Accreditation Report

Master's Programme

"IT for Sustainable Energy Engineering"

offered by

Ivano-Frankivsk Technical University of Oil and Gas/Ukraine

London South Bank University/United Kingdom

22nd Meeting of the ZEvA Commission on the 5th of November 2024

Agenda Item Nr. 04.03

Study Programme	Degree	Programme Duration	Type of Programme	Maximum annual intake
IT for Sustainable Energy Engineering"	Master/ Master of Science	1,5 years (3 semesters)	Full-time	50

Date of online site visit: 13th of May 2024

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Hanover, 19.07.2024

Table of Contents

Table of Contents 3

I. Findings of the Expert Panel and Decision of the Accreditation Commission 4

1. Decision of the ZEvA Accreditation Commission (5th of November, 2024) 4

2. Key Findings and Final Vote of the Expert Panel 5

2.1 Executive Summary: Key Findings 5

2.2 Final Vote of the Expert Panel 6

II. Evaluation Report of the Expert Panel 1

1. Introduction: Purpose and General Context of the Accreditation Procedure 1

2. Outline of the Study Programme 3

3. The Partner Universities and their Framework of Collaboration 4

4. Assessment of the Study Programme 7

4.1 Intended Learning Outcomes 7

4.2 Programme Concept and Curriculum 9

4.3 Teaching Faculty 14

4.4 Infrastructure, Resources and Student Support 15

4.5 Methods of Teaching and Student Assessment 16

4.6 Quality Assurance 17

4.7 Transparency, Documentation and Public Information 18

Appendix 21

1. Statement of the University in Response to the Expert Report 21

I. Findings of the Expert Panel and Decision of the Accreditation Commission

1. Decision of the ZEvA Accreditation Commission (5th of November, 2024)

The ZEvA Commission follows the experts' report and recommendations and takes note of the universities' statement in response.

The ZEvA Commission acknowledges that sufficiently transparent information on the study programme is now available online. However, revised Diploma Supplements still need to be submitted which adequately reflect the programme profile.

Furthermore, the Commission appreciates the universities' efforts to ensure the financial sustainability of the programme. As it seems almost impossible under the current circumstances to develop a long-term, reliable financial strategy for the entire accreditation period, the Commission would instead accept a written declaration that all students enrolled can finish the programme regardless of further external developments.

The ZEvA Commission decides to accredit the Master's programme "IT for Sustainable Energy Engineering" offered by Ivano-Frankivsk Technical University of Oil and Gas and London South Bank University with the following conditions:

1. *The double degree and the collaborative profile of the programme have to be made transparent in the Diploma Supplements issued by both partner universities.*
2. *It has to be guaranteed that all enrolled students get a chance to finish the programme in case financial resources run out. The leadership boards of the partner universities need to commit themselves to this by means of a formal written declaration.*

The conditions have to be fulfilled within a period of 12 months. Failure to comply with the conditions in due time will result in withdrawal of the accreditation.

The accreditation of the study programme is valid for a period of six years.

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. Key Findings and Final Vote of the Expert Panel

2.1 Executive Summary: Key Findings

The experts commend the programme coordinators on the interdisciplinary design of the study programme. The close linking of *IT (Information Technology)* and *Sustainability* is convincing and addresses some major challenges of our time. The experts are confident that there will be high demand for graduates of the programme, both in Ukraine and other countries, including the UK.

The collaboration between the two universities seems to have worked very well so far, and the dual degree is most likely to attract an increasing number of students – anyhow focussing a ramp-up in the Ukraine with later expansion to students in the UK. To this end, the international, collaborative nature of the programme should be made more transparent on the programme website and in other public sources of information, as well as in the official documents issued by the universities upon graduation. At present, the programme descriptions maintain the impression that the programme is wholly or primarily run by IFNTUOG, with no indication of the dual degree or the joint responsibility of both partners for the programme. The experts recommend further strengthening LSBU's direct engagement in the programme, as, for example, by means of increasing the teaching input of the LSBU faculty.

As far as the programme profile and content is concerned, the experts strongly recommend strengthening the research component of the curriculum. Even though the programme is clearly application-oriented and primarily aims at preparing students for a career in industry rather than academia, the students should receive a more solid methodological foundation at Master's level, especially to prepare them for possible further career pathways as Ph.D. students or academic staff.

In the long run it may also be advisable to further sharpen the broad programme profile by focusing on only two instead of three *disciplinary pillars* and by introducing more clear-cut elective pathways through the programme that students may choose based on their prior education and/or personal interests. The current setup uses three *disciplinary pillars (Business, Energy, IT)* and considers *Engineering* as a core domain. The reviewers instead prefer a setup with two pillars, namely *IT* and *Sustainability* and two cross-cutting competencies, namely *Engineering* and *Business* to sharpen the programme. This may help to focus on *IT and Sustainability* as core content and to reduce potentially overestimated expectations towards engineering or business skills of the students.

With a view to the interdisciplinary approach of the programme, the universities should continue admitting students from a wide range of academic backgrounds but should make sure that the necessary entrance qualifications (in terms of prior knowledge and skills) are made fully transparent to the applicants. Optional bridging classes are recommended to close individual knowledge gaps and to ensure student success.

Furthermore, the experts see the need to develop a general strategy for securing the financial stability and sustainability of the programme beyond the expiry of external funding.

2.2 Final Vote of the Expert Panel

2.2.1 Recommendations for Enhancement:

- The intended learning outcomes and the general programme profile should be described in more detail on the programme website and in other relevant sources of information. In particular, it should be clearly outlined that the programme is primarily application-oriented.
- The admission criteria and the student selection procedure should be made more transparent to the general public.
- The experts strongly recommend strengthening the research component of the programme. It should become transparent in the descriptions of the programme in which academic disciplines graduates are qualified to conduct further research at doctoral level.
- The cooperating industry partners in Ukraine should be involved continuously into the improvement and evolvement cycle of the programme. In addition, the experts recommend involving British companies in the field of energy supply and grid operation more intensely into the programme.
- Bridging classes should be offered especially for first-year students to close existing knowledge gaps and ensure that all students enter the programme at the same level. In particular, the experts strongly recommend turning the compulsory module in Business English into a bridging class to make space for a module focusing on one of the core topics of the programme.

2.2.2 Conditions:

- The double degree and the collaborative profile of the programme have to be made transparent on the programme website and in the Diploma Supplements issued by both partner universities.
- A risk mitigation and engagement plan has to be delivered which outlines possible ways of securing the financial basis of the programme beyond the expiry of external funding. As a minimum, it should be warranted that all enrolled students get a chance to finish the programme in case of closure.

2.2.3 Recommendation to the ZEvA Commission:

The expert group recommends the accreditation of the Master's programme "IT for Sustainable Energy Engineering" for the duration of six years with the conditions given above.

II. Evaluation Report of the Expert Panel

1. Introduction: Purpose and General Context of the Accreditation Procedure

In December 2023, ZEvA was commissioned with the international accreditation of six Master's programmes that had been developed and launched within the framework of the EU Twinning initiative[1], an institution-to-institution partnership framework to support Ukrainian higher education, both through short-term aid and long-term activities that help sustain and rebuild Ukrainian universities, the economy and society.

The initiative is coordinated by *Cormack Consultancy Group* with the support of University UK, the President's Fund of Ukraine for Education, Science, and Sports and different private and state organisations.

Each of the six Master's programmes is jointly offered by one Ukrainian university and one partner institution in the United Kingdom. All programmes are fully taught in English and award a double degree, whereas the exact roles and responsibilities of the partners vary with each programme. At present, all programmes are primarily directed at Ukrainian students, but are, on principle, designed to be open to both British domestic and international applicants .

As the programmes belong to a wide spectrum of different academic disciplines, they were assessed in six separate procedures across the year 2024. Each assessment procedure was organized as a peer review, involving an expert panel composed of two university professors in the discipline, one professional from outside academia and one student.

The quality assessment was based on the criteria laid out in the "ZEvA Manual for the External Assessment of Study Programmes". This framework is in turn 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).

For the purpose of the assessment, the universities were asked to submit a written self-report in English for each study programme. Each self-report contained detailed information on the higher education institutions and the programme and included an appendix of key documents, as e.g. the course syllabi, curricula, CVs of the teaching faculty and relevant regulatory documents (cooperation agreements, regulations for student assessment, graduation and recognition, quality assurance policies etc.). The main responsibility for the reports lay with the programme coordinators in Ukraine.

Due to the travel restrictions imposed by the ongoing war in Ukraine, the experts conducted online talks with the representatives of the universities instead of on-site visits.

[1] https://www.twinningukraine.com/

In addition, they were provided with concrete impressions of the premises and infrastructure on campus by means of picture and/or video material.

This assessment report refers to the Master's programme "**IT for Sustainable Energy Engineering**" offered by **Ivano-Frankivsk Technical University of Oil and Gas** in cooperation with **London South Bank University**. It reflects the outcomes of the experts' assessment of the written self-report and their impressions gained during the online talks with the students, the faculty and staff of both universities, Ukrainian industry representatives and the Twinning project coordinator.

The report serves as a key document for the ZEvA Accreditation Commission to decide on the accreditation of the study programme with the ZEvA quality label. As ZEvA is a registered agency in Ukraine, the accreditation decision can be recognized as equivalent to Ukrainian national accreditation. In the United Kingdom, no external accreditation decision is required at programme level.

2. Outline of the Study Programme

The 1,5-year Master's programme "IT for Sustainable Energy Engineering" is an interdisciplinary programme directed at Bachelor graduates from a wide spectrum of engineering disciplines. On principle, the programme is also open to applicants from academic backgrounds outside engineering who demonstrate the necessary entrance qualifications. At present, the programme is primarily directed at Ukrainian students, but is also open for applicants from other countries. The first 11 students were enrolled in September 2023.

The programme is designed to provide a comprehensive understanding of both sustainable energy engineering and information technology. It combines modules in sustainable energy technologies, renewable energy systems, energy modelling, and energy efficiency with units in data analysis, hardware and software development. The curriculum also includes a strong business management component. Graduates of the programme are expected to support the (post-war) reconstruction of the Ukrainian energy infrastructure, while taking a decidedly global perspective on sustainable energy engineering.

The programme comprises 90 ECTS and is taught completely in English. Besides a number of compulsory modules on the aforementioned core topics, it includes two short practical placements in IT companies and a graduation project which may also be absolved in form of an industry internship. In the context of this project, the students also generate their final Master's thesis.

Furthermore, students can choose five modules (five ECTS credits each) from a pool of optional modules, three in the second semester and two in the third semester.

All in all, the programme takes a strongly practical, application-oriented focus, aiming primarily at preparing students for a career in the Ukrainian energy sector.

Upon graduation, students receive a Master's degree from both Ivano-Frankivsk National Technical University of Oil and Gas and from London South Bank University. Currently, the teaching input is provided exclusively by IFNTUOG, whereas LSBU is intensely involved in the coordination, management, curricular development and quality assurance of the programme. Due to the ongoing war in Ukraine, student or staff mobility is not possible at present (apart from summer schools) but planned for the future, provided the general political situation allows for this.

3. The Partner Universities and their Framework of Collaboration

Profile of the Universities

Ivano-Frankivsk National Technical University of Oil and Gas (IFNTUOG) received its current name, along with the status of a National University, in 2001. The university started out as a branch of Lviv Polytechnic in 1960 and was established as an independent university in 1967. From the beginning until now, the core of the institutional mission has been the training of specialists for the energy sector and related fields.

Today, about 6.700 students are enrolled at IFNTUOG. The university offers more than one hundred programmes at Bachelor, Master and doctoral level. Academic disciplines include a broad spectrum of *Engineering* and *Management* specialities as well as *Computer Science*, but also Mining, Geodesy and Earth Sciences, Public Management and *Philology*. Priority research areas include *Materials Science, Power Engineering Technologies and Energy Management, Software Development* and *Environmental Engineering*.

London South Bank University (**LSBU**), founded in 1892, was originally known as Borough Polytechnic Institute. Today it offers undergraduate and postgraduate programmes from a wide variety of disciplines, including *Management and Economics, Engineering, Health and Social Care, Education* and *Law*. The university is part of the LSBU group which comprises several further colleges and academies. In total, more than 30.000 students are enrolled in the institutions of the LSBU group, about 19.000 of them at the university[2].

At IFNTUOG, the Institute of Information Technologies bears the responsibility for the joint Master's programme. At LSBU, the responsibility lies with the School of Engineering.

History and Framework of the Cooperation

As explained in the self-report, the partners were introduced to each other in the context of the Twinning initiative in the summer of 2022, without having any prior collaborative relationships in teaching or research. The two universities entered into a Memorandum of Understanding in December 2022 and started designing a joint Master's programme in "IT for Sustainable Energy Engineering".

The self-report gives a number of reasons why the two partner universities chose to develop a programme in this particular field: both partner universities have considerable experience in the field of energy and are equipped with qualified and motivated personnel working at the edge of IT and energy. Furthermore, IFNTUOG already runs a Bachelor's programme in renewable energy engineering, for whose graduates the new Master's programme may be of interest.

[2] cf. https://www.lsbu.ac.uk/__data/assets/pdf_file/0008/375470/LSBU-Group-Annual-Review-2022_23.pdf

At a more general political level, energy security and the sustainable development of the energy sector are key issues for Ukraine, both during and after the war. Also, the digital transformation of production and business processes is a core task for all sectors of the Ukrainian economy and globally.

Funding in the context of the Twinning initiative was granted to the programme upon application early in 2023. Before the programme was finally launched, it successfully underwent the internal standard process of LSBU for the validation and approval of study programmes.

The first students were enrolled in September 2023, and a full-fledged collaboration agreement was signed by the partners in March 2024. This agreement was disclosed to the experts upon request. It was closed for the period of five years but may be extended beyond that period by mutual consent of both partners.

Roles and Responsibilities of the Partners

The roles and responsibilities of the two universities within the framework of the study programme are described in detail in the self-report and were further explained to the experts in the context of the online talks in May 2024. Furthermore, they are formally stipulated in the **written collaboration agreement** of September 2024.

Both partner universities were equally involved in the design of the study programme. In the process of development, formal and legal requirements on both sides were accounted for, as e.g. national educational standards or formal regulations regarding modularization.

Student recruitment, selection and admission are entirely up to IFNTUOG, although the admission criteria are agreed upon with LSBU. The general promotion of the programme also lies in the responsibility of IFNTUOG. Students are enrolled at IFNTUOG for the entire duration of the programme and, accordingly, are subject to the academic regulations of IFNTUOG throughout the entire student lifecycle. This includes regulations for student appeals and complaints, as well as all regulations concerning student assessment. However, students have the option of lodging a complaint at LSBU, too, if it concerns academic standards, assessment decisions and/or the quality of the learning opportunity. Also, LSBU provides the students with access to its online learning resources and e-learning platforms.

At present, LSBU faculty is not involved in the teaching of the programme or the supervision of theses, even though there are plans for this to change in the future. However, a so-called **link tutor** for the programme is appointed by LSBU to ensure the maintenance of LSBU standards throughout the programme.

For the general management of the programme, the partners have established a **Partnership Management Board** consisting of five members from each university, including, among others, the programme coordinators, academic coordinators/link tutors, members of the leadership board and quality assurance staff from both universities. The board meets up at least twice a year to discuss general strategic, financial and operative matters.

In addition, there are further regular meetings (at least once a month) of the programme coordinators and programme participants from both sides.

Furthermore, a **joint examination board** ensures that joint standards are applied in the assessment of students. The examination board includes one external examiner appointed by LSBU according to UK national regulations. The external examiner is an academic expert from outside LSBU. Most members of the examination board are also part of the general Partnership Management Board.

At the end of the year, link tutors and external examiners generate a report on the general development of the programme which is forwarded to the LSBU central committee.

4. Assessment of the Study Programme

4.1 Intended Learning Outcomes

The intended learning outcomes (ILOs) of the programme have been jointly developed by the two partners, with a view to their respective national regulatory requirements. They are described in the self-report as follows:

Students will have knowledge and understanding of:
A1. sustainable energy engineering and the place of ICT in energy problems solving.
A2. scientific facts, concepts, theories, principles and methods of applying IT in sustainable energy engineering.
A3. sustainable energy engineering as a research area when working with technical literature and other sources of information.
A4. mathematical principles and methods necessary for the creation of virtual means of applying IT in sustainable energy engineering.
Students will develop their intellectual skills such that they are able to:
B1. search, process and analyze information from various sources.
B2. to conduct research at an appropriate level.
B3. identify, pose and solve problems.
B4. make informed decisions.
B5. evaluate and ensure the quality of the work performed.
B6. apply a systematic approach to solving scientific and technical tasks of applying IT in sustainable energy engineering.
Students will acquire and develop practical skills such that they are able to:
C1. choose and apply suitable mathematical methods, computer technologies, as well as approaches to standardization and certification to solve problems in the field of sustainable energy engineering.
C2. solve complex tasks and problems of ICT, information and measurement technology, standardization in quality assessment.
C3. solve complex professional tasks and problems based on an understanding of the technical aspects of ensuring quality control.
C4. apply a comprehensive approach to solving experimental tasks in sustainable energy engineering using information and measurement equipment and application software.
C5. develop software, hardware and metrological support of computerized information and measurement systems for sustainable energy engineering.
C6. to take into account the requirements for energy engineering activity in the field of technical regulation, due to the need to ensure sustainable development.
Students will acquire and develop transferable skills such that they are able to:
D1. communicate in the English language.
D2. work in an international context.
D3. develop and manage projects in sustainable energy engineering.
D4. use information and communication technologies.

D5. consider commercial and economic contexts in sustainable energy engineering.
D6. manage projects and start-ups in sustainable energy engineering and evaluate their results.
D7. comply with legal and ethical standards on intellectual property in sustainable energy engineering.

The sample Diploma Supplement for the programme provides a link to a concise programme description/course specification (in Ukrainian language), which also includes the list of ILOs.

As regards **employability**, the self-report describes the typical graduate profile as follows:

- can contribute to the development and implementation of renewable energy projects in Ukraine, reducing reliance on fossil fuels and enhancing energy security;

- can use their expertise in information technologies enables graduates to design and implement smart grid systems and energy management solutions;

- can apply their data analysis skills to analyze energy consumption patterns, optimize resource allocation, and inform decision-making processes related to reconstruction projects in Ukraine, ensuring efficient use of resources and maximizing impact;

- can integrate sustainable practices into reconstruction projects, mitigating environmental impacts and promoting long-term resilience in post-war rebuilding efforts;

- growing through collaboration experience during study, they can effectively collaborate with diverse stakeholders, coordinate multi-disciplinary teams, and lead complex projects to successful outcomes, facilitating the efficient execution of reconstruction initiatives in Ukraine;

- by providing training, technical assistance, and educational resources, they can empower local stakeholders to take ownership of sustainable energy initiatives and foster long-term resilience.

A website has also been set up for the programme[3], which outlines the intended learning outcomes as follows:

[The] MSc in Informational Technologies for Sustainable Energy Engineering is a postgraduate qualification in an emerging and interdisciplinary field, based on Informational Technologies Institute. It offers a contemporary qualification to masters' level students, who wish to develop their academic research and applied learning at postgraduate level.

The program focuses on the intersection of information technology and sustainable energy engineering, equipping graduates with the knowledge and skills to design, develop, and implement innovative solutions that promote sustainability in the energy sector. As the world moves towards a low-carbon economy, the demand for professionals with expertise in sustainable energy engineering and information technology will continue to grow.

[3] https://it4see.nung.edu.ua/ (as of 3rd of June, 2024)

Graduates of this program will be well positioned to take on leadership roles in a variety of sectors, including energy companies, government agencies, consulting firms, and non-profit organisations.

Experts' Appraisal

The experts conclude that the intended learning outcomes of the programme are clearly and comprehensively described and are made transparent to the students through the course specification. The peers confirm that the descriptions of the ILOs are in line with the Master's level as stipulated in the Framework of Qualifications for the European Higher Education Area, or with Level 7 of the European Qualifications Framework, respectively. Knowledge acquisition, application of knowledge/transferrable skills, communicative skills and general personal development are all recognisable elements of the ILOs, just as the ability to take on leadership roles and to take decisions in complex, multidisciplinary contexts and situations.

From the experts' point of view, the intended learning outcomes and the general programme profile should be made more transparent to the general public (and especially to potential applicants). Hence, they recommend including the ILOs on the programme website, or at least publishing a more detailed description of the programme outcomes online. In this context, it appears vital to the experts to express that the programme is primarily application-oriented (as opposed to an MA with a stronger research focus). Otherwise, applicants may misunderstand the target. It should become as clear as possible by the programme description that it is a programme which primarily aims at educating IT experts for the (national) business and industry sector, rather than preparing students for an academic career.

The prerequisites for entering the study programme, as well as the application procedure should also be described on the programme website (cf. Chapters 1.2 and 1.7 of this report). The experts are aware that this information is provided through other sources, too (as e.g. the general IFNTUOG website and Social Media), but it should be included on the special programme website nonetheless.

4.2 Programme Concept and Curriculum

Student Admission: Process and Criteria

According to the self-report, the basic admission criteria are a Bachelor's degree (or higher qualification) and at least a B2 level of proficiency in English. In addition to that, all applicants undergo an entrance examination organized by IFNTUOG. This written exam serves to test the applicants' knowledge and skills in the fields of programming, electrical engineering, measurement technologies and computer systems and networks. Also, applicants need to hand in a motivation letter.

All admission requirements and the entrance examination are designed in line with Ukrainian national requirements.

Curriculum

The programme is taught within the space of 16 months (if studied full-time). As mentioned already, classes take place only at the IFNTUOG campus, even though classes might be taught online if required.

The following table provides a survey of the curriculum:

	Semester 1 (Sep-Jan)		Semester 2 (Feb-Jun)		Semester 3 (Sep-Jan)	
Level 7	English for business communication (compulsory)	3 CP	Computer simulation and design of experiment (compulsory)	5 CP	Standards and quality management system in IT for energy industry (compulsory)	3,5 CP
	Informational systems Project Management (compulsory)	3 CP	Design and development of information systems for energy industry control and monitoring (compulsory)	5 CP	Pre-graduation placement	6,5 CP
	Energy: economics and sustainability (compulsory)	4 CP	Innovations and intellectual property in energy industry (compulsory)	5 CP	Graduation project (compulsory)	10 CP
	Principles of renewable and green energy generation (compulsory)	4 CP	Optional block 1 Module 1	5 CP	Optional block 2 Module 1	5 CP
	Modern world problems and challenges (compulsory)	3 CP	Optional block 1 Module 2	5 CP	Optional block 2 Module 2	5 CP
	Industry placement (compulsory)	3 CP	Optional block 1 Module 3	5 CP		
	Energy Control and Audit (compulsory)	5 CP				
	Principles and methods of data analysis in energy industry (compulsory)	5 CP				

* To synchronize the curriculum with formal LSBU requirements (each module should have a scope of either 5 or 10 ECTS credits – or 10 or 20 British credits, respectively), some modules were merged into blocks which are highlighted green, blue and purple in the survey table above. Each of these blocks equals one 10-credit module at LSBU.

In the first semester students receive necessary knowledge about resilient and sustainable economics, project management and data analysis (along with improving their programming skills). They also improve their English language skills and are familiarized with renewable energy principles and energy audits. Upon completing the compulsory modules, students absolve a 2-week industry placement. IFNTUOG has signed a number of agreements with companies in the subject area that allow students to gain practical experience in the course of their studies.

In the second semester, students learn how to apply their knowledge in the design of information systems, study on modelling, execute experimental work (lab studies) and innovate in order to prepare them for research activities.

According to the relevant regulations at national and institutional level, 25% of the credits in each programme (not less than 22.5 credits in of Master's programmes) should be dedicated to elective modules in order to enable individual study trajectories. Accordingly, students can pick three 5-credit modules (out of 4) in the second semester and two 5-credit modules (out of 4) in the third semester.

At present, the pool of electives is designed as follows:

Optional block 1	Optional block 2
Backend development for IoT interfaces	UI UX design in energy industry
Web interfaces development for IoT data visualisation	Solid modelling
Intellectual systems for decision making support in energy industry	English for engineers and scientists
Mathematical simulation for sustainable energy industry	Quality Assurance of IoT web-interfaces

Due to the relatively small number of students presently enrolled, it cannot be guaranteed that all elective modules are actually offered. If there are not enough votes for a module, it is not run and those students who pick it will have to pick among those modules that got enough votes.

In the third and final semester students learn about standardization and quality control and to apply this knowledge in a research context. In addition to that and to the elective modules, they absolve another practical placement phase to gain more experience in industry (duration: four and a half weeks).

The programme is completed with the final graduation project. The final MA thesis (including thesis defense) is embedded into this module.

Recognition and Student Mobility

At present, the Master's programme does not allow for large-scale, structured exchange of students or staff due to the ongoing war in Ukraine. Provided this situation changes for the better, there are plans to increase the mobility options at programme level, which may also include regular guest lectures or summer schools.

As far as the general mobility options for students beyond the programme level are concerned, the general rules of IFNTUOG apply.

The university has developed very detailed internal regulations for the recognition of credits obtained at other universities, as well as in the context of prior informal and non-formal learning. These regulations are fully in line with the requirements of the Lisbon Convention, explicitly naming it as the central reference document for recognition procedures and decisions.

Experts' Appraisal

The experts commend the programme coordinators on the interdisciplinary design of the study programme. They see a high general demand for this type of "hybrid" qualification and expertise – not only at a national level, but also in other countries beyond Ukraine.

The close linking of *IT* and *Sustainability* within the programme is convincing and addresses some major challenges of our time. The Master's programme could contribute significantly to building up an international scientific community centred around these two topics.

The dual degree will certainly help to attract an increasing number of students to the programme, as, for instance, graduates from the new Bachelor's programme in Renewable Energy that is now being launched by IFNTUOG. The experts got the impression that the partnership with LSBU seems to have worked very well so far and thus express the hope for a further intensification of this successful collaboration.

The experts regard the admission criteria and the student selection process as adequate for the study programme. Both, however, should be made more transparent on the programme website. In particular, it should be specified that as a general rule, applicants should have obtained their first university degree in an engineering discipline (even though, as the experts have learned, this is not compulsory as long as applicants can demonstrate the relevant prior knowledge and skills in the entrance examination). It will therefore be particularly important to highlight these prerequisites on the website, in promotional marketing materials and other sources of information describing the programme.

However, with a view to the broad programme profile it seems acceptable to the experts to attract and accept students from a larger variety of domains/academic disciplines – especially as the online talks have shown that students seem to have little difficulty in mastering the programme requirements although entering with diverse prior qualifications.

The experts understand why the partners chose to rest the programme on several "pillars" (IT/Engineering/Sustainability). However, they also see the inherent risk of weakening the programme profile and remaining too much at the surface in most of the topics covered. In particular, the Engineering pillar may be a bit too weak in this Master's programme – hence, the programme title might raise wrong expectations among potential employers. Focusing the programme on two pillars only (as e.g. *Sustainability* and *IT*, with the *Business* and *Engineering* perspective as cross-sectional topics) is therefore advised.

In the long run the programme may be further developed into a more specialized one directed at a smaller target group, or even into two completely separate programmes. Alternatively, the curriculum may be modified to include several specialization tracks (as e.g. one for sustainable engineering and one for the IT component). This would be especially recommendable with a view to consecutive doctoral programmes: at present, the programme does not provide the necessary in-depth knowledge to prepare graduates to a satisfactory extent for further specialized research at doctoral level. Sharpening the programme profile by introducing more clear-cut elective tracks may be a solution to this problem. Elective modules could also be imported from other, related study programmes. In any case, the present broad range of electives from various, only very loosely connected fields should give way to a more structured approach.

Generally, the experts strongly recommend strengthening the research component of the programme. Although the programme is clearly application-oriented (which is, of course, fully acceptable), it should still qualify students for further pursuing academic research at a higher level. To this end, the students should learn more about research methodology as part of the theory-based modules, through longer research internships or even in the context of summer schools. It should also become transparent in the descriptions of the intended learning outcomes in which academic disciplines graduates are qualified to conduct further research at doctoral level.

The online talks with representatives of the Ukrainian energy industry have also shown that there seems to be a divergence between their needs and expectations and the programme content. Some topics may therefore be integrated into the curriculum to cut the programme more tightly to market needs, as e.g. *Electrical Grids* or *Mathematical Optimization*. In this context the experts also recommend involving British companies in the field of energy supply and grid operation more intensely into the programme in order to benefit from their expertise. Ukrainian and British company representatives should be brought together with the students on a regular basis. The inherent potential of such collaborative relationships should be used to the mutual advantage of the programme, the companies, and the students.

Furthermore, it may be advisable to offer a number of bridging classes for first-year students to close existing knowledge gaps and ensure that all students enter the programme at the same level. These could be classes on key topics of the programme or additional classes in English. In this context, the experts strongly recommend turning the compulsory module in Business English into a bridging class to make space for a module focusing on one of the core topics of the programme.

As the programme is further developed by the partners, it will be vital to continuously revise and update the module descriptions accordingly. The module handbook should always adequately reflect the current state of the art to make it a stable reference document for the current and future cohorts of students.

4.3 Teaching Faculty

As already mentioned, all classes within the programme are currently taught by the faculty members of IFNTUOG. Academic supervisors (as e.g. for the final thesis) can only be picked from among the IFNTUOG faculty, too.

Academic CVs of all lecturers involved in the programme were disclosed to the experts as part of the self-report. The online talks also involved interviews with the programme coordinators and further members of faculty.

All lecturers hold a Ph.D. or a higher qualification in their particular field and are directly attached to IFNTUOG as full professors or associate professors.

In line with its standard procedures, IFNTUOG has appointed an academic coordinator (or "guarantor") for the programme from among the faculty. The guarantor, just like the LSBU link tutor, is part of the General Management Board and the Examination Board for the programme.

All members of the teaching faculty at IFNTUOG are active researchers. The professional development of the teaching staff is actively promoted by the IFNTUOG Teaching Excellence Center which offers general assistance and various didactic trainings for teaching faculty.

From the coming year onwards, the partners are planning to increase the teaching input provided by LSBU.

Experts' Appraisal

The experts are convinced that IFNTUOG has appointed a sufficient number of qualified teaching faculty for the realization of the Master's programme. All lecturers possess excellent academic qualifications and the necessary level of English that is required for this programme. In the course of the online talks, the experts have also gained the impression that the programme generally profits from a highly motivated team.

There is a good gender balance among the faculty. Furthermore, the university provides excellent opportunities for staff development.

The peers were glad to learn during the online talks that there are already concrete plans to increase the teaching input of LSBU by means of online lectures. Considering the fact that LSBU acts as a degree-awarding partner within the programme, this increased involvement seems more than appropriate and was also a wish expressed by the students during the online interview with the experts. Integrating

a higher number of LSBU classes into the curriculum may also help to extend the pool of electives in a meaningful way.

Ideally, the engagement of LSBU should also extend to (joint) thesis supervision or student mentoring.

4.4 Infrastructure, Resources and Student Support

Financial Resources and Funding

The programme is supported out of Twinning project funds for the first year. According to the programme coordinators, further funding has already been secured for the second year.

The programme coordinators also named business companies and industry as a possible future source of funding. Talks have already been held with companies of the energy sector and the IT sector, as well as Oil & Gas companies who are seeking practice-oriented academic training for their staff members. Some of the IFNTUOG laboratory equipment has already been funded by companies.

Learning Infrastructure and Resources on Campus

As an on-site visit of the expert panel was not possible, IFNTUOG has provided extensive video and picture material of the general infrastructure and equipment on campus, including the relevant laboratories, lecture rooms, and PC pools.

Students can use the university library on campus and also have access to the online learning platforms and materials offered by LSBU.

Online classes can also be arranged at relatively short notice instead of in-class teaching.

Student Support Services and Equal Opportunities Policies

IFNTUOG has developed a gender equality strategy and regulations on inclusive education, both of which apply in full to the students of the Master's programme "IT for Sustainable Energy Engineering" and have been disclosed to the experts as part of the self-report. The guidelines on inclusive education include a wide variety of support measures offered to the students, including technical support during the educational process, as well as psychological and medical counselling. Students with impairments may also study based on an individual curriculum and receive special assistance during the study process. For students with sensory impairments, for instance, educational materials are translated into an alternative format in order to warrant accessibility.

Consultation regarding international mobility is offered though the international collaboration office of the university.

For support in all academic matters, students can turn to their lecturers and the academic curator/mentor for their cohort.

Experts' Appraisal

The experts have come to the conclusion that the financial stability and sustainability of the programme is not secure at this point in time. Even though according to the programme coordinators the costs induced by the programme are relatively low, student numbers would probably have to increase steadily in order to secure external funding beyond the first two years. Considering the practice-based profile of the programme and the generally strong commitment of the local industry to the cause of the programme and to the university as a whole, it seems reasonable to approach industrial companies as a potential source of funding. However, to the experts' knowledge, there is no binding funding plan yet which covers the entire accreditation period ahead. The partners should therefore keep in close exchange about this issue to find possible solutions in due time. As a prerequisite for accreditation, the partner universities need to deliver a risk mitigation and engagement plan which outlines possible ways of securing the financial basis of the programme beyond the expiry of external funding. The experts do not expect a binding formal commitment, but rather a general strategy and action plan. As a minimum, it should be warranted that all enrolled students get a chance to finish the programme in case of closure.

The experts gained a very positive impression of the general infrastructure on campus based on the provided visual material. All technical equipment that the students need to achieve their intended learning outcomes is provided on the IFNTUOG campus, as e.g. in the renewable energy sources lab and the energy measurement lab.

E-learning and blended learning is supported and enabled by both partner institutions.

The experts commend IFNTUOG on its comprehensive student support services and efforts to create equal opportunities for students at all levels, including students with special educational needs. Academic support is also provided for the students of the programme at a fully satisfactory level.

4.5 Methods of Teaching and Student Assessment

Most of the theory-based modules in the programme (except the 1st semester module on Business English) offer a combination of lectures, practical or laboratory classes and self-study time, plus consultations with lecturers, either individually or in groups. By and large, about two thirds of the overall student workload are dedicated to self-study time and one third to in-class or virtual contact hours.

In the foreign language module there is no lecture, but rather a mixture of interactive, communication-based exercises in a seminar format.

Throughout the programme, the general institutional assessment regulations of IFNTUOG apply. The majority of the modules combine different forms of continuous assessment and final examinations, as, for example, lab reports, group presentations, project reports or written tests. Students need to pass all intermediary tests, lab work etc. in order to be able to sit the final module examination. Failed module exams can be repeated twice.

The students have to submit written reports on their two practical placements. The final graduation project is completed with a report and a project presentation.

Experts' Appraisal

The experts conclude that the chosen forms of teaching and student assessment are well-aligned with the intended learning outcomes of the programme and the academic discipline as a whole. There is a good balance of theory-based input, application-oriented lab work, and practical phases in the programme. However, as already mentioned above, the element of research methodology should be further strengthened within the curriculum.

4.6 Quality Assurance

As both universities act as degree-awarding partners, they take joint responsibility for the quality assurance and enhancement of the Master's programme. This is stipulated in Paragraph Nr. 6 of the Collaboration Agreement.

According to the agreement, the partners set up a Joint Examination Board for the programme and appoint link tutors who bear the main responsibility for the maintenance of quality standards within the scope of their respective regulatory frameworks. LSBU also appoints an external examiner to the board (cf. Chapter 3).

The agreement further stipulates that the two parties carry out an annual monitoring review of the programme and a formal collaborative review every five years. As regards the exact procedure, the agreement refers to the internal quality manual of LSBU.

In addition to that, each partner university applies its own instruments for evaluation and quality assurance. Before the programme was launched, it successfully underwent the internal validation process of LSBU.

At IFNTUOG, students are asked to evaluate each of their modules (contents and didactic quality) and also get a chance to evaluate their degree programme, their self-study phases and the learning environment as a whole two times a year. The university also conducts regular written surveys among graduates, employers and the teaching faculty. The questions included in all types of surveys were made transparent to the experts as part of the self-report.

In addition to that, the university also collects data on student performance.

The outcomes of the surveys are passed on to the programme managers/guarantors and are further discussed at departmental and institutional level. All feedback provided with regard to the Master's programme is also shared with LSBU. All changes made to the programme for the purpose of quality enhancement need to be agreed upon between the two partner universities, as was confirmed during the online talks.

Aggregated survey results are published on the website of the IFNTUOG quality assurance department and are also disclosed to the student parliament.

During the online talks it became apparent that no written surveys for course evaluation had yet been conducted among the students of the new Master's programme. However, the students reported during the interview that their lecturers always actively asked for direct oral feedback in class, and that the programme guarantor could also be approached on all issues relating to the performance of lecturers and teaching quality.

Experts' Appraisal

The experts have come to the conclusion that a comprehensive quality assurance system has been set up for the double degree programme which actively involves both degree-awarding partner institutions. The partners' responsibilities as regards quality assurance and enhancement are clearly stipulated in a binding collaboration agreement. As far as the experts can see, adequate measures are taken to monitor the quality of the modules and of the programme as a whole on a regular basis. The link tutors on both sides, as well as the joint management and examination boards further safeguard the continuous maintenance of quality standards in the programme.

During the talks with the students, the experts gained the impression that students did not always receive detailed feedback on the results of course evaluation or programme evaluation surveys, as the university only published survey results at a highly aggregated, central level. IFNTUOG should make sure in the future that feedback loops with students are closed, i.e. that students are informed about the specific survey results for their own programme and classes, and about improvement measures taken in response.

Furthermore, the experts recommend involving the cooperating industry partners continuously into the improvement and evolvement cycle of the programme.

4.7 Transparency, Documentation and Public Information

Promotion of the Programme

A bilingual website in English has been set up for the Master's programme which contains basic information on the programme profile, a survey of the curriculum and all course syllabi/module descriptions. It also includes links to the academic profiles of the teaching faculty on the general IFNTUOG website.

The new programme was also strongly promoted via social media platforms and through the companies that support the programme as cooperating partners and potential employers of graduates.

Module Descriptions/Course Handbook

IFNTUOG has published detailed descriptions/syllabi for each teaching unit/module of the Master's programme. The descriptions are written in English, but are designed based on the general regulations of IFNTUOG.

In addition to that, LSBU has designed its own module descriptors for the purpose of the internal validation process for the programme. These are based on the LSBU template, but widely identical in content with the IFNTUOG syllabi, which currently constitute the main source of reference for the students.

Each syllabus contains a detailed description of the qualification goals and the teaching contents of the module. The applied forms of teaching and assessment, the scope of the student workload and the ECTS credits awarded are also made transparent in the syllabi. In addition, all syllabi contain basic information as regards recognition and appeals procedures, as well as regulations for class attendance and for ensuring academic integrity.

Formal Documents and Regulations for Student Assessment and Certification

As the students are enrolled at IFNTUOG only, the assessment regulations of IFNTUOG apply to them throughout the programme. They have access to these regulations, as well as all other formal regulations and guidelines applying to them, via the university website.

Upon completion of the programme, students receive a certificate and a Diploma Supplement from both institutions. Samples of the IFNTUOG documents have been submitted to the experts as part of the self-report. LSBU submitted an example for a diploma certificate from another programme by request after the online talks.

The sample Diploma Supplement issued by IFNTUOG provides all basic information as recommended for this document, including a detailed description of the intended learning outcomes. However, there is no explicit reference made to LSBU as the second degree-awarding partner.

Experts' Appraisal:

The experts have gained the overall impression that the programme is very well promoted: apart from the bilingual website, potential applicants and the general public can retrieve information from various other sources.

As already mentioned above, the programme website should be further extended to include more detailed information on the intended learning outcomes, as well as the prerequisites for entering the programme and the admission procedure. Also, it needs to be made clear on the website and also in the Diploma Supplements issued that this is actually a Double Degree programme jointly offered by two partner universities.

The experts are convinced that the students have full access to all relevant information and regulations at all times. The course syllabi contain all necessary details and are in line with the recommendations of the ECTS Users' Guide.

Appendix

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

Ivano-Frankivsk national technical university of oil and gas

London South Bank University

Response on recommendations and conditions

of accreditation report on Master's Programme

"Informational technologies for sustainable energy engineering"

Dear representatives of expert panel and ZeVA commission!

We would like to extend our sincere gratitude for the thorough and thoughtful accreditation report draft you provided. We greatly appreciate the time and effort invested in evaluating our programme, and we are pleased with the positive feedback reflected in the report.

Regarding conditions and recommendations, LSBU and IFNTUOG held the meeting on 5th of August and discussed the report, as well as conditions and recommendations from the expert panel. Both universities are grateful for such precise analysis of the programme and thankful for the recommendations given.

Worth to note, that since meeting with an expert panel on May, 13th, 2024, a lot of work has been done to improve the programme, including action points that are directly related to recommendations and conditions given in the report draft.

#	Recommendation or condition	ReportPage #	Statement and actions taken
1	Experts recommend further strengthening LSBU's direct engagement in the programme	5	Starting from Autumn 2024, representatives of LSBU will be included not only in the quality control process, but also, directly into the learning process. Particularly, through: - LSBU link tutor, Mr. Raveendran Sundararajan will have a number of introductory lectures on programme profile for 2024 enrollment year students - EAP Professional Mr. James MacInnes will have a number of lectures in business English for students - LSBU representatives will be included as reviewers and consultants to the graduation

			paper research for the 2023 enrollment year students. Potentially, more LSBU teaching staff will be involved into the programme, which was stated in Partnership management board meeting on 3rd of June, 2024.
2	Experts strongly recommend strengthening the research component of the curriculum	5	We agree that the information on research possibilities definitely should have been more highlighted in self-assessment report and in the public resources. According to this recommendation, following actions were done: - New page was added to existing programme website, highlighting research and post-graduate study perspectives; - New optional module is being developed to be offered to 2024 enrollment year students: "Scientific research methodology" for students who are interested in starting their career as researchers. - Existing module "Modern world problems and challenges is to be reshaped to cover how research in the energy industry and IT field can help to solve modern problems and challenges. - For module descriptors, there will be added additional paragraph on how each module is related and will be useful for post-graduate study
3	Sharpening the programme profile from three disciplinary pillars (IT, industry and business) into two.	5	The programme is designed to rely on two disciplinary pillars (IT and Energy industry), however, it's completely understandable that the expert panel sees the business as the 3rd pillar of the programme (mostly, because of three modules in 1st semester, and "Innovation and intellectual property" module in second semester). Here, worth noting that three 1st semester modules have only 10 ECTS credits in total. We would definitely like to reduce this amount of credits, but unfortunately we can't do it because of legal limitations. As it was mentioned in the self report, according to Ukrainian legal documents, the programme belongs to the specialty 175 - Information and measurement technologies. Standard of higher education on this specialty was adopted by Ministry of education and science of Ukraine on 24th of May, 2019, and according to this document the following competencies need to be covered by educational

			programmes: - ability to consider commercial and economic context in professional activity; - ability to manage projects and startups and estimate their results; - ability to follow legal and ethical rules in field of intellectual property; - understanding of patent regulations and having skills in intellectual property security. Thus, we are required to include business-related modules into the programme.
4	Optional bridging classes are recommended to close individual knowledge gaps and to ensure students access	5	Since mandatory modules in the learning plan for 2024 enrollment year students are already approved and can't be changed, for this year IFNTUOG will offer bridging classes as series of lectures for an introduction to the programme, held by programme coordinator, Marian Slabinoha, and programme guarantor, Ihor Liutak, in the Autumn 2024. For the 2025 enrollment students, non-bearing credit course "Introduction to the specialty" will be included into the learning plan for the 1st semester, consisting on 9 lessons related to the field of applying informational technologies in the energy industry.
5	Experts see the need to develop a general strategy for securing the financial stability	5	Financial strategy draft was developed https://docs.google.com/presentation/d/1yIiVg0NsYWpCAw5ipDhc2JW4wH3VvMeN_zGkLKcSqmk/edit?usp=sharing and is discussed at the moment
6	**The intended learning outcomes and the general programme profile should be described in** **more detail on the programme website and in other relevant sources of information. In** **particular, it should be clearly outlined that the programme is primarily application-oriented.**	**6**	Added the information about programme orientation and ILOs on the website of the programme: https://it4see.nung.edu.ua/about-the-course/
7	**The admission criteria and the student selection procedure should be made more transparent to the general public.**	**6**	Additional page addressing to this recommendation was added to the website. https://it4see.nung.edu.ua/admission-criteria/ Full admission conditions are adopted by university

			every year according to the legal regulations, and are being placed and updated at admission committee page (link to this page is given on link above). Currently this documentation is in Ukrainian (because for 2023 and 2024 enrollment programme was oriented on Ukrainian students), but as a part of programme internationalization, this documentation is planned to be translated in early 2025 (when 2025 admission conditions will be adopted).
8	**The experts strongly recommend strengthening the research component of the programme. It should become transparent in the descriptions of the programme in which academic disciplines graduates are qualified to conduct further research at doctoral level.**	**6**	See #2 of this list
9	**The cooperating industry partners in Ukraine should be involved continuously into the improvement and evolvement cycle of the programme. In addition, the experts recommend involving British companies in the field of energy supply and grid operation more intensely into the programme.**	**6**	Regarding Ukrainian company representatives, IFNTUOG had already agreed on series of guest lectures and meetings with representatives of IT and energy companies in Autumn 2024, namely SoftServe, PrykarpattiaOblEnergo, Activolt, Softjourn, and this list will be extended in future. Regarding further enhancing the involvement of company representatives, IFNTUOG and LSBU agreed to form an Industrial Advisory Board for the programme. Industrial advisory board is an independent, industry-based body of experts which provide advisory on the course structure, research and directions to ensure that the programme relates to the trends in industry. Activities of industrial advisory boards include: - assistance with industrial project topics for student dissertations and supporting of site visits, industrial placements and prizes - assistance in student mentoring - taking part in lecturing activities - contribution to the experience of students in helping to promote employability, professional practice and enhancing learning - providing guidance and collaboration from the industry for apprenticeship provision. The advisory board will include both Ukrainian and British industry representatives.

10	**Bridging classes should be offered especially for first-year students to close existing knowledge gaps and ensure that all students enter the programme at the same level. In particular, the experts strongly recommend turning the compulsory module in Business English into a bridging class to make space for a module focusing on one of the core topics of the programme.**	**6**	See #4 of this list
11	**The double degree and the collaborative profile of the programme have to be made transparent on the programme website and in the Diploma Supplements issued by both partner universities.**	**6**	New page addressing the recommendation has been added. https://it4see.nung.edu.ua/history-and-form/ After 1st graduation, diplomas and diplomas supplements from both sides will be added to the website. Both partners agreed to mention the partner institution in their diploma supplements.
12	**A risk mitigation and engagement plan has to be delivered which outlines possible ways of securing the financial basis of the programme beyond the expiry of external funding. As a minimum, it should be warranted that all enrolled students get a chance to finish the programme in case of closure.**	**6**	See #5 in this list
13	From the experts' point of view, the intended learning outcomes and the general programme profile should be made more transparent to the general public (and especially to potential applicants). Hence, they recommend including the ILOs on the programme website, or at least publishing a more detailed description of the programme outcomes online	15	See #6 of this list
14	The prerequisites for entering the study programme, as well as the	16	See #7 of this list

	application procedure should also be described on the programme website		
15	Focusing the programme on two pillars only (as e.g. Sustainability and IT, with the Business and Engineering perspective as cross-sectional topics) is therefore advised.	19	See #3 of this list
16	The online talks with representatives of the Ukrainian energy industry have also shown that there seems to be a divergence between their needs and expectations and the programme content. Some topics may therefore be integrated into the curriculum to cut the programme more tightly to market needs, as e.g. Electrical Grids or Mathematical Optimization.	19	Teaching staff to develop and provide the proposed optional courses (Electrical Grids and Mathematical Optimization) was chosen, the recommendations and consultations on preparing the documentation was given. Proposed courses will appear as a option to choose in Spring 2025.
17	Ukrainian and British company representatives should be brought together with the students on a regular basis.	19	See #9 of this list
18	During the talks with the students, the experts gained the impression that students did not always receive detailed feedback on the results of course evaluation or programme evaluation surveys, as the university only published survey results at a highly aggregated, central level.	24	Following action points are planned: - programme staff meeting, discussing the feedback students made in June 2024, will be held at the beginning of September; - meeting of students with student parliament representatives will be planned to discuss any issues; - regular meetings with programme coordinator and programme guarantor are established every 2 month; - every course of the programme will have feedback survey attached in the virtual learning environment to receive more frequent and precise feedback;

Thank you once again for your valuable insights and for your continued support. Please rest assured that we are committed to addressing these conditions and will take the necessary steps to implement the further recommended improvements.

Best regards,

Programme coordinator,

Marian Slabinoha

Ivano-Frankivsk National Technical University of Oil and Gas