies, and practice problem solving with tasks such as mathematics Olympiad preparation. Practical teaching experience is gained through pedagogical practice and internships in schools, supported by guidance in inclusive education and management in the educational sector.

The Bachelor's degree programme Physics Education builds on the foundation of the original Physics-Informatics Education programme, which was established in 2017. It is designed to prepare skilled and versatile physics teachers with the capability to teach in English. Initially aimed at training educators proficient in both physics and informatics, the programme has evolved to meet the growing need for specialized, subject-focused teacher preparation. With the establishment of a dedicated Informatics Education programme in 2023, the Physics Education programme was launched in 2024 to concentrate exclusively on physics education.

The Bachelor's degree programme Physics Education offers a comprehensive foundation in both the theory and teaching of physics. Students acquire proficiency in fundamental principles of physics, mathematics, and astronomy, and learn to solve complex problems using advanced scientific and mathematical methods. The curriculum covers classical mechanics, electromagnetism, optics, quantum mechanics, thermodynamics, experimental physics, and modern research methodologies, building a broad and integrated base of subject-specific knowledge. These core subjects ensure that students develop a deep understanding of key concepts, which equips graduates with the expertise needed to meet the demands of diverse educational settings.

Pedagogical training is a central theme, with students learning effective methods of teaching physics, educational psychology, assessment strategies, and classroom management. The programme provides practical experience, including laboratory work, modelling physical processes, and the integration of computer and web technologies in physics education.

Students also develop communication and management competencies, preparing them for professional activities in educational settings.

Practical experience is a key element of the curriculum of the Bachelor's degree programme Physics Education, with an emphasis on hands-on learning. Laboratory work allows students to conduct experiments, analyse data, and gain practical insights into physical phenomena. Additionally, teaching practicums and internships at partner schools provide invaluable real-world teaching experience, allowing students to apply their knowledge and refine their teaching skills in authentic classroom settings.

The ASIIN experts found that prospective teachers studying physics in teacher education learn in the lab primarily how to handle experiment boxes, which are identical to those already available in high schools. The competencies promoted in this way are fundamentally important. However, the experts would like to point out that pupils in high schools should also be supported in their understanding of physical laws and phenomena; the finished boxes contribute only to a limited extent, as they tend to encourage cookbook-style work. Therefore, the experts recommend training students to demonstrably conduct experiments without using the boxes, and to have them carry out such experiments in student experiments.

Electives play a crucial role in promoting the achievement of the intended competence profile. By offering a range of electives, such as Social Psychology, Innovative Trends, and English for special purposes, students can tailor their learning experience to their interests and career goals. These options allow students to develop specialized skills, explore interdisciplinary applications of sciences, and deepen their knowledge in areas that enhance their professional readiness. The flexibility provided by electives supports a more personalized and well-rounded educational experience while ensuring alignment with the programme’s overall objectives.

All four Bachelor’s programmes under review include school internships, which offer valuable opportunities for students to bridge the gap between theory and practice. By providing real-world teaching experiences in high schools, students develop teaching skills, explore career paths, and gain confidence. The internship programme includes identifying suitable schools, establishing practice conditions, providing mentorship, and implementing regular evaluations. Internship assessment involves report presentations and defences, incorporating feedback and suggestions to evaluate the programme's effectiveness.

Given the programmes’ focus on preparing teachers to instruct in English, language proficiency is integrated throughout the curriculum. Students engage in courses designed to enhance their English language skills, particularly in the context of teaching the respective subject (Biology, Chemistry, Informatics, Mathematics, and Physics). This includes training

in academic writing, communication of complex concepts, and subject-specific vocabulary, ensuring that graduates can confidently deliver STEM content and facilitate discussions in multilingual classrooms.

One important issue, which the experts discuss in detail with SDU, is the question why the Bachelor's degree programmes do not include a compulsory final project (Bachelor's thesis). Currently "diploma work" as it is called either includes a final project or the "Final State Examination", which is both offered at the end of the studies. Students with a GPA ≥ 3.5 have the free choice between these two options; students with a lower GPA have to conduct the Final State Examination. Currently, a final graduation project is available for students; however, it is not mandatory. Due to staff workload considerations, the number of students who can undertake the project is limited.

The diploma work is carried out under the supervision of an assigned faculty member within the student's area of specialization. Before submission, the supervisor must approve the completed work, and a format controller reviews it for compliance and accuracy. Additionally, a pre-defence presentation is organized to evaluate the readiness of the diploma work. During this stage, students receive constructive feedback and specific recommendations to help them prepare for the final defence, which directly contributes to their overall assessment of the graduation project.

The experts expect that the School of Education and Humanities introduces a compulsory final project (Bachelor's thesis) for all students. This would also support SDU's goal of becoming a "trendsetting" research university in Central Asia. For this reason, all Bachelor's students should be involved in research activities and conduct a final project (Bachelor's thesis). The final project should allow students to explore a specific area of science or science education in depth, involving experimental work and literature review. Group projects are also possible, as long as each student contributes to the project, is responsible for a distinctive part, and receives an individual grade.

The experts point out that all four undergraduate programmes under review should ensure that modern subjects such as cell biology, immunology, bioinformatics, green chemistry, circular economy, and chemical analytics are a mandatory part of the curriculum of the respective degree programme.

In the area of biology, the curriculum is currently dominated by organismic content (human biology, zoology, and botany). Courses in cell biology, genetics, biochemistry, microbiology, and immunology are either offered only as optional electives or not at all. Laboratory training is weak and relies primarily on digital content (PraxiLab). It is important to maintain at least a minimum standard of hands-on laboratory training, where students actively conduct their own experiments. The field of Biology has undergone substantial development over

the past 20 years, with molecular biological techniques becoming increasingly important. In medicine, knowledge in microbiology and immunology has expanded dramatically, and both biotechnological production and medical research now rely heavily on heterologous protein expression. For pupils in Kazakhstan to be informed about the key biological disciplines of the present, their future teachers must first receive adequate and up-to-date training themselves.

Ultimately, the goal is to enable future teachers in Kazakhstan to teach science at a modern level. In chemistry, this includes emphasizing green Chemistry, the use of renewable resources (reducing dependence on fossil fuels), and circular economy concepts (recycling), which are crucial for addressing the global climate crisis. Understanding environmental monitoring and pollution analysis requires a solid foundation in chemical analytics, which should also be conveyed to pupils.

The science courses may be set up as collaborative courses with other universities in Almaty. Even if these subjects are not taught to high school students, it is important that teachers are familiar with them, as they play a vital role in understanding natural sciences and current developments in this area. In general, the scientific education in the educational programmes should be strengthened.

With respect to the Informatics Education programme, the experts emphasise that students should acquire solid scientific knowledge, including advanced programming skills, as well as subject-specific didactic fundamentals. However, the content of the scientific modules is currently not aimed at school beginners, but rather at advanced learners or even at students in computer science-related programmes. Future teachers need to learn more specifically about which learning outcomes are realistic in schools and how to reach all pupils (not just the most gifted). This can be achieved e.g. by expanding the respective subject-specific modules to include elementary principles that can be effectively implemented in school lessons.

During the discussion with the experts, the students make several suggestions to adjust the study plans. They propose to offer the research methodology course earlier than the last year of studies, to have an introduction to pedagogy already in the first year of studies, and to offer more courses on psychology especially children psychology. Additionally, the international students would prefer if the preparation for the science olympiad could be an elective and not a compulsory course, because it is not relevant for all students. Finally, students suggest offering the course on inclusive education earlier in the curriculum, maybe already in the second year of studies. The experts find merit in all these propositions and suggest that the programme coordinators discuss all of these suggestions with the students and other stakeholders, e.g. during the meetings of the advisory boards.

As practical education in school settings is an essential part of the study programmes, SDU offers the EDU Career programme to give students the opportunity to gain more practical teaching experience. The primary objective of the EDU Career programme is to enhance the professional preparation of future teachers, align the training of senior students with employer requirements, and bridge the gap between education and practical application. This programme is offered to high-performing students (GPA ≥ 3.2) to continue their studies during the seventh semester of the curriculum while gaining hands-on pedagogical experience in educational institutions all around the world. All processes such as registration for students and employers, applications, and assessments are carried out on an online platform. For the last two years, 78 students from School of Education and Humanities have completed internships at 27 different educational institutions in Kazakhstan (Almaty, Astana, Aktau, Atyrau, and Semey) and four students completed an internship in Ghana (Accra and Tamale). The hosting institutions pay the students during the EDU Career programme, so it is possible for several students to conduct the EDU Career programme abroad. The experts especially appreciate this programme but regret that it is limited to students with a high GPA. They would prefer if the programme was open to all interested students.

Some employers would like to prolong the length of the compulsory internships, but the students express to the experts their satisfaction with the existing opportunities. The experts point out that students can join the EDU Career programme if they want to have more practical experience with teaching in high schools.

The experts confirm that the curricula of all four Bachelor's programmes balance subject specific courses with pedagogical studies, allowing students to develop practical teaching skills, curriculum design abilities, classroom management strategies, and inclusive education practices. Throughout their studies, students become proficient in using communication technologies and modern teaching methods. They also engage in research methods, educational psychology, and STEM teaching strategies, with practical experience gained through internships and teaching practice in schools. The programmes are designed to integrate in-depth subject knowledge with advanced pedagogical skills, with a particular focus on effective teaching in English. By the end of the respective programme, graduates are equipped for careers as high school teachers or researchers, ready to educate at the secondary or higher levels or to pursue advanced studies in STEM education.

After analysing the module descriptions and the study plans, the experts confirm that all degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. All practical lab work and internships are well integrated into the curriculum and the supervision by SDU guarantees for their respective quality in terms of relevance, content, and structure.

Overall, the experts confirm that the choice of modules and the structure of the curriculum ensure that the intended learning outcomes of the respective degree programme can be achieved. All four educational programme offer a well-rounded curriculum, equipping future STEM teachers with the required knowledge, pedagogical skills, language proficiency, and practical experience necessary to excel in their careers and make a positive impact in the field of STEM education.

Periodic Review of the Curriculum

SDU constantly tries to improve their curriculum considering internal and external stakeholders. Updates on the curriculum consider the feedback from the advisory board as well as alumni. Further input is based on the satisfaction surveys of the students as well as the development in the fields of science. Due to continuous monitoring of the study programmes, adaptions on the curriculum can occur annually.

Student feedback plays a critical role in curriculum evaluation. Course and Teaching Evaluation Survey (CTE) and graduate surveys provide valuable insights into the programme's strengths and areas for improvement. Informal feedback is also collected through meetings with students.

In the discussion with the experts, the representatives of the Rector's Office highlight, that SDU has an advisory board on faculty as well as on programme level, which include students, professors from other universities, alumni, professionals in education, and principals from partner high schools. Advisory board meetings are another key component of the review process. For instance, based on their recommendations, a new minor programme offering 30 ECTS points across five modules focused on STEM pedagogy—including STEM integration, robotics, and electronics—has been introduced.

The programme coordinators are responsible to oversee the updates of the curriculum, which primarily considers feedback from staff, students and colleagues. Afterwards, the curriculum is reviewed on university level, including a financial consideration, before the curriculum is presented to the advisory board. There, everyone is free to comment on the curriculum and make suggestions. Finally, the curriculum has to be accepted by the Faculty and University Council.

The experts have seen evidence that shows that the curriculum is periodically reviewed with regard to the implementation of the programme's objectives; curricular changes are documented.

International Mobility

As described in SDU's Strategic Plan 2023-2028, the goal is to reach 10% international students, with an international recruitment strategy that includes market analysis and targeted geographic outreach. SDU also plans to increase international faculty representation to at least 5% per faculty. The adoption of English as the main teaching language, should further support SDU's internationalisation efforts.

SDU provides some opportunities for students to conduct internships and exchange programmes abroad. Approximately 100 students from SDU per year have the opportunity to go abroad and take part at international programmes and receive a tuition waiver, places are based on the GPA. Students who take part in student exchanges through cooperation programmes can gain recognition of the acquired credits after signing a learning agreement. The transfer of credits is carried out on the basis of the student's application and the presentation of supporting documents in coordination with the International Relations Office (IRO). The IRO is responsible for managing and coordinating the international activities such as coordinating and managing student mobility programmes, developing and maintaining relationships with partner institutions and organisations around the world, recruiting and admitting international students, providing support and assistance to international students during their time at SDU, such as helping with housing, visa issues, and other practical matters.

In order to reach its strategic goals, SDU has established over sixty cooperation agreements with universities in Europe, Asia, Russia, USA, Australia, and Kazakhstan. The IRO provides regular individual and group consultations on academic mobility issues, and maintains a comprehensive database of Bachelor's, Master's, and PhD programmes at partner universities. To ensure timely dissemination of information regarding academic mobility programmes, the IRO posts announcements on the university's official website and assists students with their applications. Furthermore, there is a representative from the International Relations Office in each faculty who advise and support students to choose the right foreign university according to their majors and interests.

Academic mobility programmes can be financed through various sources, grant from the Kazakh government, from SDU, or from companies. For example, each year the Ministry of Higher Education and Science allocates 5-7 scholarships for the students of SDU to study in partner universities in USA, Europe and South Asia. Usually, the students with the highest GPA and English proficiency are invited to the interviews, which is the second stage of the application process. The interviews are organised by the Rector's Office and the Deans of the four faculties and outside stakeholders participate in it.

Upon completion of the academic mobility program, students are required to submit a transcript and a report. Based on the transcript, students are subject to mandatory credit

transfer, in accordance with the credit transfer system of the ECTS type. ECTS credits can only be credited after successful completion of all assigned study work and proper assessment of learning outcomes.

As described in the Self-Assessment Report, over the last years, only a few students from the four Bachelor's programmes under review have participated in academic mobility programmes. For example, 11 students from chemistry-biology, 0 from informatics, 1 from mathematics, and 2 from physics have participated in the last 6 years. The target countries include South Korea, Lithuania, Poland Malaysia, Cyprus, and Hungary. The reason academic mobility is used mainly by chemistry-biology students is that its curriculum aligns closely with those of the SDU partner universities. This alignment allows for the effective matching of their courses with those offered by partner institutions, facilitating academic mobility opportunities. The programme coordinators explain that there are various reasons for this low number. The most significant of which is the socio-economic status of a student, as scholarships do not cover all expenses and most international universities have tuition fees.

There are several inbound students from different countries such as Tanzania-4 , Indonesia-5, Malawi-3, Keniya -3, Ghana-1, Russia-1, Nigeria-4, Uruguay-1, Turkey-2, China-2, Tajikistan- 6, Uzbekistan-3, Kyrgyzstan- 11, who study in degree programmes at the School of Education and Humanities.

To further promote internationalisation, SDU is constantly seeking new opportunities for collaboration, and as part of the budget planning for the upcoming academic year, there are funds allocated for visiting professors. For example, last year a professor from Patras University (Greece) visited the School of Education and Humanities. In addition, a professor from the University of Texas was awarded a Fulbright scholarship and spend a month as a visiting professor the School of Education and Humanities. Additionally, the School of Education and Humanities regularly hosts visiting professors from prestigious universities such as Lakehead University (Canada), University of Birmingham (UK), Michigan State University (USA), and NILE (UK), fostering international academic discourse and enhancing teaching quality through diverse perspectives.

To facilitate the exchange of expertise in the academic community, SDU organises various international conferences featuring guest speakers from abroad. These events provide a platform for sharing innovative ideas, discussing global challenges, and building strong partnerships with scholars and researchers from diverse backgrounds. By participating in these conferences, students have the opportunity to learn about the latest trends in their field, while graduate students can connect with leading experts and potentially find academic supervisors for their research projects.

The students confirm during the discussion with the experts that some opportunities for international academic mobility exist and that the credits acquired abroad are recognised at SDU. However, the number of undergraduate students who participate in international exchange programmes is still low, as the available places in the exchange programmes are limited and there are restrictions due to a lack of sufficient financial support, which hinders students from joining the outbound programmes. National scholarships are available, but they are highly competitive, so only a few students receive them.

The experts understand these problems and see that academic mobility was severely impacted by the COVID-19 pandemic, but the restrictions have been resolved and traveling and studying abroad is easily possibly again. To this end, it would be useful to actively encourage students to take part at long term (one or two semesters) academic mobility programmes (e.g. ERASMUS+) in order to study or conduct research projects at universities abroad. Especially, SDU should provide more financial support for students who want to study abroad, as a lack of funds is the main issue that keeps students from going abroad.

Student mobility within four Bachelor's degree programmes under review has been practically non-existent over the past 6–7 years, with only a few students participating in exchange programmes. Such a situation limits the development of students' intercultural competences, exposure to diverse academic traditions, and access to innovative pedagogical practices abroad. For a degree programme aspiring to meet international standards, academic mobility at this level is inadequate and requires improvement measures.

The programme coordinators should prioritise the creation of structured mobility windows, stronger bilateral agreements with international partner institutions, and clear financial and administrative support mechanisms to ensure that significantly more students can benefit from study-abroad opportunities.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- SDU Admission Policy
- Order of the Minister of Education and Science of the Republic of Kazakhstan on October 31, 2018 № 600
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The admission procedure for the Bachelor's programmes is constituted by regulations issued by the Kazakh Ministry of Education and Science and is primarily conducted through a nationwide unified exam after completing the high school or professional school. The Unified National Test (UNT) includes the examination of Kazakh and Russian, Mathematics, History of Kazakhstan and one elective subject, depending on the chosen specialty.

Unified National Testing (UNT) is the main standardised entrance exam for secondary school graduates seeking admission to universities. It is typically taken by current 11th or 12th grade students, recent secondary school graduates, and certain other eligible groups. The UNT evaluates core subjects like mathematical literacy, reading literacy, and history of Kazakhstan, plus two specialized subjects. It is regarded as key for university admission and scholarship competitions, with a scoring system up to 140 points and a set passing threshold. UNT is held annually in late June over a full day of testing at designated centres across the country, with a formal appeal process available if needed. Paying students make up less than 10 % of all students, their required UNT score is 30 points below that for non-paying students.

The process is overseen by regional state commissions that include representatives from law enforcement, public organizations, and the media to ensure the enforcement of public order, provide medical assistance, and facilitate support for persons with disabilities during the testing. Testing administrators from the National Testing Center, representatives of the Ministry of Science and Higher Education, and local education authorities also supervise the examinations to maintain integrity and quality.

Depending on national demand, the Ministry of Education and Science defines a limited number of scholarships for each Bachelor's programme offered to those with the highest score. A state grant includes free tuition and a scholarship for living expenses. If a student has good grades in his first semesters at the University, she or he can apply during the studies for a state grant. It is also possible to enrol on a fee-paid basis; however, the required minimum score of the Unified National Test must still be met.

Additionally, SDU awards grants to applicants based on the results of the annual SDU University Proficiency Test/International SDU University Proficiency Test (SPT/ISPT), an internal competition among school and college graduates that gives an opportunity to attract and select a better pool of prospective SDU University students. The winner of the SPT gets a 100% tuition discount, other participants with lower results may get 15%, 30%, 50% tuition discounts.

SDU can update their admission regulations annually and publishes them on their webpage for all interested third parties. In general, the application requirements for the Bachelor's programmes include:

- A completed secondary education;
- An attestation (diploma) for completion of high school or professional vocational school (authentic copy);
- From Kazakh citizens: the original Unified National Testing (UNT) certificate issued for the current year with passing scores as set by the Ministry of Higher Education and Science of the Republic of Kazakhstan.
- From foreign citizens an interview with the program management;
- Minimum required English proficiency.
- Submission of the established set of documents for admission

Each university in Kazakhstan can set a certain score, which national applicants need to pass in the UNT in order to be eligible to enrol in the programmes. This level for UNT is currently set at the following score:

B.Ed. in Mathematics	125/140
B.Ed. in Informatics	100/140
B.Ed. in Physics	105/140
B.Ed. in Chemistry-Biology	100/140

Table 1: Admission Score, Source: SAR SDU

Since all study programmes are conducted in English, SDU requires the students to provide proof they have reached at least intermediate proficiency in English (IELTS 5.0 / B1). This includes an initial English test, which includes four tests in reading, writing, pronunciation and listening. New Students who have not a sufficient English proficiency will attend additional English language courses and courses taught in Kazakh until their English proficiency has improved and they can enrol in English taught courses.

The maximum intake capacity per year is 150 students in the Bachelor's degree programme Mathematics Education and 100 students in the Bachelor's degree programme Chemistry-Biology Education, the Bachelor's degree programme Informatics Education, and the Bachelor's degree programme Physics Education.

The number of newly enrolled students in the four programmes under review for the last five academic years is depicted in the following table:

	Chemistry-Biology		Informatics		Mathematics		Physics	
Academic Year	**Registered students**	**Accepted Students**	**Registered students**	**Accepted Students**	**Registered students**	**Accepted Students**	**Registered students**	**Accepted Students**
2020/21	**60**	**59**			**64**	**63**		
2021/22	**61**	**61**			**85**	**84**		
2022/23	**79**	**79**			**88**	**88**		
2023/24	**82**	**82**			**134**	**134**		
2024/25	**78**	**78**	**89**	**89**	**123**	**123**	**42**	**42**

Table 2: Statistical data on admitted students, Source: SAR SDU

According to the university's homepage, the current tuition fee for the Bachelor's programme is between 1.200.000 and 1.360.000 Tenge (1865 to 2113€) for Kazakhs students. International students pay significantly higher tuition fees.

As the experts learn, admissions to the Chemistry-Biology programme were stopped beginning with the 2024/25 academic year. This decision was taken in connection with changes to the Regulation on State Standards, under which the programme is no longer allocated dedicated state grants and has been restructured into a five-year format. Starting from the 2025/26 academic year, SDU university has launched a new educational programme in Chemistry and is currently in the process of establishing a new Biology educational programme. For the current cohort of students enrolled in the Chemistry-Biology programme, the SDU seeks to have the existing programme accredited by ASIIN to ensure the quality and international recognition of their degree.

In summary, the experts find the terms of admission to be binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Criterion 1.5 Work load and credits

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
SDU applies the European Credits Transfer System (ECTS) for measuring the students' total workload. The experts confirm that ECTS points are awarded for all mandatory parts of the degree programmes, including work practices (internships). The workload includes contact hours and time for independent work.

The Bachelor's degree programmes encompass 240 ECTS and one ECTS credit is equal to 30 hours of students' total workload.

The experts point out that SDU should follow the ECTS Users' Guide to determine the students' total workload. As described in the ECTS Users' Guide, the estimation of students' workload should include all learning activities. This is the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations). In other words, a seminar and a lecture may require the same number of contact hours, but one may require significantly greater workload than the other because of differing amounts of independent preparation by students.

Since workload is an estimation of the average time spent by students to achieve the expected learning outcomes, the actual time spent by an individual student may differ from this estimate. Individual students differ: some progress more quickly, while others progress more slowly. Therefore, the workload estimate should be based on the time an "average student" spends on self-studies and preparation for classes and exams. The initial estimation should then be verified via students' satisfaction questionnaires.

Since the workload of the students was only estimated by the programme coordinators, the experts ask SDU to verify the students' total workload and to adjust the awarded ECTS points. This could e.g. be done by including a respective question in the satisfaction questionnaires. In any case, SDU must make sure that the actual workload of the students and the awarded ECTS credits correspond with each other and make that information transparent in the module descriptions and the study plans. Additionally, it is necessary to make transparent how many hours of students' workload are exactly required for one ECTS point.

In summary, the experts conclude that the total work load of the degree programmes is adequate and that there is no structural pressure on the quality of teaching and the level

of education due to the work load. The students express their general satisfaction with the amount and the distribution of their work load. The estimated time budget is realistic, and the students can usually complete the respective degree programme without exceeding the standard study period.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
During the classes, active and interactive teaching methods (e.g. lectures, discussions, reports, presentations, and group work) are applied. SDU wants to encourage the students to gain knowledge from different scientific areas and wants them to be able to solve specific problems through an interdisciplinary approach. This should ultimately contribute to the transition from a teacher centred to a student oriented teaching method. In order to involve all students in the learning process and to develop their thinking and analytical skills, the teaching staff uses several methods of training and gives assignments on different levels of complexity.

The most common method of learning in the Bachelor's degree programmes is class session, with several courses having integrated laboratory work. Lecturers generally prepare presentations to support the teaching process. At Bachelor level, the students first gain theoretical knowledge and have more practical classes in later semesters.

With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre- or post-tests, laboratory exercises, reports, discussions, and presentations. In addition, practical activities should enable students to be acquainted with academic research methods.

The Kazakh Ministry of Higher Education and Science does not allow for pure online lectures. But hybrid teaching forms and other methods such as flipped classroom are possible and are also applied in several courses at SDU. Additionally online office hours are offered by the teachers to advise students and to conduct group meetings on a Moodle-platform.

In summary, the expert group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concepts of all programmes under review comprise a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

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

The experts appreciate that by the Faculty Council decision of 21 Oct 2025, a compulsory Final Project has been introduced for all four degree programmes under review. The compulsory Final Project will be introduced in the 2025/26 academic year for Chemistry–Biology and Physics, and Informatics, and in 2026/27 academic year for Mathematics. The approved Bachelor Diploma Thesis and Diploma Project Preparation Policy ensures the transparent documentation of individual contributions within group projects and require that each student is assessed individually. The module PED 464 Writing and Defending Thesis (Project) has been incorporated into programme handbooks, and thesis topics will be approved by the Academic and Educational-Methodological Council in January 2026. The experts are satisfied with this solution.

The experts support the plan to expand students' exposure to modern interdisciplinary topics by developing new courses such as Cell Biology and Genetics, Immunology and Bioinformatics, Green Chemistry and Circular Economy, and Chemical Analytics. These courses will be presented to the Advisory Board in April 2026 for review and approval. They will be integrated into the respective curriculum in 2026/27. In parallel, SDU is establishing cooperation agreements with universities in Almaty to enable shared laboratory facilities and joint teaching initiatives. The experts add that topics such as artificial intelligence and big data should also be taken into consideration.

The experts thank SDU for explaining that the Informatics curriculum follows a "Scaffolded and Applied" model to prevent students from progressing "too deep too fast." Through courses such as Methodologies of Teaching Informatics, Educational Psychology, Digital Literacy, and Educational Practice, students learn to introduce complex concepts gradually, use accessible language, and design sequenced, age-appropriate learning materials.

The experts appreciate that SDU University is strengthening its international cooperation by establishing new exchange agreements with Ghent University (Belgium) under the Erasmus+ framework and with SOKA University (Japan), offering tuition and housing support

for SDU participants. The first student mobilities are scheduled for Spring 2026. Starting from 2026/27, a permanent budget will cover travel and accommodation costs for Erasmus+, and other bilateral exchange programmes.

The experts confirm that the awarded ECTS points now correctly reflect the students' total workload. As part of the curriculum review, SDU has validated the workload calculations through student feedback. The module descriptions have been updated accordingly and any discrepancies were corrected. The experts are satisfied with the corrections and see no need to issue a requirement to this respect.

The experts consider criterion 1 to be mostly fulfilled.

2. Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- SDU Assessment Policy
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Based on SDU regulation, the teachers are required to provide the students with an overview of the applied assessment methods and criteria at the beginning of each course as well as before the end of the lecture. In addition, all assessment criteria are also clearly stated in the module handbook and course syllabus (online in the university system as well as offline). The achievement and development of each student during one course is monitored by current, interim, and final assessment, which includes tests, oral and written examinations or other assessments. The teachers record all results in an electronic gradebook, which is part of the students' personal account. For each module, the value of the single assessments is determined based on the type of module. Currently, 60% of the final grade is based on the assessment during the semester (mid-term exams, quizzes, and assignment), whereas 40% is based on the final examination. SDU applies a scale for grading, where positive grades range from A (best) to D (pass). Additional negative grades use "FX" and "F", where "FX" (grade between 25-49 out of 100) allows the students to retake the final assessment in the current semester. In contrast, if students receive and "F" (grade below 25 out of 100), they must retake the entire course, either in the next semester or in the short summer semester. The students can see their results on SDU's online platform.

The grading scheme is shown in the following table:

Grade			
InPercent	Alphabetic	InPoints	Traditional
95 - 100	A	4	Excellent
90 - 94	A-	3.67	
85 - 89	B+	3.33	Good
80 - 84	B	3	
75 - 79	B-	2.67	
70 - 74	C+	2.33	
65 - 69	C	2	Satisfactory
60 - 64	C-	1.67	
55 - 59	D+	1.33	
50 - 54	D	1	
25 - 49	FX	0	Unsatisfactory
0 - 24	F	0	
0 - 24	FC	0	

Table 3: Grading Scheme, Source: SAR SDU

The experts inquire how students can appeal grades at SDU. The programme coordinators describe that there is a form, which students need to fill out in order to appeal the grade. The students can also submit their application in the dean's office and discuss the results. After the grade is entered into their system, the students have one day to appeal their grades. SDU will then form a committee to re-examine the grade. In addition, an external examination can be involved. Every student is further welcome to visit them in their office and discuss the grade before they submit an appeal. The students are aware of their option to appeal their grades. They add that they usually go directly to their teachers to talk about their examination if they consider it necessary.

Students who fail too many credits may lose their state grant and they have to repeat the academic term. The academic advisors and the teaching staff try to help the students to make up time lost by e.g. illness during the semester so that every student has a chance to pass the final exam.

The experts conclude that the exams in the four study programmes under review assess the extent to which the defined learning objectives in each module have been achieved. The exams relate to specific modules. Students are provided with feedback on the competencies that they have acquired. Within the study programmes under review, the experts see various assessment methods are applied. Students are informed about the conditions for completing the module (coursework, exams etc.) latest at the beginning of the semester. There are transparent rules for make-up exams, non-attendance, cases of illness as well as compensation of disadvantages in the case of students with disabilities or special needs

(e.g. pregnancy, childcare, caring for relatives) etc. The experts consider the number and distribution of exams ensure an adequate workload as well as sufficient time for preparation. The organization of the exams ensures a smooth study process.

As part of the on-site visit, the experts also inspect sample examinations as well as final projects from all degree programmes under review. Overall, they are satisfied with the quality of the examinations and theses. However, they notice that some of the group projects have not the required scientific depth and scope. For example, if the final project is done by a group of five students, which is maybe too many and should be limited to a maximum of two to three students, the project must have the necessary scope so that all students can contribute in a sufficient manner. This deficit should be addressed.

Otherwise, the experts confirm that the different forms of examination used are competence-oriented and are suitable overall for verifying the achievement of the intended learning outcomes as specified in the respective module descriptions. The form of examination is determined individually for each course and published in the respective module description. The forms of examination are based on the main content of the modules and the level is appropriate for the respective degree programme.

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

SDU does not comment on this criterion in its statement.

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report
- Staff Handbook
- Study plans
- Module descriptions
- SDU Regulation on Recruiting of Employees
- Discussions during the audit

Preliminary assessment and analysis of the experts:

At SDU, the staff members have different academic positions. There are (full) professors, associate professors, assistant professors, senior lecturers, and lecturers/instructors. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full or an associate professor needs to hold a PhD degree. The responsibilities and tasks of each teacher with respect to teaching, research, and supervision depend on the academic position. In addition, there are non-academic staff members consisting of librarians, technicians and administrative staff.

The number of professors and lecturers in the different degree programmes according to their academic position is depicted in the following table:

	Ba Chemistry-Biology Edu	**Ba Informatics Edu**	**Ba Mathematics Edu**	**Ba Physics Edu**
Associate Professor	**8**	**4**	**11**	**5**
Assistant Professor	**3**	**2**	**1**	**2**
Instructor/Lecturer/Senior Lecturer	**20**	**16**	**19**	**13**
∑	**31**	**22**	**31**	**20**

Table 4: Statistical data on teaching staff and their academic position, Source: SAR SDU

The teaching staff is supplemented by international visiting professors. In addition, technical staff, such as laboratory assistants and technicians, are employed to carry out the practical laboratory work.

The representatives of the Rector's Office explain during the audit that currently 61.2% of full-time teaching staff at SDU University hold academic degrees such as a Master's, Candidate of Sciences, or PhD. The remaining 38.8% consist primarily of younger lecturers and assistants who are currently pursuing their master's or doctoral studies, as well as several part-time instructors. When part-time staff is included, the proportion of teaching staff with an academic degree increases to 79.6%, with a total of 39 faculty members holding advanced degrees (Master's, Candidate of Sciences, or PhD), including eight part-time PhD holders and one part-time MSc holder.

The presence of a smaller number of Bachelor's degree holders in teaching roles is part of a deliberate institutional strategy aligned with national education reforms in Kazakhstan.

To meet the urgent demand for English-medium instruction (EMI) specialists in higher education, SDU University launched the Zhas Maman ("Young Specialist") Programme. This initiative identifies outstanding Bachelor's graduates with strong English proficiency and pedagogical potential and recruits them to begin teaching while simultaneously enrolling in master's degree programmes. These young specialists are employed under a dual-track model: they contribute to the teaching process while continuing their postgraduate education. Their teaching responsibilities are carefully limited and closely supervised to maintain academic quality. Bachelor's degree holders are assigned primarily to practical and skills-based components of courses, such as guided exercises to reinforce theoretical knowledge delivered in lectures as well as laboratory work which includes overseeing hands-on experiments, facilitating technical applications, and helping students develop practical competencies.

The experts also learn that SDU ensures the continuous professional development of young teachers through a range of institutional measures. These include internal grants for doctoral studies, pedagogical skills enhancement programmes, mentorship by senior faculty, and workload reductions for those actively pursuing higher degrees. In addition, SDU regularly organizes workshops and training sessions on digital pedagogy, curriculum design, and assessment methods to strengthen the teaching capacity of junior staff.

Finally, the experts discuss with the teaching staff why there are currently no full professors teaching in the four study programmes. SDU explains that most faculty members who hold PhDs are Assistant and Associate Professors. As an English-medium institution, SDU faces challenges in recruiting professors with high English proficiency. The university is addressing this by supporting current faculty in applying for professorial titles and attracting qualified international candidates. Currently, two faculty members are in the process of obtaining the title of Full Professor.

The experts understand these explanations and encourage SDU in further pursing this path with the goal of continuously increasing the share of teachers with a PhD.

In summary, the experts confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes under review.

Staff Development

The experts discuss with the members of the teaching staff the opportunities to spend time abroad and to participate in international projects. They learn that there are several international cooperations (see criterion 1.3) and that there is a special fund for financing the

participation at international conferences. In addition, the members of the teaching staff can visit international partners that are involved in their research activities.

All members of the teaching staff receive incentives for publishing scientific work. The value of the incentives is determined by the quality of the journal the article is published in. SDU also supports their teaching staff members to join conferences by offering specific funding.

The Faculty of Engineering and Natural Sciences organizes regular research and methodological seminars. In these seminars, staff members have the opportunity to present their scientific research and results as well as inviting guest speakers. In addition, SDU offers courses on staff development in their Center for Professional Development and Innovation, which also organizes summer and winter schools. Further possibilities for staff development include pursuing specific certificates and qualifications, which are fully funded by SDU. In order to participate in international internships, the teaching staff members can apply in the Bolashak Scholarship programme. Staff members have the opportunity to receive grants to do research projects abroad for up to six months. Since 2020, SDU offers additional funding options for one year projects.

In general, the experts gain the impression that several opportunities for teachers exist to spend time abroad and to participate in international projects. The teachers confirm this positive assessment and state their satisfaction with the existing opportunities.

Student Support

SDU provides a comprehensive support system for all students; it includes consultations with advisors about the individual educational plan and the study progress. In addition, the students can contact their academic advisor any time for assistance in academic questions. The members of the teaching staff are available on any issues regarding the degree programmes and offer advice on specific courses, as well as on required papers or reports.

During the third and fourth years of study, SDU organises various events to help students develop their employability skills. These events start with meetings with advisors who explain the importance of building a career. Every year, the School of Education and Humanities holds an "EDU Job Fair" where students can meet with potential employers and make contact with them. This year, over 600 senior students attended the event. To make this contact with employers even more continuous, SDU has created a Telegram channel called “EDU Hunter”, where job providers can post vacancies for our students to see. The general idea behind this channel is to increase the involvement of senior students and recent graduates in the professional and academic development process.

SDU has a diverse student population, including students from large families, students from single-parent families, orphans and students with disabilities. In order to create a welcoming environment for learners of all categories, SDU has developed an Equality, Diversity and Inclusion Policy. Equality is used here to refer to the same treatment, access and opportunities for students and all members of the community. Diversity refers to the different demographic and cultural groups that make up the community. Inclusion refers to the degree to which different social groups are well integrated and equally included in the community. The experts especially appreciate that SDU has an Office for Inclusive Education.. Students who feel they have been treated unfairly may report it to the Student Services Center for guidance on how to proceed.

The experts notice positively the comprehensive students' clubs and social life. To this end, SDU has numerous student organisations (clubs) that increase students' activity and sense of responsibility, giving them experience in organisational and public activities. The spheres of activity of the clubs are diverse, from teaching dancing, playing the national instrument - dombra to participating in the organization and conduct of charity events. Likewise, teaching staff and students can collaborate via SDU University Technopark in working on joint university-wide projects financed by the industry.

The expert group notices that there are enough resources available to provide individual assistance, advice, and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay.

Criterion 3.2 Funds and equipment

Evidence:

- Self-Assessment Report
- Visitation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to SDU's management, approximately 90 % of the budget for the teaching and learning processes are derived from tuition fees. The rest comes from donations and cooperation projects.

SDU also cooperates with several universities in Almaty, so that students and teachers can use the facilities there e.g. for conducting practical work, research activities, and theses.

During the audit, the expert group also visits the laboratories at the School of Education and Humanities in order to assess the quality of the infrastructure and the technical equipment. In general, the laboratories are functional for the purposes of the programmes and there are no severe bottlenecks due to missing equipment or a lacking infrastructure. This impression is confirmed by the students as well as the teachers who express their satisfaction with the facilities and technical equipment. However, the lab work for conducting basic research activities could be increased and basic equipment for applied chemistry and cellular biology should be available in the laboratories. Additionally, the scientific education within the Bachelor's degree programme Chemistry-Biology Education should consistently reflect the current state of research and technological development. At present, this does not appear to be fully the case.

At school, students should develop an awareness of the chemical composition of our environment. This provides a foundation for explaining why a life based on fossil resources is finite and why renewable raw materials are so important. Based on environmental chemistry, basic analytical techniques are essential. Separation methods should not be limited to TLC in the laboratory; measuring refractive indices and using IR spectroscopy should also be affordable in Kazakhstan. In the field of cellular and molecular biology, at least more UV-Vis spectrophotometers are needed to measure enzyme activities, along with several sets of micropipettes and laboratory centrifuges to isolate proteins and DNA. Electrophoresis equipment is required to purify proteins and nucleic acids, as well as the ability to purchase molecular biology reagents (e.g., enzymes for DNA digestion). A PCR machine can be used once DNA isolation, digestion with restriction enzymes, electrophoretic separation, and subsequent PCR analysis are possible. Even basic experiments in protein chemistry—overexpression and purification of a simple protein in E. coli—cannot currently be performed. Covering the field of enzymology an enzyme that breaks down starch can easily be isolated from saliva. This can be detected and kinetically analysed using a photometer but also made visible through a colorimetric assay.

A retrofitting of the basic laboratory infrastructure is therefore strongly recommended. This should include five sets of micropipettes covering different volume ranges, five UV-Vis spectrophotometers, two centrifuges for different volumes with a capacity of at least 20,000 × g, one temperature-controlled incubator, five electrophoresis units (for DNA and protein separation, restriction enzymes and further reagents for molecular biology and enzymatic analysis, reaction tubes in both µl and ml volumes, several shaking flasks, and one autoclave.)

More advanced instruments and infrastructure for targeted mutagenesis, heterologous protein expression, eukaryotic cell culture, and immunology should, at a minimum, be made accessible to students in elective courses in the final semesters of the Bachelor's

programme and, in any case, as part of the Master's programme, ideally through collaboration with other universities in Almaty.

The same applies to the area of chemistry: Working with organic solvents requires improved fume hood capacity, and teacher education students should be able to carry out basic organic syntheses themselves (e.g., esterification, saponification, aldol reaction). This would require, in addition to better fume hoods, multiple heating plates, several reflux condensers and distillation setups, as well as a rotary evaporator.

In analytical chemistry, in addition to thin-layer chromatography, the use of column chromatography should be possible as a baseline, and equipment such as a refractometer and an IR spectrophotometer would be highly beneficial for practical training at the basic level. Furthermore, through partnerships with other universities, students should have access to standard analytical techniques such as HPLC, gas chromatography (GC), NMR, mass spectrometry, and atomic absorption spectroscopy, at least in elective courses.

Additionally, the experts point out that it would be very useful to teach students how to conduct experiments besides what is provided through the "experiment boxes", which just include the tools for conducting certain experiments after a given "recipe" just like a cooking book. Future teachers should be able to set up their own experiments in physics but also in chemistry and biology taken the natural environ and the respective phenomena into account.

The experts notice that SDU has no micro-teaching laboratory. As micro-teaching is an important teacher training and faculty development technique whereby the teachers and fellow students observe and review a teaching session, such a laboratory should be available at SDU. This way, students can get constructive feedback from professors or fellow students about what has worked and what improvements can be made to their teaching technique. During these sessions, the "teacher" organises and leads a short lesson while others act as learners; afterwards, participants discuss what worked well and identify areas for development. Mock teaching helps educators build confidence, refine their pedagogy, and master both lesson content and classroom techniques before working directly with students.

Otherwise, the experts appreciate the modern facilities with numerous meeting places and small group areas, which is very useful because these support several key aspects of learning, collaboration, and community life. Here are some main reasons: Small group meeting spaces give students a comfortable environment to discuss ideas, share tasks, and collaborate effectively without distractions from larger crowds. Additionally, this supports active learning, promote creativity and can lead to more interdisciplinary collaboration. Finally, it creates a cozy atmosphere, which areas help students form connections, build friendships,

and feel more included — especially in large universities where students can easily feel anonymous.

The students express their general satisfaction with the available resources and conditions of studying, thereby confirming the positive impression of the expert group. The students also express their satisfaction with the library and the available literature there. Remote access via VPN is possible. However, the experts point out that the library should provide more scientific literature on modern science topics and science education. Additionally, there should be a distinction between science and fiction books.

With respect to the IT-infrastructure, the experts suggest that SDU should offer Education Roaming (eduroam), which is an initiative that provides employees and students of participating universities and organisations with Internet access at the sites of all participating organisations using their own username and password. This facilitates academic mobility for teachers and students and enables them to access the internet at every participating institution without any restrictions.

The experts conclude that there are sufficient funds and equipment and that the infrastructure (laboratories, library, seminar rooms etc.) complies with the requirements for sustaining the degree programmes.

In summary, the expert group judges the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms etc.) to comply – besides the mentioned restrictions – with the requirements for adequately sustaining the degree programmes.

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

The experts appreciate that SDU has already allocated a dedicated budget for laboratory modernisation. The procurement of essential chemistry and biology equipment—such as centrifuges, microscopes, UV–Vis spectrophotometers, pH meters, electrophoresis units, incubators, analytical balances, and safety systems is currently in progress and will be finalised by the end of the 2025/26 academic year. The 2026/27 budget includes funding for advanced analytical and molecular biology instruments. Collaboration with local universities will further extend laboratory access for students and faculty.

The experts are glad to read that to strengthen teacher training, Room E205 is being equipped as a dedicated Micro-Teaching Laboratory, which will become operational in spring 2026. The facility will be fitted with cameras and audio-visual equipment for recording and observing demonstration lessons, supporting reflective practice, peer feedback, and professional development for both students and faculty.

The experts support the plan of the University Library to strengthen its scientific resources by expanding access to major databases (SpringerLink, ScienceDirect, Elsevier Education Collections) and by creating a dedicated Science Education section. The distinction between scientific and fiction collections will be further improved, with new acquisitions planned for the 2026/27 academic year.

The experts consider criterion 3 to be mostly fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module descriptions
- Homepage SDU: https://sdu.edu.kz/en/
- Homepage School of Education and Humanities: https://sdu.edu.kz/en/education-and-humanities
- Homepage Ba Chemistry-Biology Education: https://sdu.edu.kz/en/chemistry-biology
- Homepage Ba Informatics Education: https://sdu.edu.kz/en/informatics/
- Homepage Ba Mathematics Education: https://sdu.edu.kz/en/mathematics/
- Homepage Ba Physics Education: https://sdu.edu.kz/en/physics/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
The students, as all other stakeholders, have access to the module descriptions via the respective programme's homepage.

After studying the module descriptions of all programmes under review, the experts confirm that the module description include almost all necessary information about the respective module such as, module title, persons responsible for the module, teaching methods, awarded credits, learning outcomes, content, admission and examination requirements, forms of exams, and recommended literature.

However, the experts point out that the module handbooks do not include the module descriptions of the final project in the Mathematics and Physics programmes. Additionally, there need to be separate module descriptions for each course. Currently there are some joint module descriptions for similar courses, such as the different teaching practises. As these are distinctly different courses, the module descriptions also need to be separated. Moreover, the module descriptions of the laboratory courses should make transparent what experiments are conducted and if the experiments are only shown as demonstrations or if the experiments are actually conducted by the students. Finally, the workload calculation and the awarded ECTS points as mentioned in the module descriptions needs to be consistent (see Criterion 1.5).

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Sample Transcript of Records for each degree programme
- Sample Diploma Certificate for each degree programme

Preliminary assessment and analysis of the experts:
The experts confirm that the students of all degree programmes under review are awarded a Diploma after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records.

On the other hand, the experts emphasise that SDU also needs to issue a Diploma Supplement to every graduate, the document should be aligned with the European Template and make the students' individual academic achievements transparent. This includes information about the chosen specialisation and the respective learning outcomes. To this end, SDU needs to submit one sample Diploma Supplement for each of the four study programmes. This Diploma Supplement then should be issued automatically to every graduate.

Criterion 4.3 Relevant rules

Evidence:

- Self-Assessment Report
- All relevant regulations as published on the university's webpage

Preliminary assessment and analysis of the experts:
The experts confirm that the rights and duties of both SDU and the students are clearly defined and binding. All rules and regulations are published on the university's website and the students receive the relevant course material at the beginning of each semester. This includes a syllabus and exam schedule.

However, the experts point out that all programmes' homepages should include the essential information about the respective study programme such as the learning outcomes, the length and awarded ECTS points, the general content, and a link to the module handbook. Especially the links to the module descriptions do not work properly.

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

The experts see that separate module descriptions have been developed for every course. Missing module descriptions—particularly for the Final Project in Mathematics and Physics—have been added.

Moreover, the descriptions of the laboratory courses have been updated to explicitly outline whether experiments are demonstrative or student performed. They also include a list of key experiments for each semester, the intended learning outcomes and corresponding assessment criteria, and safety measures and supervision protocols.

The updated Module Handbooks are published on the University's website on the programmes' web pages prior to the spring semester, enabling students to review course content in advance of registration. They are also available on the internal student portal My SDU for convenient access throughout the academic year.

The experts are satisfied with the supplemented and updated module handbooks.

The experts confirm that SDU has submitted a sample Diploma Supplement for each of the four degree programmes. The documents are aligned with the European template and include all necessary information. The Diploma Supplement is awarded automatically to every graduate.

The experts consider criterion 4 to be fulfilled.

5. Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Quality assurance policy at SDU
- IAAR certificates
- Discussions during the audit

Preliminary assessment and analysis of the experts:

SDU applied for international accreditation, because it is their goal to align the educational programmes with international standards and foster the competitiveness of the graduates not only on the national but also on the international job market. To this end, SDU is highly interested in receiving an external view on their teaching and learning processes.

The experts discuss the quality management system at SDU with the representatives of the Rector's Office and the programme coordinators. They learn that there is an institutional system of quality management aiming at continuously improving the degree programmes. This system relies on internal as well as external quality assurance. Internal quality assurance encompasses all activities focused on implementing measures for improving the teaching and learning quality at SDU.

Monitoring and evaluation of the quality of educational services at SDU are carried out by the Quality Assurance Department, which developed the internal quality management system that was certified for compliance with the ISO 9001-2016 (Quality Management System - Requirements, IDT). The Quality Assurance Department is responsible for ensuring that the quality assurance system meets national and international standards and for improving SDU's educational services, which is mainly based on the students', stakeholders' and staff satisfaction. The department is also responsible for the continuous professional development of the staff and for monitoring the intended learning outcomes and the quality of their assessment. To this end, the Quality Assurance Department ensures a two way communication with the external and internal stakeholders to respond to their suggestions through data collection, analysis, and interpretation.

For external assessment of the study programmes, SDU uses accreditation for their external quality assessment. For internal quality assessment, evaluation of the study programmes in conducted by considering the feedback of students and stakeholders. The assessment considers, if the content of the study programme still meets the needs of society and considers all advances and developments in the respective field. It further observes

the performance of students and their graduation time as well as the satisfaction of students. All this information is gathered in order to make modifications in the study programmes. All updates and modifications are made public.

The experts point out that there should be a regular and institutionalised survey on students' workload in every course. For example, this could be done by including a respective question in the course questionnaires that students have to fill out at the end of each semester (see Criterion 1.5).

The mechanism of internal monitoring further considers surveys among employers and strategic partners, students and graduates and faculty members involved in the development and implementation of the study programmes. Results of the monitoring are discussed in the Faculty's Advisory Board to develop a strategy on how to continue the development of each programme. In addition, the results of the monitoring are regularly reviewed at meetings at the university, such as meetings of the Department, the Faculty Council, or the Academic Council. This monitoring also ensures that the quality of the study programmes matches ESG standards. Furthermore, SDU conducts satisfaction surveys among their students, teaching and administrative staff. Primary monitoring and adjustments to the content of the educational programme are discussed at the programmes' and the faculty's Advisory Boards. Depending on the nature of the adjustments, changes may be made to the curriculum, passports of the educational program, the content and volume of disciplines. Information of any updates made to the educational program is publicly available on SDU's homepage.

The experts especially appreciate that students are official members of the Advisory Boards. The students' representatives are members of the Students Government, which is elected by all SDU students. This way, students are directly involved in the decision-making processes for further developing the degree programmes.

In addition, students are encouraged to participate in a course and teaching evaluations survey at the end of each semester. The main purpose of this evaluation is to gather student feedback on the satisfaction of the students and their opinion of the applied teaching methods, course content and assigned workload. The course and teaching evaluations survey is conducted online; students receive an invitation by email, social networks and the SDU online portal (MYSDU). Each student receives a link to the survey, which will be online for two weeks. In this survey, students can rate the courses and teaching and have the opportunity to give free feedback in open-ended questions. At the end of the semester, the Quality Assurance Department reports the results of the survey to the Administrative Council. In addition, the results are sent out to the faculties for further work. The results of

the survey are available for every teacher, and the students receive them by e-mail. In the future, the reports will be published on SDU's homepage.

Since 2021, SDU also conducts annual meetings of the management with all employees and students (Town Hall meetings). In these meetings, SDU provides an overview of the last year and shares their plan for the upcoming years. They also include the results of the course and teaching evaluations surveys as well as the results of the satisfaction surveys. The purpose of this meeting is to further personally discuss questions and problems. After the meeting, a questionnaire is sent to all participants to get feedback on their impression of this event.

The representatives of the Rector's Office explain that they perform a qualitative and quantitative analysis of the survey results. The students also remark that they can give direct feedback to the lecturer if problems arise. They also confirm that SDU conduct surveys at the end of each course. In the past, these surveys used to be compulsory, but now they are optional.

After graduation, SDU asks the alumni to provide their contact information so that SDU can stay in touch with them. After 6 to 9 months following graduation, the School of Education and Humanities will contact all fresh graduates to gather information about their employment status (for national rankings). Additionally, the alumni department organizes various events for alumni, where graduates can network and look for new job opportunities.

In the discussion with the experts, SDU partners, which are representatives from high schools and other institutional institutions, give a very positive feedback on the qualification of SDU's graduates. The experts see that the evaluation and revision of the study programmes involve students and other stakeholders. The collected information is analysed which results in the modifications to the educational programmes.

In conclusion, the experts confirm that all four study programmes under review are continuously reviewed, which includes feedback from internal and external stakeholders. The results of these processes are incorporated into the continuous improvement of the programmes. The comprehensive quality assurance system with the involvement of all stakeholders is one of the strong points of SDU.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 5:

SDU does not comment on this criterion in its statement.

The experts consider criterion 5 to be fulfilled.

D Additional Documents

Before preparing their final assessment, the panel asks 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:

- A sample Diploma Supplement for each of the four study programmes

E Comment of the Higher Education Institution (13.11.2025)

SDU provides a sample Diploma Supplement for each of the four study programmes and the following statement:

SDU University fully recognizes the significance of providing a Diploma Supplement as a standard document accompanying every diploma, in line with the principles of the European Higher Education Area. Beginning with the 2023–2024 academic year, the University introduced an automated system to issue the Diploma Supplement to all graduates, ensuring they receive both the national diploma and the EUROPASS-compliant Diploma Supplement free of charge.

The annex contains sample Diploma Supplements issued to graduates of the study programmes undergoing accreditation, demonstrating the structure, content, and alignment of these documents with EUROPASS standards.

In addition, the following section provides supplementary information reflecting the actions undertaken by the University after the completion of the expert panel's on-site visit, offering clarifications, additional details, and comments on the areas identified by the panel as requiring improvement.

Implemented Updates to Study Programme Module Handbooks:

SDU University has comprehensively revised and standardized all Module Handbooks to ensure full alignment with ECTS User's Guide (2015) and the experts panel requirements regarding ECTS allocation, workload consistency, completeness of module descriptions, and transparency of laboratory activities. The following updates have been implemented:

- **Recommendation:** *Awarded ECTS points must correspond to the students' total workload and be verified for each course*.

The University confirms that all awarded ECTS credits accurately reflect the students' total workload. As part of the 2025 curriculum review, all module descriptions were thoroughly verified and updated in accordance with the *SDU University Regulation on the Credit System-Based Teaching Process* (1 ECTS = 25–30 hours). Additionally, workload calculations are validated through student feedback collected at the end of each semester via the Course and Teaching Evaluation Survey, as well as through responses gathered in the Graduates Survey during the graduation period.

- **Recommendation:** *The workload calculation and the awarded ECTS points as mentioned in the module descriptions needs to be consistent*.

During the October–November 2025 curriculum review, all module descriptions were reviewed to ensure full consistency between workload calculations and the awarded ECTS credits. Any discrepancies were corrected in line with the University Regulation and the European Credit Transfer and Accumulation System standards.

- **Recommendation:** *There need to be separate module descriptions for each course, some module descriptions are missing (final project in Mathematics, Physics)*

Separate module descriptions have been developed for every course, ensuring that each module stands as an independent, self-contained unit. Missing module descriptions—particularly the Final Project modules in Mathematics and Physics—have been added.

- **Recommendation:** *Introduce a compulsory final project (Bachelor's thesis) for all students. If the final project is done by a group of students together, the individual contribution of each students needs to be made transparent, and each student needs to be graded individually.*

By the Faculty Council decision of 21 Oct 2025 (*attached*), a compulsory Final Project is introduced for Chemistry–Biology, Mathematics, Physics, Informatics SPs. The implementation timeline is as follows: 2025/26 academic year for Chemistry–Biology and Physics, Informatics SPs, and 2026/27 academic year for Mathematics SP. The approved *Bachelor Diploma Thesis and Diploma Project Preparation Policy* ensure transparent documentation of individual contributions within group projects and require that each student is assessed individually (*attached*). The module PED 464 Writing and Defending Thesis (Project) has been incorporated into programme handbooks, and thesis topics will be approved by the Academic and Educational-Methodological Council in January 2026.

The issue of reinstating the bachelor thesis/project as the final attestation component for the Mathematics programme from the 2026/27 academic year will be reconsidered, with the underlying reasons detailed in the explanatory note provided in the annex.

- **Recommendation:** *The module descriptions of the laboratory courses should make transparent what experiments are conducted and if the experiments are only shown as demonstrations or if the experiments are actually conducted by the students.*

Laboratory course descriptions in Chemistry–Biology and Physics Module Handbooks have been updated to explicitly outline:

- whether experiments are demonstrative or student-performed;
- a list of key experiments for each semester;
- intended learning outcomes and corresponding assessment criteria;
- safety measures and supervision protocols.

The updated Module Handbooks are published on the University's website on the programme web pages prior to the spring semester, enabling students to review course content in advance of registration. They are also available on the internal student portal My SDU for convenient access throughout the academic year.

Planned Measures and Future Actions:

SDU University appreciates the panel's constructive recommendations and is already taking steps to further strengthen its study programmes, learning infrastructure, and international opportunities. The following actions are planned or in progress:

- **Introduction of New Scientific Courses**
  To expand students' exposure to modern interdisciplinary topics, new courses — *Cell Biology and Genetics, Immunology and Bioinformatics, Green Chemistry and Circular Economy,* and *Chemical Analytics* — are being developed. These courses will be presented to the Advisory Board in April 2026 for review and approval, and integrated into the 2026/2027 programme curriculum. In parallel, SDU is establishing cooperation agreements with universities in Almaty to enable shared laboratory facilities and joint teaching initiatives.
- **Laboratory Equipment Enhancement**
  A dedicated budget for laboratory modernization was allocated for 2025. The procurement of essential chemistry and biology equipment—such as centrifuges, microscopes, UV–Vis spectrophotometers, pH meters, electrophoresis units, incubators, analytical balances, and safety systems (full list provided in the attachments)—is currently in progress and will be finalized by the end of the 2025/2026 academic year. The 2026/2027 budget includes funding for advanced analytical and molecular biology instruments. Collaboration with local universities will further extend laboratory access for students and faculty.
- **Establishment of a Micro-Teaching Laboratory**
  To strengthen teacher training, Room E205 is being equipped as a dedicated Micro-Teaching Laboratory, which will become operational in Spring 2026. The facility will

be fitted with cameras and audio-visual equipment for recording and observing demonstration lessons, supporting reflective practice, peer feedback, and professional development for both students and faculty.

- **Library Development**
  The University Library will continue strengthening its scientific resources by expanding access to major databases (SpringerLink, ScienceDirect, Elsevier Education Collections) and by creating a dedicated Science Education section. The distinction between scientific and fiction collections will be further improved, with new acquisitions planned for the 2026–2027 academic year.
- **Expansion of Student Mobility Support**
  SDU University is strengthening international cooperation through new exchange agreements:
  – Ghent University (Belgium) under the *Erasmus+* framework;
  – SOKA University (Japan), offering tuition and housing support for SDU participants.
  The first student mobilities are scheduled for Spring 2026.
  Starting from 2026/2027, a permanent budget line will cover travel and accommodation costs for Erasmus+, Mevlana, and bilateral exchange programmes.
  The Global Teaching Fund will continue to provide competitive grants for research and teaching mobility.
- **Informatics Education Approach**
  The Informatics curriculum follows a "Scaffolded and Applied" model to prevent students from progressing "too deep too fast." Through courses such as *Methodologies of Teaching Informatics, Educational Psychology, Digital Literacy,* and *Educational Practice*, students learn to introduce complex concepts gradually, use accessible language, and design sequenced, age-appropriate learning materials. This approach ensures that graduates become confident informatics educators capable of building learners' understanding step by step.

F Summary: Expert recommendations (20.11.2025)

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Chemistry-Biology Education	Without requirements	-	30.09.2031
Bachelor Informatics Education	Without requirements	-	30.09.2031
Bachelor Mathematics Education	Without requirements	-	30.09.2031
Bachelor Physics Education	Without requirements	-	30.09.2031

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to strengthen the scientific education by offering courses on essential scientific subjects such as bioinformatics, molecular biology, green chemistry, circular economy, artificial intelligence, and big data.

E 2. (ASIIN 1.3) It is recommended to provide more financial support for students who want to study abroad.

E 3. (ASIIN 3.2) It is recommended to establish a micro-teaching laboratory at SDU, where teachers and fellow students can observe and review demonstration teaching sessions.

E 4. (ASIIN 3.2) It is recommended to provide more scientific literature on modern science topics and science education in SDU's library. Additionally, it is recommended to have a clear distinction between science and fiction books.

For Ba Informatics Education

E 5. (ASIIN 1.3) It is recommended to make transparent how students are taught to convey informatics subjects to high school students without going too deep too fast.

For Ba Chemistry-Biology Education

E 6. (ASIIN 1.3) It is recommended to align both curricular content and laboratory training more closely with international standards in chemistry and biology education.

E 7. (ASIIN 3.2) It is recommended to provide more technical equipment for conducting experiments in applied chemistry and cellular biology in the laboratories.

G Comment of the Technical Committees (05.12.2025)

Technical Committee 04 – Informatics/Computer Science (28.11.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and agrees with the experts' assessment.

The Technical Committee 04 – Informatics/Computer Science recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Informatics Education	Without requirements	-	30.09.2031

Technical Committee 09 – Chemistry, Pharmacy (24.11.2025)

Assessment and analysis for the award of the ASIIN seal:

The university has already addressed the main points of criticism identified by the expert group following the audit in its response to the draft report. These concerned the introduction of a compulsory final thesis for all students, the correction of the student workload and the corresponding ECTS credits specified in the module descriptions, as well as missing and outdated module descriptions. An investment plan to improve the equipment in the chemistry and biology laboratories was also presented. Based on these improvements, the expert group is not proposing any requirements, but only seven recommendations. The Technical Committee concurs with this assessment.

The Technical Committee 09 – Chemistry, Pharmacy recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Chemistry-Biology Education	Without requirements	-	30.09.2031

Technical Committee 10 – Life Sciences (25.11.2025)

Assessment and analysis for the award of the ASIIN seal:

The university has already addressed the main points of criticism identified by the expert group following the audit in its response to the draft report. These concerned the introduction of a compulsory final thesis for all students, the correction of the student workload and the corresponding ECTS credits specified in the module descriptions, as well as missing and outdated module descriptions. An investment plan to improve the equipment in the chemistry and biology laboratories was also presented. Based on these improvements, the expert group is not proposing any requirements, but only seven recommendations. The Technical Committee concurs with this assessment.

The Technical Committee 10 – Life Sciences recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Chemistry-Biology Education	Without requirements	-	30.09.2031

Technical Committee 12 – Mathematics (05.12.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC confirms the proposed recommendations.

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Mathematics Education	Without requirements	-	30.09.2031

Technical Committee 13 – Physics (28.11.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and, in particular, recommendation E1 regarding the mention of AI and Big Data, which is not specified in the report. Ms. Vega explains that this is a general recommendation for all programmes. As this is merely a recommendation, the members of the TC accept it and follow the experts' assessment without changes.

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

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditation**
Bachelor Physics Education	Without require-ments	-	30.09.2031

H Decision of the Accreditation Commission (12.12.2025)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission discusses the procedure and decides to delete recommendation E5, as the AC is of the opinion that it is up to the university to decide what constitutes appropriate teaching design for teacher training students in the field of informatics and whether this prepares them adequately for their future work as informatics teachers in high schools. Otherwise, the AC follows the assessment of the experts and the Technical Committees.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Chemistry-Biology Education	Without requirements	-	30.09.2031
Bachelor Informatics Education	Without requirements	-	30.09.2031
Bachelor Mathematics Education	Without requirements	-	30.09.2031
Bachelor Physics Education	Without requirements	-	30.09.2031

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to strengthen the scientific education by offering courses on essential scientific subjects such as bioinformatics, molecular biology, green chemistry, circular economy, artificial intelligence, and big data.

E 2. (ASIIN 1.3) It is recommended to provide more financial support for students who want to study abroad.

E 3. (ASIIN 3.2) It is recommended to establish a micro-teaching laboratory at SDU, where teachers and fellow students can observe and review demonstration teaching sessions.

E 4. (ASIIN 3.2) It is recommended to provide more scientific literature on modern science topics and science education in SDU's library. Additionally, it is recommended to have a clear distinction between science and fiction books.

For Ba Chemistry-Biology Education

E 5. (ASIIN 1.3) It is recommended to align both curricular content and laboratory training more closely with international standards in chemistry and biology education.

E 6. (ASIIN 3.2) It is recommended to provide more technical equipment for conducting experiments in applied chemistry and cellular biology in the laboratories.

Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment Report, the following **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Chemistry-Biology Education:

LO1	Use in practice the methods of teaching chemistry and biology with using modern technologies
LO2	Acquire the communicative competence and professional skills of the teacher by learning language and general educational subjects in an interdisciplinary approach.
LO3	Develop the scientific skills by working with physical-chemical installations and by carrying out scientific observation of chemical processes.
LO4	Apply the theoretical foundations and experimental knowledge of chemistry and biology knowledge in everyday life.
LO5	Analyze the results of lab activities in chemistry and biology laboratory classes through practical applications.
LO6	Systematize and summarize the laws of natural sciences, sectoral, regional and international problems, and analyze various options for improving the state of the environment.
LO7	Master new educational technologies, multimedia tools, software methods in profession, and also criteria-based assessment methods through practical experience.
LO8	Gain professional competence in the performance of scientific work related to applied research.

The following **curriculum** is presented:

Module Code	Module name		Compulsory/Elective	ECTS	Total Contact hours/ week	Lecture/week	Seminar/Practice/ week	Lab/ week
Semester 1						**Workload / hours**		
MDE 291	Physical Education 1		Compulsory	2	1	0	1	0
MDE 197	Foreign language 1		Compulsory	5	3	0	3	0
MDE 153	Module of Social and Political Knowledge (Cultural Studies)		Compulsory	2	1	1	0	0
MDE 154	Module of Social and Political Knowledge (Psychology)		Compulsory	2	1	1	0	0
MDE 283	Turkish language 1		Compulsory	4	3	0	3	0
PED 134,PED 103	Botany	Introduction to Biology and Terminology	Elective	5	3	1	1	1
PED 101, PED 136	Basis of General chemistry and terminology	Introduction to Chemistry and Terminology	Elective	5	3	1	1	1
PED 137	Mathematics		Compulsory	5	3	1	2	0
				30	18			
Semester 2								
MDE 292	Physical Education 2		Compulsory	2	1	0	1	0
MDE 171	History of Kazakhstan		Compulsory	5	3	2	1	0
PED 144	General Chemistry Lab		Compulsory	4	3	1	2	0
MDE 198	Foreign language2		Compulsory	5	3	0	3	0

MDE 284	Turkish language 2	Compulsory	4	3	0	3	0
PED 135	Zoology	Compulsory	5	3	1	1	1
PED 133	Inorganic chemistry	Compulsory	5	3	1	1	1
			30	19			
Semester 3							
MDE 293	Physical Education 3	Compulsory	2	1	0	1	0
MDE 115-125	Kazakh language1/Russian Language 1	Compulsory	5	3	0	3	0
MDE 151	Module of Social and Political Knowledge (Political Science)	Compulsory	2	1	1	0	0
MDE 152	Module of Social and Political Knowledge (Sociology)	Compulsory	2	1	1	0	0
MDE 172	Philosophy	Compulsory	5	3	2	1	0
PED 202	Cytology and Histology	Compulsory	5	3	1	1	1
PED 303	Analytical Chemistry (qualitative analysis)	Compulsory	5	3	1	1	1
PED 273	Pedagogy	Compulsory	4	3	2	1	0
			30	18			
Semester 4							
MDE 294	Physical Education 4	Compulsory	2	1	0	1	0
MDE 173	Information and Communication Technologies (ICT)	Compulsory	5	3	1	2	0
MDE 116-126	Kazakh Language 2 / Russian Language 2	Compulsory	5	3	0	3	0
PED 266	Analytical Chemistry (quantitative analysis)	Compulsory	5	3	1	1	1

PED 274	Analytical Chemistry Lab.		Compulsory	3	2	0	0	2
PED 335, PED 108	Professional Oriented Foreign Language (CLIL)	Academic English	Elective	5	3	0	3	0
PED 363,PED 302	Plant and animal biology	Physiology of animals and plants	Elective	5	3	1	1	1
				30	18			
Semester 5								
MDE 161-162164-166-167-289	Economy -Law - Ecology - Entrepreneurship - Leadership-Financial Literacy		Elective	5	3	1	2	0
PED 336	Environmental chemistry		Elective	5	3	1	1	1
PED 338	Human Anatomy and Physiology		Compulsory	5	3	1	1	1
PED 393	Gene engineering		Compulsory	4	3	1	1	1
PED 371	Organic Chemistry I		Compulsory	6	4	2	1	1
PED 352	Biochemistry (Bioorganic chemistry)		Compulsory	5	3	1	1	1
				30	19			
Semester 6								
PED 372	Organic Chemistry II		Compulsory	5	3	1	1	1
PED 305	Microbiology		Compulsory	5	3	1	1	1
PED 351	Electrochemistry		Compulsory	5	3	1	1	1
PED 339	Biotechnology		Compulsory	5	3	1	1	1

PED 342	Chemical Industry		Compulsory	5	3	1	1	1
PED 368	Physical chemistry		Compulsory	5	3	1	1	1
				30	18			
Semester 7								
PED 482	Solving olympiad problems in chemistry		Compulsory	5	3	2	1	0
PED 488	Inclusive Education		Compulsory	5	3	2	1	0
PED 436	Management in education		Compulsory	5	3	2	1	0
PED 437	Criteria-based assessment technology		Compulsory	5	3	2	1	0
PED 474	Methods of teaching chemistry and STEM		Compulsory	5	3	1	2	0
PED 478	Methods of teaching biology and STEM		Compulsory	5	3	1	2	0
				30	18			
Semester 8								
PED 432	Research methods in science education		Compulsory	4	3	2	1	0
PED 444-497	Pre-graduation practicum	Pedagogical work-shop	Elective	4	3	0	3	0
PED 387	Teacher Professional Guidance		Compulsory	4	3	1	2	0
PED 460	Pedagogical Practice		Compulsory	10	10	0	10	0
PED 464,PED 462	Writing and defense of the thesis (pro-ject)	State exam on speci-ality	Elective	8	4	0	4	0
				30	23			
				240			**149**	

According to the Self-Assessment Report, the following **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Informatics Education:

LO1	Develop proficiency in both national and foreign languages and effectively apply scientific and methodological materials in professional activities, using learning strategies that cover various levels of cognition from memorization to creation.
LO2	Evaluate the basic requirements and challenges of human capital formation in modern educational science and apply innovative technologies and principles of educational management through effective and ethical teaching and empowering students to realize their full potential.
LO3	Apply modern trends in the development of computer graphics and the principles of 3D modeling in the design of multimedia and virtual educational resources by creating interactive 3D models of educational content, designing visually attractive graphics and animation, developing virtual reality simulators for educational purposes
LO4	Establish the educational process in the context of updated content of secondary education, taking into account the characteristics of development processes, targeted development of students and students by analyzing and comprehending the new content and requirements of secondary education and using this knowledge to design effective lesson plans and educational programmes.
LO5	Analyze complex development data sets to implement machine learning algorithms and models that can effectively identify patterns, trends, and insights in large and diverse data sets through participation in research projects and development of custom software solutions.
LO6	Apply mathematical methods and algorithms to solve practical problems, analyze conditions affecting the development of software, computer technologies and synthesize modern optimal information technologies by optimizing resource allocation, developing efficient algorithms or developing predictive models.
LO7	Apply fundamentals of physics, electronics, robotics, hardware programming, and STEM education by designing and building electronic circuits, programming robots, or intelligent systems to develop and implement innovative solutions to complex problems.
LO8	Develop a healthy lifestyle through a proactive approach to identifying social issues, using new technologies or creative methods to solve complex social problems, as well as regular physical activity and managing stress and mental health.
LO9	Proficient in programming languages (OOP, functional), knows application development methodologies and processes through web or mobile application development.
LO10	Utilize the principles and technologies underlying computer networks, including protocols, routing, switching, and security, by designing, configuring, and maintaining local and wide area networks and network hardware and software, troubleshooting, and optimizing performance.
LO11	Apply economic theories, environmental principles and human rights norms to analyze and propose solutions to modern problems.

The following curriculum is presented:

Module Code	Module name	Compul-sory/Elective	ECTS	Contact hours	Contact Hours Distribu-tion		
Semester 1					Lec-ture	Semi-nar/Prac tice	Lab
MDE 291	Physical Education 1	Compulsory	2	1	0	1	0
MDE 197 /MDE 199	Foreign language1	Compulsory	5	3	0	3	0
MDE 111-127	Kazakh language1	Compulsory	5	3	0	3	0
MDE 283/ MDE 285	Turkish language 1	Compulsory	4	3	0	3	0
MDE 173	Information and Communication Technologies (in English)	Compulsory	5	3	1	2	0
PED 151	Learning and Communication Skills	Compulsory	3	2	0	2	0
PED 141	Mathematics	Compulsory	5	3	1	2	0
			29	17			
Semester 2							
MDE 292	Physical Education 2	Compulsory	2	1	0	1	0
MDE 171	History of Kazakhstan	Compulsory	5	3	2	1	0
MDE 112-128	Kazakh language2	Compulsory	5	3	0	3	0
MDE 198/ MDE 200	Foreign language2	Compulsory	5	3	0	3	0
MDE 284/	Turkish language 2	Compulsory	4	3	0	3	0

MDE 286							
PED 143	Basics of Programming Language	Compulsory	5	3	1	2	0
PED 128	English for Special Purposes 1	Elective	5	3	0	3	0
PED 108	Academic English 1						
			31	18			
Semester 3							
MDE 293	Physical Education 3	Compulsory	2	1	0	1	0
PED 269	Data Structures and Algorithms	Compulsory	5	3	1	2	0
MDE 172	Philosophy	Compulsory	5	3	2	1	0
MDE 164	Ecology	Elective	5	3	1	2	0
MDE 161	Economy						
MDE 162	Law						
MDE 166	Entrepreneurship						
MDE 289	Financial Literacy						
MDE 167	Leadership						
PED 267	Database systems	Compulsory	5	3	1	2	0
PED 268	Object Oriented Programming	Compulsory	5	3	1	2	0
PED 142	Mathematics 2	Compulsory	5	3	1	2	0
			32	19			
Semester 4							
MDE 294	Physical Education 4	Compulsory	2	1	0	1	0
PED 272	Computer Architecture	Compulsory	5	3	1	2	0

PED 273	Pedagogy	Compulsory	4	2	0	2	0
MDE 151	Module of Social and Political Knowledge (Political Science)	Compulsory	2	1	0	1	0
MDE 152	Module of Social and Political Knowledge (Sociology)	Compulsory	2	1	0	1	0
PED 280	Computing Systems	Compulsory	6	4	2	2	0
PED 276	Electronics (Robotics)	Compulsory	6	4	2	2	0
PED 198	Educational practice	Compulsory	1	1	0	1	0
			28	16			
Semester 5							
PED 379	Web programming	Compulsory	5	3	1	2	0
MDE 153	Module of Social and Political Knowledge (Cultural Studies)	Compulsory	2	1	0	1	0
MDE 154	/Module of Social and Political Knowledge (Psychology)	Compulsory	2	1	0	1	0
PED 381	Basics of Statistics	Compulsory	5	3	1	2	0
PED 382	Computer networks	Compulsory	5	3	1	2	0
PED 383	Theory of Computation	Compulsory	6	4	2	2	0
PED 384	Graphic Design and 3D modelling	Compulsory	5	3	1	2	0
			30	18			
Semester 6							
PED 386	Software Engineering	Compulsory	5	3	1	2	0
PED 388	Digital Literacy	Compulsory	5	3	1	2	0
PED 310	Professional Oriented Foreign Language(CLIL)	Compulsory	3	2	0	2	0
PED 397	Educational practice	Compulsory	5	3	1	2	0

PED 394	Solving Olympiad Problems in Informatics	Compulsory	6	4	2	2	0
PED 396	Internet of things	Compulsory	6	4	2	2	0
			30	19			
Semester 7							
PED 400	Social Project Development	Compulsory	5	3	1	2	0
PED 481	Methodology of teaching Informatics and STEM	Compulsory	5	3	1	2	0
PED 436	Management in education	Compulsory	5	3	1	2	0
PED 435	Multimedia in Education	Compulsory	5	3	1	2	0
PED 483	Educational Psychology	Compulsory	5	3	1	2	0
PED 487	Data Science and Machine Learning Basics	Compulsory	5	3	1	2	0
			30	18			
Semester 8							
PED 437	Criteria-based assessment technology	Compulsory	5	3	2	1	0
PED 486	Curriculum Design and Development	Compulsory	5	3	1	2	0
PED 491	Pre-graduation practicum	Compulsory	4	2	0	2	0
PED 489	Pedagogical Practice	Compulsory	8	5	0	5	0
PED 493	Writing and defense of the thesis (project)	Elective	8	5	0	5	0
PED 500	State exam on speciality						
			30	18			
			240	149			

According to the Self-Assessment Report, the following **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Mathematics Education:

LO1	Demonstrate a deep understanding of mathematical concepts and theories by analyzing, synthesizing, and evaluating mathematical information from a variety of sources.
LO2	Communicate this understanding effectively to others through clear and concise explanations using appropriate mathematical language and representations.
LO3	Utilize technology effectively in teaching and learning of mathematics by identifying and selecting appropriate technological tools and resources, applying them in mathematical problem-solving, and evaluating their effectiveness for enhancing student learning.
LO4	Prepare students for participation in mathematics Olympiads at national and international levels by designing and implementing challenging and authentic problem-solving tasks that develop students' critical thinking, analysis, synthesis, and evaluation skills.
LO5	Develop proficiency in Python programming language for mathematical modeling, data analysis, and visualization by practicing coding skills at various levels of complexity, analyzing and evaluating algorithms and data structures, and utilizing appropriate libraries and frameworks.
LO6	Apply mathematical concepts and reasoning to solve real-world problems in various fields by analyzing and interpreting data, formulating mathematical models, testing hypotheses, and making predictions or recommendations based on mathematical evidence.
LO7	Demonstrate effective communication skills, both orally and in writing, to explain complex mathematical concepts and theories to different audiences by using appropriate communication strategies, such as summarizing, paraphrasing, and elaborating, and by utilizing appropriate mathematical language and representations.
LO8	Design and implement effective mathematics instruction and assessment strategies that promote student learning and achievement by analyzing student needs, setting learning objectives, selecting appropriate instructional methods and materials, and utilizing formative and summative assessment techniques.
LO9	Conduct original research in mathematics education using appropriate research methods and tools by formulating research questions, designing research studies, collecting and analyzing data, and interpreting and reporting findings using appropriate statistical and qualitative techniques.
LO10	Collaborate with other educators, researchers, and stakeholders in the field of mathematics education, both nationally and internationally, by sharing knowledge and expertise, participating in professional organizations and conferences, and engaging in professional development activities to promote excellence in mathematics education

The following curriculum is presented:

Module Code	Module name	Compulsory/Elective	ECTS	Contact hours
Semester 1				
PED 129	Mathematical Analysis 1	Compulsory	5	3
PED 138	Elementary Mathematics + Educational Practice	Compulsory	5	3
MDE 171	History of Kazakhstan	Compulsory	5	3
MDE 291	Physical Education 1	Compulsory	2	1
MDE 197/199	Foreign Language (English)	Compulsory	5	3
MDE 111/113/115/117/119/121/123/125/127	Kazakh Language 1 / Russian Language 1	Compulsory	5	3
MDE 283/285	Turkish Language 1	Compulsory	3	2
MDE 160	Community Engagement and Value-Based Society 1	Compulsory	1	1
Semester 2				
PED 132	Mathematical Analysis 2	Compulsory	5	3
PED 111	Linear Algebra	Compulsory	5	3
PED 139	Introduction to Geometry	Compulsory	5	3
MDE 292	Physical Education 2	Compulsory	2	1
MDE 198/200	Foreign Language 2 (English)	Elective	5	3
MDE 112/114/116/118/122/124/126/128	Kazakh Language 2 / Russian Language 2	Elective	5	3
MDE 284/286	Turkish Language 2	Compulsory	3	2

MDE 170	Community Engagement and Value-Based Society 2	Compulsory	1	1
Semester 3				
PED 131	Mathematical Analysis 3	Compulsory	5	3
PED 356	Discrete Mathematics	Compulsory	5	3
PED 244	Analytic Geometry	Compulsory	5	3
MDE 173	Information and Communication Technologies (English)	Compulsory	5	3
MDE 293	Physical Education 3	Compulsory	2	1
PED 265/MDE 289/166/163/161/168/169	Ecology and Life Security Precautions	Elective	5	3
	Financial Literacy	Elective	5	3
	Entrepreneurship	Elective	5	3
	Fundamentals of Anti-Corruption Culture	Elective	5	3
	Innovative Trends	Elective	5	3
	Social Psychology	Elective	5	3
PED 256	Programming for Mathematics	Elective	5	3
PED 247	General Physics 1	Elective	5	3
Semester 4				
PED 246	Mathematical Analysis 4	Compulsory	6	4
PED 359	History of Mathematics	Compulsory	5	3
PED 223	Pedagogy	Compulsory	3	2
MDE 153	Module of Social and Political Knowledge (Cultural Studies)	Compulsory	2	1
MDE 154	Module of Social and Political Knowledge (Psychology)	Compulsory	2	1
MDE 294	Physical Education 4	Compulsory	2	1
PED 225	Pedagogical Practice 1 (Continuous)	Compulsory	3	2
PED 357	Algorithms and Olympic Programming	Elective	5	3

PED 255	General Physics 2	Elective	5	3
Semester 5				
PED 257	Number Theory and Solving Olympiad Problems 1	Compulsory	5	3
PED 318	Ordinary Differential Equations	Compulsory	5	3
PED 327	Mathematical Statistics	Compulsory	5	3
PED 263	Multimedia Technologies in Education	Compulsory	4	3
MDE 151	Module of Social and Political Knowledge (Political Science)	Compulsory	2	1
MDE 152	Module of Social and Political Knowledge (Sociology)	Compulsory	2	1
MDE 172	Philosophy	Compulsory	5	3
Semester 6				
PED 300	Mathematics Teaching Skills	Compulsory	5	3
PED 328	Calculation Methods	Compulsory	5	3
PED 361	Applied Statistics	Compulsory	5	3
PED 391	Complex Analysis	Compulsory	5	3
PED 450	Teaching Students to Solve Olympiad Problems	Compulsory	5	3
PED 128	English for Special Purposes 1 (CLIL)	Elective	5	3
PED 108	Academic English	Elective	5	3
Semester 7				
PED 380	Methods of Teaching Mathematics and STEM	Compulsory	5	3
PED 437	Criteria-Based Assessment Technology	Compulsory	5	3
PED 479	Research Methods in Education 1	Compulsory	5	3
PED 436	Management in Education	Compulsory	5	3
PED 480	Inclusive Education	Compulsory	5	3
PED 398	Teaching Practice (Continuous)	Compulsory	4	0
Semester 8				

PED 408	Research Methods in Education 1	Compulsory	6	4
PED 459	Passing State Examinations in Two Major Disciplines	Compulsory	8	2
PED 460	Pedagogical Practice	Compulsory	8	0
PED 495	Special Topics in Mathematics	Compulsory	5	3
PED 444/497	Pre-Diploma Practice	Elective	4	0
	Pedagogical Workshop	Elective	4	3

According to the Self-Assessment Report, the following **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Physics Education:

LO1	Develop proficiency in both national and foreign languages and effectively apply scientific and methodological materials in professional activities, using learning strategies covering various levels of cognition from memorization to creation.
LO2	Apply the fundamental principles of physics, mathematics and astronomy to solve complex problems using advanced mathematical and scientific methods to promote a deep understanding of the relationship between different scientific disciplines.
LO3	Develop and implement effective methods of teaching physics, paying special attention to a variety of learning styles, as well as comprehensively assesses student learning using various tools and methods, creating an inclusive educational environment.
LO4	Develop interactive physical simulations using advanced programming, algorithmic problem solving and web technology skills to refine learning methodologies and effectively communicate complex physical concepts.
LO5	Analyze sociological and political concepts related to cultural studies, psychology, political science and sociology, providing a contextual background for historical and modern events in Kazakhstan, giving students the opportunity to navigate the intersection of education and social structures.
LO6	Manage the educational environment effectively, understanding the principles of education management, conducts research, applying reliable methodologies to promote the development of education.
LO7	Understand and analyze the main problems and requirements of human capital formation in modern pedagogical science, as well as apply innovative technologies and ethical principles in the management of the education system for effective and ethical teaching and empowering students to fully realize their potential.
LO8	Form students' understanding of the importance of a healthy lifestyle, using innovative approaches to physical education and psychological support aimed at improving the physical and mental well-being of students.
LO9	Trace the development of basic physical concepts, understand their historical context, appreciate the contributions of different cultures and key figures, and effectively communicate these ideas.
LO10	Apply economic theories, environmental principles and human rights norms to analyze and propose solutions to modern problems.

The following curriculum is presented:

Module Code	Module name	Compul-sory/Elective	ECTS	Con-tact hours	Contact Hours Distri-bution		
Semester 1					Lec-ture	Semi-nar/Practice	Lab
MDE 153	Module of Social and Political Knowledge (Cultural Studies)	Compulsory	2	1	1	0	0
MDE 154	Module of Social and Political Knowledge (Psychology)	Compulsory	2	1	1	0	0
MDE 291	Physical Education 1	Compulsory	2	1	0	1	0
PED 105	English for Special Purposes 1	Compulsory	5	3	0	3	0
PHY 111	Mechanics 1	Compulsory	5	3	1	1	1
PHY 112	Calculus 1	Compulsory	5	3	1	2	0
MDE 109	Foreign language 1	Compulsory	5	3	0	3	0
MDE 283 MDE 285	Turkish language 1	Compulsory	4	3	0	3	0
			30	19			
Semester 2							
MDE 292	Physical Education 2	Compulsory	2	1	0	1	0
PHY 121	Mechanics 2	Compulsory	4	3	1	1	1
PHY 122	Calculus 2	Compulsory	5	3	1	2	0
PHY 124	English for Specific Purposes 2	Compulsory	5	3	0	3	0
MDE 284 MDE 286	Turkish language 2	Compulsory	4	3	0	3	0
MDE 171	History of Kazakhstan	Compulsory	5	3	2	1	0
MDE 191	Foreign language 2	Compulsory	5	3	0	3	0
			30	20			
Semester 3							

MDE 151	Module of Social and Political Knowledge (Political Science)	Compulsory	2	1	1	0	0
MDE 152	Module of Social and Political Knowledge (Sociology))	Compulsory	2	1	1	0	0
MDE 293	Physical Education 3	Compulsory	2	1	0	1	0
PED 277	Introduction to Programming	Compulsory	5	4	1	2	1
PED 360	Pedagogy	Compulsory	5	3	2	1	0
PHY 231	Molecular Physics and thermodynamics	Compulsory	9	6	2	2	2
MDE 111 MDE 113 MDE 115 MDE 117 MDE 121 MDE 123 MDE 125 MDE 127	Kazakh Language 1 / Russian Language 1	Compulsory	5	3	0	3	0
			30	18			
Semester 4							
MDE 173	Information and Communication Technologies (in English)	Compulsory	5	3	1	2	0
MDE 294	Physical Education 4	Compulsory	2	1	0	1	0
PHY 241	Electrostatics and current	Compulsory	9	6	2	2	2
PHY 242	Physiology of Pupils	Compulsory	4	3	2	1	0
MDE 112 MDE 114 MDE 116 MDE 118 MDE 122 MDE 124 MDE 126 MDE 128	Kazakh Language 2/Russian language 2	Compulsory	5	3	0	3	0
PED 204 PED 207	Object Oriented Programming / Introduction to Algorithms	Elective	5	4	1	2	1
			30	19			

Semester 5							
MDE 172	Philosophy	Compulsory	5	3	2	1	0
PED 259	Statistics and probability	Compulsory	5	3	1	2	0
PHY 351	Electrodynamics	Compulsory	6	4	1	2	1
PHY 355 MDE 161 MDE 162 MDE 164 MDE 166 MDE 167 MDE 289	Economy - Law - Ecology - Entrepreneur-ship - Leadership - Financial literacy	Elective	5	3	2	1	0
PED 321	Web programming - Robotics	Elective	5	4	1	2	1
PHY 353	Physics modelling - Computer simulation in Physics	Elective	4	3	1	1	1
			30	20			
Semester 6							
PHY 362	Optics	Compulsory	6	4	1	2	1
PHY 363	Physics Olympiad	Compulsory	5	3	1	2	0
PHY 471	History of Physics	Compulsory	4	3	1	2	0
PHY 473	Modern Physics	Compulsory	5	3	1	2	0
PED 439 PHY 364	Methodology of teaching Physics / Project based Learning in Science	Elective	5	3	1	2	0
PHY 475 PHY 476	Introduction to astronomy / Modern Astrophysics	Elective	5	3	2	1	0
			30	19			
Semester 7							
PHY 361	Assessment in Education	Compulsory	4	3	1	2	0

PHY 472	Content and Language Integrated Learning		Compulsory	5	3	1	2	0
PHY 474	Experimental Physics		Compulsory	6	4	1	1	2
PED 388 PED 435	Digital Literacy	Multimedia in education	Elective	5	3	1	2	0
PED 465 PHY 477	Inclusive education	Leadership in Education	Elective	5	3	2	1	0
PED 436 PHY 357	Management in education	Psychology in Education	Elective	5	3	2	1	0
				30	18			
Semester 8								
PED 387	Teacher's professional guidance		Compulsory	4	3	1	2	0
PHY 481	Research in education		Compulsory	6	4	2	2	0
PHY 482	Pedagogical practice		Compulsory	8	6	0	6	0
PHY 462 PHY 464	State exam on speciality	Writing and defense of the thesis (project)	Elective	8	6	0	6	0
PED 444 PED 497	Pre-diploma practice	Pedagogical workshop	Elective	4	3	1	2	0
				30	22			
				240	155			