# Accreditation Report

**Cluster "Engineering"**

**Kyiv School of Economics**

**Reference Number IP-1227-1**

**25th Meeting of the ZEvA Commission on 4 November 2025**

**Agenda item 04.02**

| Study Programme | Degree | Programme Duration | Type of Programme | ECTS Credits |
|---|---|---|---|---|
| Unmanned Aerial Vehicles (UAV) | Master | 16 months | Full-Time / Part-Time | 90 |
| Micro- and Nanoelectronics (MNE) | Master | 16 months | Full-Time | 90 |

**Accreditation contract signed on**: 3 March 2025

**Date of site visit**: 9 July 2025

**Contact person at the higher education institution**: Viktoriia Rudyk, Study Programme Accreditation Manager, Kyiv School of Economics, vrudyk@kse.org.ua

## Expert Reviewer Panel

### Representation of Higher Education Institutions

**Unmanned Aerial Vehicles**

- Prof. Dr. Andreas Strohmayer, Managing Director, Institute of Aircraft Design, University of Stuttgart, Germany, Website
- Prof. Dr. Carsten Braun, Professor for Aerial Vehicle Engineering, Faculty of Aerospace Engineering, University of Applied Sciences Aachen, Website

**Micro- and Nanoelectronics**

- Prof. Dr.-Ing. Moustafa Nawito, Professor of Electrical Engineering, IU International University of Applied Sciences, Germany, Website
- Dr. Serhii Stepenko, Head Researcher and Associate Professor, Chernihiv Polytechnic National University, Ukraine, Website

### Representation of Professions

- Dr. Felix Finger, Airbus Defence and Space GmbH, Manching, Germany (UAV Programme)
- Dr. Jan van den Hurk, Senior Academic Councillor, RWTH Aachen University, Germany (MNE Programme), Website

### Representation of Students

- Mr. Martin Peschel, Master's Student in Aerospace Engineering, University of Stuttgart, Germany (UAV Programme)
- Mr. Joshua Weygant, PhD Student in Engineering, University of Cambridge, UK (MNE Programme)

## ZEvA Project Officer

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**Hanover, 8 September 2025**

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# I. Final Vote of the Expert Panel and Decision of the ZEvA Commission

## 1. Decision of the ZEvA Commission

The ZEvA Commission follows the experts' report and recommendations and acknowledges the university's response to the accreditation report dated 8 September 25.

The ZEvA Commission decides to accredit the two study programmes

1. Unmanned Aerial Vehicles (Master)
2. Micro- and Nanoelectronics (Master)

offered by the Kyiv School of Economics with the following general conditions:

1. The number of ECTS credits for the master's thesis has to be increased to at least 15 ECTS credits in workload.
2. The syllabi of elective courses have to be as specific as the syllabi of mandatory courses.

and the following conditions specific to programme 2:

1. A course on data converters or on on-chip sensors or on advanced RFIC design must be offered as an elective course.
2. Either the course on communication electronics or the course on analogue integrated circuits has to become mandatory. Alternatively, the title of the programme has to be changed so as to make programme title and course content match.

for a period of six years. The conditions have to be fulfilled within a period of 12 months. Failure to comply with the conditions in due time will result in the withdrawal of the accreditation. This decision is based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), the Framework of Qualifications of the European Higher Education Area and the recommendations of the ECTS Users' Guide as referred to in the ZEvA Manual for the External Assessment of Study Programmes.

# 2. Central Findings and Final Vote of the Expert Panel

## 2.1 Central Findings of the Experts: Executive Summary

The expert panel agrees that the overall concept and profile of the University as a private institution of higher education is convincing and well-integrated. During the online accreditation talks, it became apparent that the level of motivation and engagement across all levels of hierarchy at the University, from management over faculty to students, is very high. A large degree of openness towards possibilities for improvement and development as well as high levels of self-reflection were perceivable. Coherence in communication across all levels of the University hierarchy contributes to a positive atmosphere from which students also benefit significantly.

Correspondingly, the expert group also perceived a high degree of student satisfaction, which is due to a number of aspects that support a student-centred approach at the University, such as, primarily, a wide variety of electives from which students can choose to create individual study plans, a general technical infrastructure and infrastructure for distance learning that meets all requirements of the respective programme and the personal life situation of students, and student support services that are geared towards the needs of students.

During the accreditation talks, which also involved representatives from industry and companies cooperating with the University, the expert panel also convinced itself of the adaptiveness with which the two study programmes under consideration meet the needs of Ukraine's current and future labour market. In particular, the orientation of the University towards dual-use technologies and its integration into European supply chains is seen by the experts as an apt strategic move. This labour-market orientation, it was agreed, is to the clear benefit of students, external stakeholders, and the University. Closed and effective feedback loops between industry and the University allow for positive dynamics in the study programmes' further development in this regard. Graduates who have no problems immediately joining companies provide a direct return on the resources and time invested in the study programmes.

The expert group also emphasizes that staff development opportunities at the University are extensive and well-used, and thus also contribute to an improvement of the teaching and learning experience of students. In such an environment, staff can dedicate sufficient resources to teaching, research and service duties. Students appreciate the high share of teaching staff with a background in industry.

Moreover, the quality assurance and management system of the University seems to be highly effective. Feedback loops are closed and well-functioning.

At the same time, and notwithstanding the positive impression received, the expert panel has issued a set of two general conditions that apply to both programmes. First, the number of ECTS credits for the master's thesis has to be increased to at least 15 ECTS credits in workload in order to make this part of the study programmes reflective of the weight and meaning that is generally attached to the final thesis of a study programme. Second, the syllabi of elective courses have to be as specific as the syllabi of mandatory courses so as to provide students with the same level of information about the most relevant aspects of a course.

With regard to programme-specific conditions, the expert group has issued none for programme 1, and two for programme 2. First, a course on data converters or on on-chip sensors or on advanced RFIC design must be offered as an elective course since this would be expected of a study programme on micro- and nanoelectronics. Second, and this connection, either the course on communication electronics course or the course on analogue integrated circuits has to become mandatory since a study programme with the title "Micro- and Nanoelectronics" must contain at least one of these courses in order to make programme title and course content match. Alternatively, the title of the programme has to be changed to, for example, "Master of Digital Electronics", so as to make programme title and course content match.

## 2.2 General Aspects

### 2.2.1 General Recommendations:

The expert panel has issued a set of four general recommendations that apply to programmes 1 and 2 (see chapters 2.3.1 and 2.4.1 for programme-specific recommendations):

1. At least one (mandatory) course on scientific methodology should be introduced into the curricula to ensure that the programme provides a solid foundation for students who would like to carry on with doctoral studies in their respective field.

2. The university should consider dropping English language courses from the core curriculum to free up ECTS credits for more subject-related courses (see recommendation 1) and instead make those English courses part of the preparation for / requirements of the Master's programme.

3. The University already has an official Gender Equality Policy. In addition, it should also introduce an official strategy for students with special needs.

4. The University should try to further reduce the amount of content overlap between courses.

### 2.2.2 General Conditions

The expert panel has issued a set of two general conditions that apply to programmes 1 and 2 (see chapters 2.3.1 and 2.4.1 for programme-specific recommendations):

1. The number of ECTS credits for the master's thesis has to be increased to at least 15 ECTS credits in workload.

2. The syllabi of elective courses have to be as specific as the syllabi of mandatory courses.

## 2.3 Programme 1: Unmanned Aerial Vehicles (Master)

### 2.3.1 Recommendations

For programme 1, the expert panel has issued no programme-specific recommendations.

### 2.3.2 Conditions

For programme 1, the expert panel has issued no programme-specific conditions.

### 2.3.3 Recommendation to the ZEvA Commission

The expert group recommends the accreditation of programme 1 "Unmanned Aerial Vehicles (Master)" for the duration of six years under the aforementioned general and programme-specific conditions, which have to be fulfilled by the University within 12 months.

## 2.4 Programme 2: Micro- and Nanoelectronics (Master)

### 2.4.1 Recommendations

For programme 2, the expert panel has issued a set of three programme-specific recommendations:

1. The University should offer more electives on soft skills, such as project management and presentation skills, for students to choose from.

2. The University should consider introducing preparatory courses in core topics of micro- and nanoelectronics to bring students on the same level before they officially start the programme.

3. The number of ECTS credits for the practice module (pre-diploma internship) should be raised from 9 ECTS to 10 ECTS credits (in accordance with national regulations).

### 2.4.2 Conditions

For programme 2, the expert panel has issued a set of two programme-specific conditions:

1. A course on data converters or on on-chip sensors or on advanced RFIC design must be offered as an elective course.

2. Either the course on communication electronics or the course on analogue integrated circuits has to become mandatory. Alternatively, the title of the programme has to be changed so as to make programme title and course content match.

### 2.4.3 Recommendation to the ZEvA Commission

The expert group recommends the accreditation of programme 2 "Micro- and Nanoelectronics (Master)" for the duration of six years under the aforementioned general and programme-specific conditions, which have to be fulfilled by the University within 12 months.

# II. Evaluation Report of the Expert Panel

## 1. Purpose, Design and Context of the Accreditation Procedure

In March 2025, the Kyiv School of Economics (KSE), Ukraine, commissioned the Central Evaluation and Accreditation Agency Hanover (ZEvA) with the external quality assessment and international accreditation of two study programmes in the field of engineering. For this purpose, the agency assembled a panel of eight experts, four from academia, two professional experts and two student experts.

The assessment was conducted according to the criteria laid out in the "ZEvA Manual for the External Assessment of Study Programmes". This assessment framework is fundamentally based on the "European Standards and Guidelines for Quality Assurance in Higher Education (ESG)" (ENQA 2015), the "Framework for Qualifications for the European Higher Education Area" (2005) and the "ECTS Users' Guide" (European Communities, 2015).

This report is based on the experts' desktop validation of the university's self-report and on the outcomes of the online accreditation talks with faculty, staff and students on 9 July 2025.

The accreditation report serves as a basis for the ZEvA Commission to decide on the accreditation of the two study programmes, and as a source of information for the general public as regards the quality and the accreditation status of the programmes.

## 2. Profile and Mission of the University

KSE is a group of companies that consists of three distinct legal entities: the KSE Foundation, the KSE Institute, and KSE University. The latter includes the Business School and the School of Engineering, which has been founded only in 2024. KSE itself has its roots in the establishment of the Master's programme in Economics, taught in English, in 1996. This programme was launched by the Economic Education and Research Consortium (EERC) and the Eurasia Foundation at Kyiv-Mohyla Academy. EERC's mission was to enhance economic education and research capacity in post-socialist countries.

In 2017, following the establishment of KSE University within the KSE group of companies, licenses were obtained to conduct educational activities. While the KSE Institute focuses on research in different areas, such as sociology, regional development, procurement, food and land use, public finance and governance, and health economics, KSE University is a private higher education institution offering Bachelor's and Master's programs in a range of fields. At KSE University's Business School, business education is combined with academic learning to prepare students for a career in economics and business. The University's first programs were in "Economic Analysis", "Business and Financial Economics" and "Public Policy and Governance". In 2021, the University introduced new Bachelor's programs in "Business Analysis", "Economics and Big Data", "Software Engineering and Business Analysis", and in 2023, the University expanded again by introducing eight new programs, including "Psychology", "Law", "Artificial Intelligence", "Cybersecurity", and "Applied Mathematics" on the Bachelor's level, and "Memory Studies and Public History", "Urban Studies and Post-War Reconstruction", and "Social Psychology" on the Master's level. A feature of the Bachelor's programs is the transition to using English as the language of instruction starting from the second year of studies, while some graduate programs are taught in English from the beginning.

Due to the political situation in Ukraine, a shortage of specialists in semiconductor technologies has been identified, which hinders the development and production of strategic components for communication, control, navigation, and defence systems. In response, the University established the Engineering School in 2024 and introduced two new Master's programs, one in "Unmanned Aerial Vehicles" and another in "Micro- and Nanoelectronics", with the aim to train highly qualified engineering personnel capable of contributing to the development of Ukraine's strategically important industries, both in the defence and the civilian sector.

As of March 2025, 570 students are enrolled in the University's Bachelor's programs, around 390 in the Master's programs, and 16 students are enrolled in the University's PhD programs, which have been launched in 2024.

# 3. Assessment of the Study Programmes

## 3.1 General Aspects

### 3.1.1 Intended Learning Outcomes

The University has formulated sets of general competencies that students acquire through each of the two programmes and that align with the respective programme objective (see chapters 3.2.1 and 3.3.1). These general competencies overlap in three elements: (1) the ability to think abstractly, analyse, and synthesize; (2) the ability to conduct research at an appropriate level; and (3) the ability to generate new ideas (creativity).

#### 3.1.1.1 Experts' Appraisal

The expert reviewer group confirms that the general competencies that graduates of the programmes should have acquired are made explicit and reflect the overall programme objectives. The respective qualification resulting from each of the two programmes is clearly specified and communicated, and refers to the correct level of the national qualifications framework for higher education. The intended learning outcomes also include the future role of graduates in society and the personal development of students.

### 3.1.2 Structure and Content of the Study Programmes

#### 3.1.2.1 General Features

See chapters 3.2.2 for programme 1 and 3.3.2 for programme 2.

#### 3.1.2.2 Course Catalogues

See chapters 3.2.2 for programme 1 and 3.3.2 for programme 2.

#### 3.1.2.3 Internationalisation, Recognition and Mobility

The University has provided extensive documentation about its internationalization efforts in its self-assessment report. It has more than 60 formalized international partnerships with leading higher education institutions in the US, the EU, Canada, the UK and other countries. Recognition is regulated by national laws.

In cooperation with its international partners, the University also creates opportunities for academic mobility for its students as well as internships for staff. According to the self-assessment report, more than 70 KSE students annually participate in 15 international mobility programs, which allows them to study abroad. In particular, KSE offers semester exchange programmes with universities in the USA

(University of Connecticut, Brown University) as well as with European universities (Bocconi University, Sciences Po, SWPS University, SGH Warsaw School of Economics, New York University Prague, University of Tartu). Moreover, it implements double degree programmes, in particular, with partners in the USA and Canada.

Programme 1, as a very recent programme, is currently working to create conditions for international cooperation and academic mobility of students. The involvement of foreign partners and use of academic mobility mechanisms are at the stage of searching options.

In contrast, programme 2 is undertaking significant efforts to create conditions for international cooperation and academic mobility on the basis of its strategic cooperation with ETH Zurich, which already allows students to access lectures, educational materials, and tutorials. Students already have the opportunity to visit ETH laboratories to conduct measurements and characterize the developed prototypes within their thesis design research. Under ETH's programme for certificates of advanced study, graduates can conduct a several-week internship at ETH Zurich.

#### 3.1.2.4 Experts' Appraisal

The expert reviewer group agrees that the international outreach of the University and its integration in existing international networks of higher education is commendable, also in view of the recency of the KSE's academic existence and its current environment. All formal prerequisites to allow for students' academic mobility are in place. The procedures for the recognition of higher education qualifications, periods of study and prior learning, including the recognition of non-formal and informal learning, are fair, transparent and comply with national legislation. Students receive appropriate documentation that explains the qualification gained, including achieved learning outcomes and the context, level, content and status of the studies that were pursued and successfully completed.

### 3.1.3 **Teaching Faculty**

Both study programmes are staffed with faculty who are either active researchers or practitioners with professional and project implementation experience. The coordination of the recruitment process for academic staff is managed by the faculty recruitment manager in direct collaboration with the academic directors of the respective study programs along the regulations stipulated in KSE's Faculty Hiring Policy, which has been made available to reviewers as part of the self-assessment report.

According to national legislation, state recognition and confirmation from the Ministry of Education and Science of Ukraine are required to conduct educational activities. In 2024, the University got a license to offer PhD study programs. During the licensing process, the Ministry of Education and Science of Ukraine has also assessed the KSE's capability to conduct educational activities, including evaluating the faculty composition and their degree of qualification.

In addition to full-time faculty, part-time lecturers are also engaged. The University also frequently

invites foreign lecturers. In some cases, these lecturers are employed full-time, in others, they teach part-time or on a pro bono basis.

University faculty members receive information about available professional development programs, research projects, internships, and academic exchanges they can participate in. The University organizes short-term training programs, public lectures, discussions, and workshops with invited lecturers. The calendar of such events is available on the University website and through corporate communication networks. Specifically, KSE has launched a marathon of lectures in support of Ukraine with leading world intellectuals (https://kse.ua/ua/lektsi-na-pidtrimku-ukrayini/).

University faculty can participate in research projects conducted by the KSE Institute, including those commissioned by Ukrainian government organizations and major Ukrainian and international companies.

#### 3.1.3.1 Experts' Appraisal

The experts are convinced that KSE has appointed a sufficient number of qualified teaching faculty for both programmes. In the course of the online talks, the experts have also gained the impression that the programme profits from a highly motivated team. Processes for staff recruitment and conditions of employment appear transparent and fair, and follow clear regulations. Lecturers hold appropriate academic qualifications. Opportunities for professional development of teaching staff are also offered. The expert group was also pleased to see that the University encourages scholarly activities of staff. Staff support students extensively during their studies.

### 3.1.4 Infrastructure, Resources and Student Support

#### 3.1.4.1 General Infrastructure on Campus

According to the self-report of the University, it features modern classrooms equipped with multimedia tools, laptops, and video recording cameras for various educational purposes. There are several study rooms for independent learning, including one with freely accessible computer equipment, all of which are available to students at any time. Additionally, each floor of the University is equipped with multifunctional devices for educational use.

As KSE University continues to grow, it has expanded with a new space with classrooms, a place for students to relax both indoors and outdoors, as well as a space for public events. For recreation and leisure, an event hall is available for students to organize initiatives. Students and faculty with children can use a dedicated child-care room. The University also features recreational spaces on various floors. A specific office is provided for student self-government activities, and a communal mini-kitchen with necessary appliances for storing and heating meals is available.

In addition to these physical resources, the University has established a corporate messenger, the Moodle platform, KSE Hub, and personal student accounts to support the educational process and

virtual communication with students. The SLACK is a corporate mailing account which provides students with information about their studies, University events, and other opportunities within the KSE community. On the Moodle platform, students can access information about each course, including syllabi, lecture notes, electronic learning materials, and video recordings of classes. These resources, created by faculty members, are available for independent study, evaluation, and feedback. The University also uses a KSE Hub that allows study directors to conduct a general analysis of the student population, to analyse data on sources of funding for student education, to analyse student performance, including individual grade point average and student performance according to the ECTS grading scale, and it allows students to find information about the academic directors and coordinators of study programs, the structure of the study programme curriculum, and to choose elective courses. Moreover, each student has an electronic personal learning account, which serves as a gateway to information services that offer access to personalized information about their studies and electronic document management. The personal account includes services such as class schedules, study group details, academic records, individual learning paths, diploma supplements, and study contracts.

#### 3.1.4.2 Student Advice and Support Services

The University provides access to various resources and services, such as consultations, mentoring and psychological support. Centrally, KSE's Study Support Office seeks to ensure the organization of a high-quality educational process through programme coordinators who support students and assist faculty members. The key functions of the Study Support Office in organizing the educational process and supporting students include the coordination of processes and the provision of advisory support on academic matters such as enrolment, interruption and resumption of studies, completion and withdrawal, and transfer from other higher education institutions; the coordination of processes of administering and retaking assessments; the management of the recognition of formal, non-formal, and informal learning results; addressing student inquiries regarding their studies; creating class schedules and coordinating the video recording of classes; moderating the Moodle educational platform; assisting with course selection by students; and coordinating the collection of feedback from students.

#### 3.1.4.3 Equal Opportunities

According to the University, KSE operates on the principles of pluralism of opinions, equality, integrity, and mutual respect. To this end, KSE also implements a gender equality plan, which has been made available to the reviewers as part of the self-assessment report. The main objective of this plan is to "*improve gender equality and create a favorable environment for the development and achievements of all members of the university community. The Gender Action Plan is aimed at eliminating gender inequalities, ensuring equal opportunities and building a culture of equality in all aspects of university life.*"

KSE also says it is committed to providing equal learning and development opportunities for students

with special needs by creating an inclusive environment and offering personalized study plans to support their specific requirements. Academic directors and the Study Support Office of KSE provide support to these students as needed.

Students with special educational needs who require adjustments to the educational process can submit a request to the Study Support Office of KSE. After reviewing the request, a decision is made regarding the necessary modifications, which also consider negative impacts on other students and the assessment process.

#### 3.1.4.4 Experts' Appraisal

The expert group agrees that the physical and digital infrastructure seems sufficient for ensuring student learning success and progress. Powerful learning platforms and the possibilities they create enhance the experience of distance learning. The experts also commend KSE on its academic support services, which seek to ensure that students of the two programmes can concentrate on pursuing their studies successfully. The University's efforts to create equal opportunities for all students and staff at all levels are fully satisfactory and officially laid out in KSE's Gender Equality Policy. Although students with special needs have a reference point at the Study Support Office, the expert panel nonetheless recommends that the University introduce an official strategy for students with special needs.

### 3.1.5 **Student Learning and Assessment**

Credits are awarded not only for the time spent on learning but also for the achievement of specific learning outcomes, which are verified through various assessment methods, such as written exams, practical tasks, defence of projects, and other types of knowledge control.

According to the University, students have access to all documents regulating the educational process in general and rules for conducting exams in particular. The syllabus includes information about exams, requirements for academic integrity, etc.

The student is allowed one attempt to retake the final examination in accordance with paragraph 5.3.9 (1) of the "KSE Educational Process Guideline" (see appendix 5) if, based on the results of the final examination, the student has an unsatisfactory grade in the discipline and if such an unsatisfactory grade is the basis for expulsion due to the failure to complete the individual study plan.

The final grade for a course must be published in Moodle no later than 7 days after the end of the term. The final grade may be assigned or changed after this period if there is a decision from the committee regarding violations of academic integrity. Each student's grades are confidential and are not disclosed to other students.

A student has the right to use compensatory measures if, for valid reasons, he or she did not take part in the current or final control. More details on the use of compensatory measures in student assessment are described in paragraph 2.5.6 of the KSE Educational Process Guidelines.

Paragraph 2.5.9 of the KSE Educational Process Guidelines regulates the issue of appealing assessment results. A student may appeal both ongoing and final assessment results. Grounds for appealing an assessment result are limited to: (a) the faculty member's failure to comply with the assessment rules specified in the syllabus, or (b) a conflict of interest, which the student was not aware of and could not have been aware of before the assessment.

Students who complete programme 1 are issued with a higher educational diploma - Master in Aviation and Rocket-Space Technology. Students who successfully complete programme 2 are issued with a higher education diploma - Master in Micro and Nanosystems Engineering. KSE issues a diploma only if the student has successfully fulfilled the requirements of the study programme, in particular, if she or he has successfully completed the educational components at a total of 90 ECTS credits and has received a satisfactory grade based on the results of the final assessment. The diploma is attached to the diploma supplement. Specimen diploma supplements for each programme have been made available as part of the self-assessment report.

#### 3.1.5.1 Experts' Appraisal

The expert reviewer panel agrees, and the online talks with students of the study programmes under consideration have given no indication to the contrary, that the implementation of student-centred learning and teaching as well as the University's approach to student assessment complies with the requirements of the European Standards and Guidelines. In particular, the implementation of student-centred learning and teaching considers and uses different modes of delivery and a variety of pedagogical approaches. The reviewer group also confirms that assessment is consistent, fairly applied to all students and carried out in accordance with official procedures. A formal procedure for student appeals is in place. Students know the criteria for and method of assessment as well as criteria for marking in advance. The means of assessment allows students to demonstrate the extent to which the intended learning outcomes have been achieved. Procedures for dealing with student complaints are in place. The diploma supplement also contains all relevant information on this aspect of the study programmes.

### 3.1.6 **Quality Assurance**

According to the self-report of the University, the quality assurance system at KSE has two components: an internal and external quality assurance system. To ensure the quality of educational activities, the University has developed an internal quality assurance system based on the "KSE Quality Assurance Policies and Procedures" (see appendix 4), the "KSE Educational Process Guidelines" (see appendix 5) and the "KSE Academic Integrity Code" (see appendix 2). It is a system of principles, procedures, and measures to ensure the effectiveness of educational and administrative processes that directly affect the quality of study programs, ensure the achievement of learning outcomes, and the formation of key competencies in students, as well as contribute to their personal development.

To this end, the internal quality assurance system at KSE is described to rests on procedures for the development and revision of study programs, curricula, and syllabuses of courses, the implementation of a student-centered approach and creating opportunities for students to develop their individual learning paths, the internal monitoring of the quality of the educational process, merit-based human resources policies, adherence to the principles of academic integrity, and an education management system.

The core figure in the development, implementation, and quality assurance of the educational process in the programme is its Academic Director, who is responsible for developing, reviewing, and ensuring the effective functioning of the study programme and curricula, determining the necessary resources for the quality implementation of the study programme, internal and external monitoring of the study programme, study course, and the quality of the educational process organization, bringing together a team of professional lecturers and supporting them, and developing syllabi in accordance with the content of the study programme and internal standards, among other duties.

Decisions regarding the development of educational activities and the introduction of new study programs are made collectively with the involvement of various stakeholder groups. The stakeholders who interact in the process of ensuring the quality of education at KSE include the University Team (university management, academic directors and lecturers, Study Support Office, and managers and coordinators of various departments); university students and alumni; employers, partner organizations, and educational institutions; and also external experts (National Agency for Quality Assurance in Higher Education, KSE International Academic Council, international academic community experts). KSE also collaborates with interested companies that contribute to the creation, implementation, and development of study programs, create conditions for academic mobility of students, internships, practical training, and the implementation of joint projects. In some cases, companies are willing to provide financial support for the education of individual students.

International activity and cooperation with leading educational institutions is one of the priorities of the University, so study programs are subject to international expertise, particularly the International Academic Council of KSE. More information about the composition of the International Academic Council of KSE and its influence on KSE activities can be found on the University's website.[1]

#### 3.1.6.1 Experts' Appraisal

The experts have reached the conclusion that a purposeful quality assurance system has been set up by the University, which centrally involves external partners and stakeholders, both professionally and academically. As far as the experts can judge, adequate measures are taken to continuously monitor the quality of the programmes. Furthermore, the expert group has perceived a high level of satisfaction among the students with the way the programmes have been run so far, in particular, the possibilities

[1] See https://kse.ua/community/stories/international-academic-board/.

offered for distance learning and part-time study.

### 3.1.7 Transparency and Public Information

The University informs students in several ways. All public information regarding the educational process is posted on the University's website.[2] Descriptions of study programs are available on the University's website in the respective section. On the same page, applicants can find information about the admissions process. Information about courses, including syllabi, assignments, assessments, etc., can be found on the respective course pages in Moodle, which are freely accessible to enrolled student.

#### 3.1.7.1 Experts' Appraisal

The expert reviewer group considers the degree to which information about the two study programmes is available to the public on the website of the University as fully sufficient.

[2] See https://university.kse.ua/dokymenty.

## 3.2 Programme 1: Unmanned Aerial Vehicles (Master)

### 3.2.1 Intended Learning Outcomes

According to the University, the main objective of programme 1 is the preparation of highly qualified specialists capable of engaging in innovative activities in the development, production, and operation of unmanned aerial vehicles. To this end, the programme focuses on the expansion and deepening of professional knowledge acquired at the bachelor's level, as well as on the development of the ability to independently solve complex engineering, technical, and research problems regarding the latest aviation technology trends.

In addition to the general competencies that programme 1 and 2 have in common (see chapter 3.1.1), the University defines six general competencies that specifically apply to programme 1: the ability to identify, formulate, and solve problems; the ability to use information and communication technologies; the ability to adapt and act in new situations; the ability to work intently and persistently on the assigned tasks and undertaken responsibilities; the ability to learn and gain contemporary knowledge; and the ability to apply knowledge in practical situations.

Building on these general competencies, the University further defines eleven special (professional, subject-specific) competencies that are based on the field standard. These range from knowledge of the history, current state, challenges, and development prospects of aircraft to the ability to design and implement innovative hardware solutions for UAVs that integrate advanced communication and navigation systems to enhance UAV functionality and autonomy.

To acquire these competencies, programme 1 features 22 intended learning outcomes (ILO; also called programme learning outcomes). These range from "*Know and understand the principles of fundamental and engineering sciences that underlie aviation technology*" (ILO 1) to "*develop integrated systems of UAV hardware by incorporating advanced communication and navigation systems that meet modern standards for autonomy, resilience to interference, and operational efficiency*" (ILO 22).

#### 3.2.1.1 Experts' Appraisal

The expert reviewer group confirms that programme 1 is designed with overall programme objectives that are in line with standards defined by the field as well as the institutional strategy of KSE. The experts regard the programme-specific competencies and intended learning outcomes as fully appropriate for the programme's level of qualification. The intended learning outcomes are in line with the institutional strategy of the University and are made explicit in the programme's course catalogue.

### 3.2.2 Structure and Content of the Study Programme

Programme 1 complies with the requirements of the European Credit Transfer and Accumulation

System (ECTS). In line with the ECTS system, 1 credit is equivalent to 30 academic hours of workload. ECTS credits are assigned after students successfully complete a course's requirements. In total, programme 1 comprises 90 ECTS credits and lasts for 16 months (three semesters).

According to the University, the programme primarily focuses on four key aspects: (1) the study of advanced design techniques and methodologies for UAVs with an emphasis on innovative structural solutions, (2) the use of cutting-edge materials and the integration of complex systems, (3) in-depth exploration of UAV flight control systems (including algorithms for autonomous navigation and remote control), and (4) practice-oriented training involving industry practitioners. Mandatory courses in these areas cover 49 ECTS credits, while elective courses contribute 24 ECTS credits.

The maximum volume of educational components included in the structure of the programme is 5 credits, the minimum 3 ECTS credit. The volume of practical training is 10 ECTS credits. To the preparation and defence of the master's qualification work 7 ECTS credits are allocated. Elective courses are organized along two areas of UAV development, from which students can choose in accordance with their professional interests.

Block 1 "Development and Production of UAVs" covers the technical aspects of creating unmanned aerial vehicles, from structural design to manufacturing technologies, diagnostics, quality control, and preparation for certification. It develops engineering skills in working with materials, power circuits, and aviation standards (modern technologies for manufacturing parts of unmanned aerial vehicles, design of UAV structures of non-traditional structural and power schemes, reliability and survivability of unmanned aerial vehicles, diagnostics of elements of unmanned aerial vehicles and quality control, labour protection in the aviation and space rocket industry, aircraft certification).

Block 2 "UAV Onboard Systems and Operational Complexes" focuses on the development and application of onboard control, communication, navigation systems, as well as ground infrastructure and operational complexes. It includes the basics of programming and integration of software and hardware solutions for efficient UAV operation (theory of automatic control, equipment of unmanned aerial vehicles, communication and navigation systems of unmanned aerial vehicles, operational complexes based on unmanned aerial vehicles, ground infrastructure for unmanned aerial vehicles, basics of applied interactive programming).

Table 1 shows the specific structure of programme 1 for the full-time variant, Table 2 for the part-time variant of the programme.

*Table 1. Structure of study programme in Unmanned Aerial Vehicles (full time)*

| № | Study course | Year | Term | ECTS credit | Academic workload, hours | | | | | Form of final assessment |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | including | | | | |
| | | | | | | Class hours | | | self-study hours | |
| | | | | | | Total | including | | | |
| | | | | | | | lecture | practice | | |
| **Mandatory courses (MC)** | | | | | | | | | | |
| MC 1 | Aerodynamics and Flight Dynamics of Unmanned Aerial Vehicles | I | 1 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| MC 2 | Foreign Language | I | 1 | 5.0 | 150.0 | 60.0 | 0.0 | 60.0 | 90.0 | E |
| MC 3 | Modeling of Designs and Processes in Automated Systems | I | 1 | 5.0 | 150.0 | 40.0 | 30.0 | 10.0 | 110.0 | FE |
| MC 4 | Prospective Unmanned Systems Layouts and Their Manufacturing | I | 1 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| MC 5 | Foreign Language for Professional Purpose | I | 2 | 5.0 | 150.0 | 62.0 | 0.0 | 62.0 | 88.0 | E |
| MC 6 | Aircraft Design | I | 2 | 3.0 | 90.0 | 30.0 | 14.0 | 16.0 | 60.0 | FE |
| MC 7 | Prospective UAV Power Units and Their Parts | I | 2 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| MC 8 | Design of Unmanned Aerial Vehicles | I | 2 | 5.0 | 150.0 | 46.0 | 30.0 | 16.0 | 104.0 | E |
| MC 9 | On-board Systems of Unmanned Aerial Vehicles | I | 3 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| MC 10 | Innovative Economy and Management of Technological Startups | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| MC 11 | Intellectual Property and Scientific Research Organization | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***The total amount of credits for mandatory course*** | | | **49.0** | **1470.0** | **402.0** | **226.0** | **276.0** | **968.0** | |
| **Elective courses**<br>**(the student chooses a number of courses totaling 24 ECTS credits, including at least 24 ECTS credits of elective courses specific to the study programme)** | | | | | | | | | | |
| | **Selective Block 1: Development and Production of UAVs** | | | | | | | | | |
| EC.1 | Modern Technologies for Manufacturing UAV Parts | I | 2 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| EC.2 | Design Non-Traditional Structural and Power Schemes of UAVs | I | 3 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| EC.3 | Reliability and Durability of Unmanned Aerial Vehicles | I | 3 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| EC.4 | Diagnostics of UAV Elements and Quality Control | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| EC.5 | Labor Protection in the Aviation and Space Rocket Industry | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| EC.6 | Aircraft Certification | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| | **Selective Block 2: UAV Onboard Systems and Operational Complexes** | | | | | | | | | |
| EC.7 | Automatic Control Theory | I | 2 | 5.0 | 150.0 | 46.0 | 30.0 | 16.0 | 104.0 | E |
| EC.8 | Unmanned Aerial Vehicles Equipment | I | 3 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| EC.9 | Communication and Navigation Systems of Unmanned Aerial Vehicles | I | 3 | 5.0 | 150.0 | 48.0 | 30.0 | 18.0 | 102.0 | E |
| EC.10 | Operational Complexes based on Unmanned Aerial Vehicles | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| EC.11 | Ground Infrastructure for Unmanned Aerial Vehicles | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| EC.12 | Basics of Applied Interactive Programming | II | 4 | 3.0 | 90.0 | 32.0 | 16.0 | 16.0 | 58.0 | E |
| **Internship** | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IN.1 | Industrial internship | I | 3 | 5.0 | 150.0 | 2.0 | 0.0 | 2.0 | 148.0 | FE |
| IN.2 | Pre-diploma internship | II | 4 | 5.0 | 150.0 | 4.0 | 0.0 | 4.0 | 146.0 | FE |
| | ***The total amount of credits for internships*** | | | **10.0** | **300.0** | **6.0** | **0,0** | **6.0** | **294.0** | |
| **Final Attestation** | | | | | | | | | | |
| FA.1 | Master's thesis and defense | II | 4 | 7.0 | 210.0 | 10.0 | 0.0 | 10.0 | 200.0 | E |
| | **Total ECTS credit for all courses** | **x** | **x** | **90.0** | **2700.0** | **x** | **x** | **x** | **x** | |

*Table 2. Structure of study programme in Unmanned Aerial Vehicles (part time)*

| № | Study course | Year | Term | ECTS credit | Academic workload, hours | | | | | Form of final assessment |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | including | | | | |
| | | | | | | Class hours | | | self-study hours | |
| | | | | | | Total | including | | | |
| | | | | | | | lecture | practice | | |
| **Mandatory courses (MC)** | | | | | | | | | | |
| MC 1 | Aerodynamics and Flight Dynamics of Unmanned Aerial Vehicles | I | 1 | 5.0 | 150.0 | 16.0 | 12.0 | 4.0 | 134.0 | E |
| MC 2 | Foreign Language | I | 1 | 5.0 | 150.0 | 18.0 | 0.0 | 18.0 | 132.0 | E |
| MC 3 | Modeling of Designs and Processes in Automated Systems | I | 1 | 5.0 | 150.0 | 18.0 | 12.0 | 6.0 | 132.0 | FE |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| MC 4 | Prospective Unmanned Systems Layouts and Their Manufacturing | I | 1 | 5.0 | 150.0 | 16.0 | 10.0 | 6.0 | 134.0 | E |
| MC 5 | Foreign Language for Professional Purpose | I | 2 | 5.0 | 150.0 | 20.0 | 0.0 | 20.0 | 130.0 | E |
| MC 6 | Aircraft Design | I | 2 | 3.0 | 90.0 | 10.0 | 4.0 | 6.0 | 80.0 | FE |
| MC 7 | Prospective UAV Power Units and Their Parts | I | 2 | 5.0 | 150.0 | 16.0 | 12.0 | 4.0 | 134.0 | E |
| MC 8 | Design of Unmanned Aerial Vehicles | I | 2 | 5.0 | 150.0 | 16.0 | 12.0 | 4.0 | 134.0 | E |
| MC 9 | On-board Systems of Unmanned Aerial Vehicles | I | 3 | 5.0 | 150.0 | 16.0 | 10.0 | 6.0 | 134.0 | E |
| MC 10 | Innovative Economy and Management of Technological Startups | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 58.0 | E |
| MC 11 | Intellectual Property and Scientific Research Organization | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 58.0 | E |
| | ***The total amount of credits for mandatory course*** | | | **49.0** | **1470.0** | **162.0** | **78.0** | **84.0** | **1260.0** | |
| **Elective courses**<br>**(the student chooses a number of courses totaling 24 ECTS credits, including at least 24 ECTS credits of elective courses specific to the study programme)** | | | | | | | | | | |
| | **Selective Block 1: Development and Production of UAVs** | | | | | | | | | |
| EC.1 | Modern Technologies for Manufacturing UAV Parts | I | 2 | 5.0 | 150.0 | 16.0 | 10.0 | 6.0 | 134.0 | E |
| EC.2 | Design of UAV Structures of Non-Traditional Structural and Power Schemes | I | 3 | 5.0 | 150.0 | 16.0 | 10.0 | 6.0 | 134.0 | E |
| EC.3 | Reliability and Survivability of Unmanned Aerial Vehicles | I | 3 | 5.0 | 150.0 | 18.0 | 10.0 | 8.0 | 132.0 | E |
| EC.4 | Diagnostics of UAV Elements and Quality Control | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 82.0 | E |
| EC.5 | Labor Protection in the Aviation and Space Rocket Industry | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 82.0 | E |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| EC.6 | Aircraft Certification | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 82.0 | E |
| | **Selective Block 2: UAV Onboard Systems and Operational Complexes** | | | | | | | | | |
| EC.7 | Automatic Control Theory | I | 2 | 5.0 | 150.0 | 16.0 | 10.0 | 6.0 | 134.0 | E |
| EC.8 | Unmanned Aerial Vehicles Equipment | I | 3 | 5.0 | 150.0 | 16.0 | 12.0 | 4.0 | 134.0 | E |
| EC.9 | Communication and Navigation Systems of Unmanned Aerial Vehicles | I | 3 | 5.0 | 150.0 | 18.0 | 10.0 | 8.0 | 132.0 | E |
| EC.10 | Operational Complexes based on Unmanned Aerial Vehicles | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 82.0 | E |
| EC.11 | Ground Infrastructure for Unmanned Aerial Vehicles | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 82.0 | E |
| EC.12 | Basics of Applied Interactive Programming | II | 4 | 3.0 | 90.0 | 8.0 | 4.0 | 4.0 | 82.0 | E |
| | **Internship** | | | | | | | | | |
| IN.1 | Industrial internship | I | 3 | 5.0 | 150.0 | 2.0 | 0.0 | 2.0 | 148.0 | FE |
| IN.2 | Pre-diploma internship | II | 4 | 5.0 | 150.0 | 4.0 | 0.0 | 4.0 | 146.0 | FE |
| | ***The total amount of credits for internships*** | | | **10.0** | **300.0** | **6.0** | **0,0** | **6.0** | **294.0** | |
| | **Final Attestation** | | | | | | | | | |
| FA.1 | Master's thesis and defense | II | 4 | 7.0 | 210.0 | 10.0 | 0.0 | 10.0 | 200.0 | E |
| | **Total ECTS credit for all courses** | **x** | **x** | **90.0** | **2700.0** | **x** | **x** | **x** | **x** | |

#### 3.2.2.1 Experts' Appraisal

The experts consider the structure and content of programme 1, primarily the compulsory courses, to be in line with European standards on similar programmes. The share of electives grants a high flexibility to students in designing individual study profiles.

At the same time, and notwithstanding the very positive impression received, the expert panel issues two conditions for programme 1. First, the number of ECTS credits for the master's thesis has to be increased to at least 15 ECTS credits in workload and at least 6 months in duration in order to make this part of the study programme reflective of the weight and meaning that is generally attached to the final thesis of a study programme. Second, the syllabi of elective courses have to be as specific as the syllabi of mandatory courses so as to provide students with the same level of information about the most relevant aspects of a course.

Additionally, the expert panel issues a set of three recommendations. First, the University should continue its efforts to ensure that the amount of content overlap between courses be reduced to a minimum. Second, the expert group recommends that at least one (mandatory) course on scientific methodology be introduced into the curriculum to ensure that the programme provides a solid foundation for students who would like to carry on with doctoral studies in their respective field. Third, the university should consider dropping English language courses from the core curriculum to free up ECTS credits for more subject-related courses and instead make those English courses part of the preparation for / requirements of the Master's programme.

### 3.2.3 Teaching Faculty

See chapter 3.1.3

#### 3.2.3.1 Experts' Appraisal

See chapter 3.1.3.1

### 3.2.4 Infrastructure, Resources and Student Support

In addition to common resources and infrastructure already mentioned in chapter 3.1.4, students and faculty of programme 1 have a UAV prototyping laboratory at their disposal. The laboratory is designed for the production of physical prototypes of UAVs and is equipped with tools for the full production cycle: from digital modelling to machining, assembly and soldering. Main equipment includes 3D printers, CNC milling machines, laser equipment, soldering stations, and tools for manual and electrical processing.

Furthermore, the study space of the programme covers several functional areas that support learning and student project implementation, including a lecture hall that is used for theoretical classes and

presentations, a computer classroom that is equipped with modern workstations for performing engineering, design and calculation tasks.

#### 3.2.4.1 Experts' Appraisal

The expert reviewer group regards the infrastructure and resources specifically available to students of programme 1 as highly conducive to a positive study experience and study success.

### 3.2.5 Student Learning and Assessment

Programme 1 uses a blended-learning model that combines synchronous online classes, offline labs, and asynchronous self-study on the Moodle KSE platform. The courses of the programme can be found on Moodle KSE, where students familiarize themselves with the study materials, syllabi, and instructions for labs, submit their assignments, and receive grades. Classes are conducted by lecturers, most of whom have practical experience in engineering, defence, or aerospace industries.

According to the University, the general didactic approach of programme 1 relies on the following main principles:

- active participation of students in the learning process, which is achieved through the use of interactive lectures, demonstrations, discussions, practical exercises, and tutorials;
- practical orientation, which is realized through project learning and case studies, as well as practical classes and labs that simulate real professional situations (for example, in the "Design of Unmanned Aerial Vehicles" course, students create their own drone designs that undergo aerodynamic testing);
- research, which involves students in solving real research and technical problems and developing independent research skills;
- the use of modern laboratory equipment; and
- student-centred learning through a wide range of elective courses.

The teaching formats and methods used in programme 1 include lectures with interactive elements, conducted both online via Zoom and in the KSE campus classrooms; practical labs, in which students solve tasks that correspond to real working conditions; tutorials, group and individual ones, held both online and offline; case-studies, in which students work on applied engineering tasks; problem-based learning, which involves immersing students in solving practical engineering and research problems; discussions, which enable students to deepen their understanding of complex topics, exchange opinions, justify their own position, and develop professional communication skills; guided instructions during labs, involving modern software and lab equipment; inquiry-based learning, which lets students immerse in independent scientific research aimed at developing critical thinking skills; and finally, the integration of teaching and research, linking theoretical knowledge, practical skills, and student participation in real-world research and technical university-industry projects.

3.2.5.1 Experts' Appraisal

See chapter 3.1.5.1

### 3.2.6 Quality Assurance

See chapter 3.1.6

3.2.6.1 Experts' Appraisal

See chapter 3.1.6.1

### 3.2.7 Transparency and Public Information

See chapter 3.1.7

3.2.7.1 Experts' Appraisal

See chapter 3.1.7

## 3.3 Programme 2: Micro- and Nanoelectronics (Master)

### 3.3.1 Intended Learning Outcomes

According to the University, the main objective of programme 2 is to prepare highly skilled professionals in micro- and nanoelectronics, who will be capable of designing integrated circuits (microchips) for communication, control, and signal processing systems. The programme aims to provide the high-tech sectors of Ukraine's economy with a pool of professionals in the long run, as well as to facilitate the integration of graduates into the international community of microchip developers. Training personnel for Ukrainian and international microelectronics companies having branches in Ukraine is particularly emphasized.

In addition to the general competencies that programme 1 and 2 have in common (see chapter 3.1.1), the University defines five general competencies that specifically apply to programme 2: the ability to communicate in Ukrainian both orally and in writing; the ability to communicate in a foreign language; the ability to search, process, and analyze information from various sources; interpersonal skills; and the ability to communicate with representatives of other professional groups of varying qualification levels (including experts from different fields of knowledge/economic activities).

Building on these general competencies, the University further defines seven special (professional, subject-specific) competencies that are based on the field standard. These range from the ability to effectively utilize complex control and measuring, technological, and research equipment in the study and production of materials, components, instruments, and devices for micro- and nano-system technologies of various applications to the ability to develop and implement research and/or innovative projects in micro- and nano-systems engineering and related interdisciplinary projects. Moreover, the University additionally defines four such special competencies, including, for example, the ability to develop communication and signal processing systems, create analogue-to-digital integrated implementations of such systems that meet specified performance and energy efficiency requirements, and evaluate the characteristics of the developed systems both through modelling and utilizing measuring equipment.

To acquire all competencies, programme 2 features 19 intended learning outcomes (ILO; also called programme learning outcomes - PLO), which are also divided into those given by the field standard (15 ILOs) and those additionally defined by the University (four ILOs). The former range from "*formulate and solve complex engineering, manufacturing, and/or research problems during the design, production, and study of micro- and nanosystem technologies of various purpose and create competitive developments, ultimately implementing the results in business projects*" (ILO 1) to "*ensure the protection of intellectual property and commercialization of the results of scientific research, inventive activities, and project development*" (ILO 15). Intended learning outcomes for programme 2 that are defined in addition to the field standard include, for example, the following: "*develop system-on-chip solutions for specialized tasks, reasonably select architectural solutions, and optimize them to meet performance, energy efficiency, and area-on-chip requirements*" (ILO 19).

#### 3.3.1.1 Experts' Appraisal

The expert reviewer group confirms that programme 2 is designed with overall programme objectives that are in line with standards defined by the field as well as the institutional strategy of KSE. The experts regard the programme-specific intended learning outcomes are fully appropriate for the programme's level of qualification. The intended learning outcomes are in line with the institutional strategy of the University and are made explicit in the programme's course catalogue.

### 3.3.2 Structure and Content of the Study Programme

According to the University, the programme in micro- and nanoelectronics aims at the in-depth study of the principles of integrated circuit design, including both analogue and digital systems.

Programme 2 complies with the requirements of the European Credit Transfer and Accumulation System (ECTS). ECTS credits are assigned after students successfully complete the requirements of academic courses. In total, programme 2 comprises 90 ECTS credits and lasts for 16 months (three semesters). Mandatory courses comprise 48 ECTS credits, while elective courses have 24 ECTS credits. The pre-diploma internship yields 9 ECTS credits, and 9 ECTS credits are allocated for the preparation and defence of the master's thesis.

In line with ECTS requirements, 1 credit is equivalent to 30 academic hours of workload. The academic workload includes class hours (lectures, training, and labs) and self-study hours. The number of credits for each course was calculated based on course complexity, amount of material, and the time needed to master it. Most courses comprise 6 ECTS credits and involve a significant amount of self-study by students.

The programme primarily focuses on three key areas, which form individual tracks:

(1) Design of Integrated Circuits: Development of System-on-Chip (SoC) analogue-digital systems, tailored for both Field-Programmable Gate Arrays (FPGA) and Application-Specific Integrated Circuits (ASIC)
(2) Telecommunications Systems and Signal Processing: communication theory, wireless communications, signal detection, and discrete and statistical signal processing
(3) Control Systems and their Computational Realization: computational control and integration at microchip level

Track (1) includes both mandatory and elective courses. For digital circuits, mandatory courses include "VLSI 1: HDL Based Design for FPGAs", "VLSI 2: From Netlist to Complete System on Chip" and "VLSI 3: Full-Custom Digital Circuit Design", together with the elective "Systems-on-Chip for Data Analytics and Machine Learning". For analogue circuits, "Electronic Circuits" is mandatory and "Communication Electronics" and "Analog Integrated Circuits" are electives. Though the "Electronic Circuits" course considers issues of analogue circuit engineering, it is also a prerequisite for the "VLSI 3: Full-Custom Digital Circuit Design" course, which regards designing integrated circuits at the level of individual

transistors rather than specified standard cells as in previous courses.

Track (2) similarly includes both mandatory and elective courses, with "Communication Systems", "Communication and Detection Theory" and "Wireless Communication" being mandatory and "Discrete-Time and Statistical Signal Processing", "Communication Networks", and "Communication Electronics". Track (3) includes the electives "Control Systems" and "Computational Control". Thus, structurally related courses are to be studied sequentially from simpler to more complex ones, and each course involves defined prerequisites from the list of courses studied either on the bachelor's level or in the previous semesters of the programme. This approach to the study of microelectronic systems should equip students, according to the educational strategy of KSE, with the competencies necessary for the development of integrated solutions in communication, control, and signal processing, with primary emphasis being placed on the practical application of acquired knowledge through projects and collaboration with industry partners.

Ukraine's legislation stipulates that the volume of elective courses should exceed 25% of the study programme. Hence, programme 2 allocates 24 credits of electives that expand and complement the tracks of the courses studied within the mandatory component of the Programme. Electives are grouped into three blocks:

(1) Radio-Frequency Integrated Circuit Design with courses in "Communication Electronics" and "Analog Integrated Circuits"
(2) Automatic Control Theory with courses in "Control Systems" and "Computational Control"
(3) Networking and Computing Systems for Machine Learning with courses in "Discrete-Time and Statistical Signal Processing", "Systems-on-Chip for Data Analytics and Machine Learning" and "Communication Networks"

Students choose at least one full block and can additionally choose any courses from other blocks. Students choose courses before the start of the semester using the Moodle platform. As of next academic year, KSE plans to increase the number of electives to focus on the demands of industrial partner companies.

For the pre-diploma internship in the third semester and the design of the thesis and its defence, partner companies offer relevant practical tasks and provide mentor engineers who accompany and advise students during the completion of their theses. Each student also has a supervisor from KSE. Students work closely with company engineers on company equipment to implement projects. In total, students invest 18 credits in completing their diploma work. This pre-diploma internship results in a thesis section dedicated to the practical implementation of the selected topic and provides relevant practical experience in creating a prototype. If necessary and possible, students visit ETH Zurich laboratories for several weeks to conduct the required measurements. Thesis works may involve creating a full-fledged analogue or digital microcircuit or developing systems based on programmable logic microcircuits for solving communication, navigation, or automatic control tasks.

Study and research are combined through the completion of diploma works containing a research component. Students perform such research stages as setting a task (together with KSE lecturers and

industry partners), reviewing the state of the subject area (research publications, patents), analytically and algorithmically working on the topic selected, proposing a task solution, creating a prototype, and studying the developed prototype to assess the achieved features.

Drawing centrally on educational material provided by the partner university of programme 2, ETH Zurich, KSE has tried to adapt the workload to Ukrainian realities. Anonymous student surveys held twice a semester for each course included questions about the intensity of the academic workload.

Having analysed the feedback from students and lecturers, the University concluded that the academic workload is too high given the general conditions in the country. Therefore, KSE plans to increase the duration of programme 2 to 22 months (4 semesters) to reduce the workload. For the 2024 enrolment, compensatory measures were taken to reduce the workload. Also, the number of assistants was increased for additional tutorials with students who faced difficulties in mastering certain course materials. In the "Electronic Circuits" course, for instance, based on student survey results, lecturers planned to reduce the number of labs and prepare extended instructions for their performance for the next academic year.

Table 3 shows the specific structure of programme 2. The self-assessment report also contains a matrix visualizing the correspondence of courses with intended learning outcomes, which are also available in the course syllabi.

*Table 3. Structure of study programme in Micro- and Nanoelectronics*

| № | Study course | Year | Term | ECTS credit | Academic workload, hours | | | | | Form of final assessment |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | including | | | | |
| | | | | | | Class hours | | | self-study hours | |
| | | | | | | Total | including | | | |
| | | | | | | | lecture | practice | | |
| **Mandatory courses (MC)** | | | | | | | | | | |
| MC 1 | Foreign Language | I | 1 | 4.0 | 120.0 | 32.0 | 16.0 | 16.0 | 88.0 | FE |
| MC 2 | Foreign language of professional direction | I | 1 | 4.0 | 120.0 | 32.0 | 16.0 | 16.0 | 88.0 | FE |
| MC 3 | Electronic Circuits | I | 1 | 4.0 | 120.0 | 60.0 | 30.0 | 30.0 | 60.0 | E |
| MC 4 | VLSI 1: HDL Based Design for FPGAs | I | 1 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| MC 5 | Communication Systems | I | 1 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| MC 6 | VLSI 2: From Netlist to Complete System on Chip | I | 2 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| MC 7 | Communication and Detection Theory | I | 2 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| MC 8 | Wireless Communications | I | 2 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| MC 9 | VLSI 3: Full-Custom Digital Circuit Design | II | 3 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | FE |
| | ***The total amount of credits for mandatory course*** | | | **48.0** | **1440.0** | **484.0** | **242.0** | **242.0** | **956.0** | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Elective courses**<br>**(the student chooses a number of courses totaling 24 ECTS credits, including at least 24 ECTS credits of elective courses specific to the study programme)** | | | | | | | | | | |
| | **Block 1: Radio-Frequency Integrated Circuit Design** | | | | | | | | | |
| EC.1 | Communication Electronics | I | 2 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| EC.2 | Analog Integrated Circuits | II | 3 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | FE |
| | **Block 2: Automatic Control Theory** | | | | | | | | | |
| EC.3 | Control Systems | I | 1 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| EC.4 | Computational Control | I | 2 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| | **Block 3: Networking and Computing Systems for Machine Learning** | | | | | | | | | |
| EC.5 | Discrete-Time and Statistical Signal Processing | I | 1 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| EC.6 | Communication Networks | II | 3 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | FE |
| EC.7 | Systems-on-Chip for Data Analytics and Machine Learning | I | 2 | 6.0 | 180.0 | 60.0 | 30.0 | 30.0 | 120.0 | E |
| | The total amount of credits for elective courses | | | 24.0 | 720.0 | 240.0 | 120.0 | 120.0 | 480.0 | |
| **Internship** | | | | | | | | | | |
| IN.1 | Pre-diploma internship | II | 3 | 9,0 | 270,0 | 4,0 | 0,0 | 4,0 | 266,0 | FE |
| | ***The total amount of credits for internships*** | | | **9,0** | **270,0** | **4,0** | **0,0** | **4,0** | **266,0** | |
| **Final Attestation** | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FA.1 | Master's thesis and defense | II | **3** | 9,0 | 270,0 | 10,0 | 0,0 | 10,0 | 260,0 | E |
| | | | | | | | | | | |
| | **Total ECTS credit for all courses** | | | **90.0** | **2700.0** | **738.0** | **362.0** | **376.0** | **1962.0** | |

#### 3.3.2.1 Experts' Appraisal

The experts consider the structure and content of programme 2, primarily the compulsory courses, to be in line with European standards on similar programmes. The share of electives grants a high level of flexibility to students in designing individual study profiles.

At the same time, and notwithstanding the very positive impression received, the expert panel issues four conditions that apply to programme 2. First, the number of ECTS credits for the master's thesis has to be increased to at least 15 ECTS credits in workload and at least 6 months in duration in order to make this part of the study programme reflective of the weight and meaning that is generally attached to the final thesis of a study programme. Second, the syllabi of elective courses have to be as specific as the syllabi of mandatory courses so as to provide students with the same level of information about the most relevant aspects of a course. Third, a course on data converters or on on-chip sensors or on advanced RFIC design must be offered as an elective course since this would be expected of a study programme on micro- and nanoelectronics. Fourth, and in this connection, either the course on communication electronics course or the course on analogue integrated circuits has to become mandatory since a study programme with the title "Micro- and Nanoelectronics" must contain at least one of these courses in order to make programme title and course content match. Alternatively, the title of the programme has to be changed to, for example, "Master of Digital Electronics", so as to make programme title and course content match.

Additionally, the expert panel issues a set of six recommendations. First, the University should continue its efforts to ensure that the amount of content overlap between courses be reduced to a minimum. Second, the expert group recommends that at least one (mandatory) course on scientific methodology be introduced into the curriculum to ensure that the programme provides a solid foundation for students who would like to carry on with doctoral studies in their respective field. Third, the university should consider dropping English language courses from the core curriculum to free up ECTS credits for more subject-related courses and instead make those English courses part of the preparation for / requirements of the Master's programme. Fourth, the University should offer more electives on soft skills, such as project management and presentation skills, for students to choose from. Fifth, the University should consider introducing preparatory courses in core topics of micro- and nanoelectronics to bring students on the same level before they officially start the programme. And sixth, the number of ECTS credits for the practice module (pre-diploma internship) should be raised from 9 ECTS to 10 ECTS credits (in accordance with national regulations).

### 3.3.3 **Teaching Faculty**

See chapter 3.1.3

3.3.3.1 Experts' Appraisal

See chapter 3.1.3.1

### 3.3.4 Infrastructure, Resources and Student Support

In addition to common resources and infrastructure already mentioned in chapter 3.1.4, students of programme 2 use the laboratory of their programme, whose total area of 238 m² is divided into a lecture hall equipped with projector, camera, and laptop for conducting classes in face-to-face and hybrid format, the computer classroom Micro (equipped with modern PCs), which is connected to uninterruptible power supply, a room for laboratory assistants, an additional computer classroom, and a work area for self-study. Moreover, students of programme 2 can use resources of ETH Zurich to prepare for classes and complete assignments. At the beginning of each semester, students register for courses at ETH Moodle as free listeners and have the opportunity to attend online broadcasts of lectures by ETH professors and get full access to all course materials.

3.3.4.1 Experts' Appraisal

The expert reviewer group regards the infrastructure and resources specifically available to students of programme 2 as highly conducive to a positive study experience and study success.

### 3.3.5 Student Learning and Assessment

The main principles of the general didactic approach of programme 2, according to the University, relies on active student participation in the educational process (achieved through interactive lectures, demonstrations, discussions, practical exercises, and tutorials), practice-based learning (implemented through the use of projects and case studies, as well as practical and lab classes), an inquiry-based approach (involving students in solving real technical problems and developing independent research skills), the use of modern software and lab equipment, the individualization of learning (through a wide range of elective courses, and formative assessment and feedback (constant assessment of students' academic achievements in the learning process with regular feedback.

The main methods of assessment in programme 2 include a final exam held at the end of the course and aimed at testing theoretical knowledge and abilities to analyse and solve complex problems; midterm exams, which enables timely checking of the current level of mastery; quizzes, that is, short written or online tests used regularly during the semester to quickly assess students' current understanding of key concepts; homework practical exercises that students complete on their own and regularly submit to lecturers for assessment (homework assignments may contain analytical calculation tasks, tasks to create a programme using Matlab/Python, or both types of tasks and are mainly used in track courses on signal analysis and control systems); lab reports and lab performance assessment of the quality and completeness of the report submitted, quality of lab tasks, analysis of

experimental results, and ability to draw conclusions and prepare technical reports; project reports and project discussion, which assess students' abilities to design, model, and analyse the operation of developed integrated circuits, as well as control and communication systems, and to justify and present their solutions.

The distribution of points between the final exam and tasks completed during the semester depends on the peculiarities of a particular course and is determined by the lecturer. The most common distribution of points is 50 percent for continuous assessment and 50 percent for final assessment, though some courses use a ratio of 70 / 30. The distribution of points is detailed in a course's syllabus.

Some courses may use a system of bonus and penalty points motivating students to actively participate in the learning process. The assessment results are recorded and communicated to students through the Moodle Learning Management System. If a student disagrees with an assessment, they can file an appeal, which will be considered by the respective commission.

Lecturers and assistants monitor class attendance and current student performance; then, the results are analysed and student coordinators (representatives of the study support office) communicate with each student facing difficulties in studying to find out the reasons for missing classes and problems that arise when mastering courses.

#### 3.3.5.1 Experts' Appraisal

See chapter 3.1.5.1

### 3.3.6 **Quality Assurance**

See chapter 3.1.6

#### 3.3.6.1 Experts' Appraisal

See chapter 3.1.6.1

### 3.3.7 **Transparency and Public Information**

See chapter 3.1.7

#### 3.3.7.1 Experts' Appraisal

See chapter 3.1.7.1

# Appendix

## 1. Statement of the University in Response to the Expert Report

KSE Response to the Report of ZEvA the expert panel Cluster Engineering

On behalf of the Kyiv School of Economics (KSE), we sincerely appreciate the thorough evaluation and constructive recommendations in the accreditation report. Below, we outline our response to the key recommendations and the steps we plan to take to address them shortly.

### 1. General recommendations for both study programmes

#### 1.1. To increase the workload (at least 15 ECTS credits) and duration (at least 6 months) for master's theses (Chapters 2.2.1., 3.2.2.1 (UAV study program) 3.2.9.1. (MNE study program)

KSE appreciates and acknowledges the recommendation to increase the workload (at least 15 ECTS credits) and duration (at least 6 months) for master's theses. In the new updated UAV study program for the first year students, the preparation of the master thesis is spanned across several modules during the 2nd, 3rd, and 4th terms, totaling 15 ECTS credits. The work on the thesis and formulation of the technical assignment is conducted in the 2nd term, the analytical literature review begins in the 3rd term and continues during the pre-diploma internship, and the main part of the master thesis is completed in the 4th term. For the MNE program, the updated curriculum divides the master's thesis into two credit modules: "Preparation of the Master's Project" (5 ECTS, 2nd semester) and "Preparation and Defense of the Master's Project" (10 ECTS, 3rd semester), for a combined total of 15 ECTS credits, with thesis work spanning two semesters. The issue of further increasing the duration of the MNE program to 22 months is currently being discussed and monitored, as it requires significant additional resources and must align with student needs and labor market demands.

#### 1.2. To develop syllabi for elective courses that are as specific as those for required courses, providing students with the same level of information about the most relevant aspects of the course (Chapters 2.2.1., 3.2.2.1 (UAV study program) 3.2.9.1. (MNE study program)

The university recognizes the importance of the recommendation to ensure that syllabi for elective courses are as comprehensive and detailed as those for mandatory courses. In this academic year, the elective course syllabi will be developed according to the principles of completeness and informativeness, in line with the syllabi for mandatory courses. Additionally, the university is piloting a new, extended syllabus format that provides a more thorough and detailed description of learning and assessment activities, expanded evaluation criteria. These steps aim to enhance transparency, equitable access to information for students, and improve academic planning.

#### 1.3. To introduce into the curricula at least one (mandatory) course on scientific methodology to ensure that the programme provides a solid foundation for students who would like to carry on with doctoral studies in their respective field (Chapters 2.2.1., 3.2.2.1 (UAV study program) 3.2.9.1. (MNE study program)

KSE appreciates the recommendation to introduce at least one mandatory course on scientific methodology into the curricula, ensuring a solid foundation for students pursuing doctoral studies in their fields. In the UAV study program, the curriculum for 2025–2026 now includes the course "Intellectual Property and

Scientific Research" in the fourth term of the second year, providing students with fundamental knowledge in scientific methodology and research organization. For the MNE program, the introduction of a course with a substantial scientific methodology component is currently in the process of development and has to be synchronised with our partners at the ETH. These measures aim to strengthen students' research competencies and support their readiness for further academic advancement.

**1.4. To consider dropping English language courses from the core curriculum to free up ECTS credits for more subject-related courses (Chapters 2.2.1., 3.2.2.1 (UAV study program) 3.2.9.1. (MNE study program)**

KSE appreciates the recommendation to consider excluding English language courses from the mandatory curriculum in order to optimize the distribution of ECTS credits within the program. Considering the bilingual content of the UAV program and the need for students to work with courses taught in both English and Ukrainian, a concept for studying English has been developed. The English language component now consists of three consecutive courses: "English for UAV Engineers: Basics" (mandatory), "English for UAV Engineers: Extension," and "English for UAV Engineers: Technical Writing" (both elective). This approach ensures the gradual development of both general and professional language skills, helping students adapt to a bilingual learning environment and improving their ability to work with technical literature, academic courses, and professional communication in English. In the MNE program, which is taught entirely in English, students are expected to have a sufficient level of English proficiency; the English language course has been moved from the mandatory part of the program to an elective block. Thus, the structure of language learning for both programs is adapted to their specifics and allows students to optimize their academic workload.

**1.5. To reduce the amount of content overlap between courses (Chapters 2.2.1., 3.2.2.1 (UAV study program) 3.2.9.1. (MNE study program).**

KSE appreciates the recommendation to reduce content overlap between courses. In response, for both the UAV and MNE study programs, a set of specific measures has been implemented. Instructors of thematically related courses are grouped for joint planning to coordinate the distribution of topics, educational software, and sequencing of material, ensuring comprehensive coverage of required competencies and minimizing redundancy. Before each academic term, the content of lectures and lab assignments is reviewed and harmonized across related courses, and necessary adjustments are made to maintain consistency and distinctness within the curriculum. These processes are established as an ongoing element of curriculum management for both referenced study programs, ensuring systematic alignment and ongoing improvement.

**1.6. To introduce an official strategy for students with special needs (Chapters 2.2.1., 3.1.4.4.)**

KSE expresses its gratitude to the experts for their thoughtful recommendation regarding the introduction of an official strategy for students with special needs. Recognizing and acknowledging the challenges faced by Ukrainian society due to losses and crises related to the war, the university is currently at the stage of examining and further developing a comprehensive policy to ensure equity and accessibility in education for individuals with special needs. As part of this process, an internal study has been conducted to analyze current needs, barriers, opportunities, and risks in introducing inclusive education. A vacancy has been opened for a person who will be involved in barrier-free activities in collaboration with the veterans' association of the KSE. KSE has launched a new office for veterans. This office is now involved in the admission campaign, design of educational policies, and support of student veterans. The university remains committed to further dialogue with students, faculties, and staff to develop an official strategy for inclusive education.

**2. Specific conditions and recommendation for MNE study program**

**2.1. To redesign MNE study program structure (Chapters 2.1., 2.4.2., 3.2.9.1.)**

KSE expresses its appreciation to the experts for their comprehensive and constructive recommendation regarding the redesign of the MNE study programme. In response to the onsite visit final session experts' recommendation, the programme structure has been reviewed and a number of key changes have already been implemented for the first-year students. Specifically, as the elective courses "RFIC Design 1" and "RFIC Design 2" — covering both fundamental and advanced topics in RFIC design—are now offered. An elective course "Silicon Photonics" has also been introduced. Topics such as data converters and on-chip sensors are covered in the newly mandatory course "Analog Integrated Circuits". The "Electronic Circuits" course has been expanded

from 4 to 6 ECTS credits. "Communication Systems", "Communication and Detection Theory", and "Wireless Communication" have been moved from mandatory to elective status. "Analog Integrated Circuits" is now a mandatory component of the curriculum. A new core course "IC Verification" has been introduced. As a result, all mandatory courses are now focused on analog or digital integrated circuit design, ensuring strong alignment between the programme's title and its content. Domain-specific knowledge in communication systems and control algorithms-relevant for implementation in ICs-has been classified as electives. These changes are intended to meet both the expectations of students and external stakeholders and the requirement that the programme's content matches its title. The curriculum revision is a cycle process performed by continuous stakeholder feedback, internal and external evaluation.

**2.2. To raised the number of ECTS credits for the practice module (pre-diploma internship) (Chapters 2.4.1., 3.2.9.1.)**

KSE expresses its gratitude to the experts for their valuable recommendation to increase the number of ECTS credits for the practice module (pre-diploma internship). Throughout this academic year, the university will monitor national regulatory requirements, with particular attention to the ongoing revision of national standards, as well as continually assess the needs of students and external stakeholders regarding the duration of internship. Based on the results of this monitoring, the issue of internship duration will be reviewed and adjusted as necessary to align with both identified needs and standards.

**2.3. To offer more electives on formative soft skills (Chapters 2.4.1., 3.2.9.1.)**

KSE appreciates the experts' recommendation to offer more electives focusing on formative soft skills. In response of this recommendation, the university has already revised the curriculum for first year students and established a dedicated block of elective courses aimed at developing students' soft skills, including Academic English, Building Effective Organizations, Leadership: Understanding Oneself and People through Challenges, Evaluation of Financial Information, and Business Intelligence and Visualizations. The university is also considering expanding elective options by introducing broader opportunities for students to choose any courses freely. Throughout this academic year, KSE will continue to monitor the needs and requests of students, and at the end of the academic year, the structure of the elective block within the MNE programme will be further discussed and reviewed if it is needed.

**2.4. To consider introducing preparatory courses in core topics of micro- and nanoelectronics to bring students on the same level before they officially start the programme (Chapters 2.4.1., 3.2.9.1.)**

KSE appreciates the experts' recommendation to consider introducing preparatory courses in core topics of micro- and nanoelectronics to bring students on the same level before they officially start the programme. In response, the university is taking the following measures and planning future steps to address this recommendation: - depending on the admission requirements, we are considering including additional entrance interviews to ensure the selection of students whose background corresponds to the level required by the programme; - the university is preparing supplementary (preparatory) courses in key subjects, which will be offered to applicants prior to the start of the academic year in March-May. We are also developing a series of video courses for first-year students to facilitate adaptation to the core topics in MNE. These initiatives are aimed at ensuring that all students enter the programme with the necessary foundational knowledge and skills, thereby supporting their successful progress and learning outcomes.

Best regards,
Tymofii Brik, PhD
Rector of the Kyiv School of Economics