ASIIN Seal & EUR-ACE® Label

Accreditation Report

Ba Water Sector and Land Reclamation
Ma Land Reclamation and Irrigated Agriculture
Ma Operation and Maintenance of Hydromeliorative Systems
Ma Water-saving Irrigation Technologies
Ma Water Resources Planning and Management

Provided by
Tashkent Institute of Irrigation and Agricultural Mechanization Engineers - National Research University (TIIAME)

Version: 12 July 2024

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A About the Accreditation Process

Name of the degree programme (in original language)	**(Official) English translation of the name**	**Labels applied for** [1]	**Previous accreditation (issuing agency, validity)**	**Involved Technical Committees (TC)**[2]
Сув хўжалиги ва мелиорация	Ba Water Sector and Land Reclamation	ASIIN, EUR-ACE® Label	/	03, 08
Мелиорация ва суғорма деҳқончилик	Ma Land Reclamation and Irrigated Agriculture	ASIIN, EUR-ACE® Label	/	03, 08
Гидромелиоратив тизимлардан фойдаланиш	Ma Operation and Maintenance of Hydromeliorative Systems	ASIIN, EUR-ACE® Label	/	03, 08
Сув тежамкор суғориш технологиялари	Ma Water-saving Irrigation Technologies	ASIIN, EUR-ACE® Label	/	03, 08
Сув ресурсларидан мукаммал фойдаланиш ва бошқариш	Ma Water Resources Planning and Management	ASIIN, EUR-ACE® Label	/	03, 08
Date of the contract: 22.04.2022 **Submission of the final version of the self-assessment report:** 13.09.2023 **Date of the onsite visit:** 24.-26.01.2024				

[1] EUR-ACE® Label: European Label for Engineering Programmes.

[2] TC: Technical Committee for the following subject areas: TC 03 - Civil Engineering, Geodesy and Architecture; TC 08 - Agriculture, Forestry, Food Sciences, and Landscape Architecture.

at: TIIAME Campus Tashkent	
Expert panel: Prof. Dr. André Niemann, University Duisburg-Essen Prof. Dr. Peter Braun, Hochschule Geisenheim University Dr. Vadim Sokolov, Head of office, Agency of the International Fund for saving the Aral Sea (Agency of IFAS) Murodjon Abdurakhmanov, National University of Uzbekistan	
Representative of the ASIIN headquarter: Sascha Warnke	
Responsible decision-making committee: Accreditation Commission for Degree Programmes	
Criteria used: European Standards and Guidelines, as of May 15, 2015 ASIIN General Criteria, as of December 10, 2015 Subject-Specific Criteria of Technical Committee 03 – Civil Engineering, Geodesy and Architecture as of September 28, 2012; Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture as of March 27, 2015 EUR-ACE® Framework standards and guidelines, as of March 31, 2015	

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Сув хўжалиги ва мелиорация" таълим йўналиши соҳасида инженерия ва технологиялар бакалаври	Bachelor of Science (BSc) Water Sector and Land Reclamation	/	6	Full time	--	8 semesters	240 ECTS	Annually, since September 1, 1997
Land Reclamation and Irrigated Agriculture	-	/	7	Full time	--	4 semesters	120 ECTS	Biannually, since September 1, 1997
Operation and Maintenance of Hydromeliorative Systems	-	/	7	Full-time	--	4 semesters	120 ECTS	Biannually, since September 1, 2019
Water-saving Irrigation Technologies	-	/	7	Full-time		4 semesters	120 ECTS	Biannually, since September 1, 1997
Water Resources Planning and Management	-	/						

For the Bachelor's degree programme Water Sector and Land Reclamation the institution has presented the following profile in the self-assessment report:

The study programme encompasses "tools, techniques, approaches, and methods of human activity aimed at developing professional skills in the development and use of irrigated lands, improving the ameliorative condition of lands, the creation and operation of hydromeliorative systems and structures, sustainable management and rational use of water resources".

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

For the Master's degree programme Land Reclamation and Irrigated Agriculture the institution has presented the following profile in the self-assessment report: "Graduates of the educational program are trained to carry out scientific research activities in the fields of production and technology, organizational management, design and land reclamation, and irrigated agriculture scientific specialization".

For the Master's degree programme Operation and Maintenance of Hydromeliorative Systems the institution has presented the following profile in the self-assessment report: "Graduates of the training program are trained in production and technological, organizational, and management design and research. According to the requirements, a specialist must have a high level of professional training, combine extensive fundamental scientific and practical training, master his specialty perfectly, continuously supplement his knowledge, apply the principles of scientific organization of work, and master advanced methods of conducting scientific work, have research and qualifications of scientific and pedagogical works."

For the Master's degree programme Water-saving Irrigation Technologies the institution has presented the following profile in the self-assessment report: The programme "aims to prepare graduates for various professional activities related to water-efficient irrigation technologies. Organizations under the Ministries of Agriculture and Water Management; Irrigation Systems Basin Departments; The Academy of Sciences of the Republic of Uzbekistan; branch research and design institutes for agriculture and water management; and Departments of Agriculture and water management; Water Management and reclamation facilities."

For the Master's degree programme "Water Resources Planning and Management the institution has presented the following profile in the self-assessment report: The programme "prepare[s] graduates for a range of professional activities related to water resources planning and management. This includes proficiency in understanding and addressing water-related challenges, such as water scarcity, irrigation systems, hydroelectric power generation, water quality management, and sustainable water use."

C Expert Report for the ASIIN Seal[4]

1. The Degree Programme: Concept, Content & Implementation

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

Evidence:

- Diploma supplement
- Objective-module matrix
- Rector's presentation
- Self-assesment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME) is a university in Tashkent, founded in 1923. Next to its main campus in the Uzbek capital Tashkent, it operates campuses in Bukhara (Bukhara Institute of Natural Resources) and Karshi (Karshi Institute of Irrigation and Agrotechnology). TIIAME was granted the title of "National Research University" in 2021 by the Uzbek government. The vision of TIIAME is to "become a world-class university characterized by its excellence and contribution to society through education, advanced research and internationalization". Its vision is expressed in the following three points:

1. Pursuing and delivering academic excellence in every aspect of our endeavours
2. Producing graduates to become future-ready leaders through lifelong learning experience
3. Developing the potential of water and agriculture, as well as improving the prestige of Central Asia in education, research and innovation in the global market.

[4] This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

TIIAME consists of seven faculties that offer 40 Bachelor's degree programmes, 36 Master's degree programmes and 22 PhD programmes as of 2024. There are 380 professors and associate professors (or candidates of science), 250 assistance professors and 120 doctors of science employed at the university. There are about 7,000 students enrolled, of which 1,400 study part time and 194 are international students. Currently, the university is ranked as the best university within the Republic of Uzbekistan (State Inspectorate for Supervision of Quality in Education under the Cabinet of Ministers of the Republic of Uzbekistan), and makes ninth place in Central Asia (QS Asia University Rankings).

The study programmes under review here are one Bachelor's degree programme and four Master's degree programmes. They are named as follows:

- Ba Water Sector and Land Reclamation
- Ma Land Reclamation and Irrigated Agriculture
- Ma Operation and Maintenance of Hydromeliorative Systems
- Ma Water-saving Irrigation Technologies
- Ma Water Resources Planning and Management

The five study programmes are part of the Faculty of Hydromelioration, and offer various specialisations within the greater subject of irrigation, agriculture, water treatment. Water and its uses are important topics in a region like Uzbekistan, in which water is a scarce resource. Thus, water is a source for international, political conflict and collaboration and, within the country of Uzbekistan, a great issue of sustainability and mitigation of climate change that is currently altering climate patterns. This helps to explain the high degree of specialised fields of study at the Master's level. The importance of these study programmes can also be fathomed by the choice to be among the first programmes to be accredited internationally at TIIAME.

For their assessment of these study programmes, the auditors refer to the requirements of the Technical Committee 03 – Civil Engineering, Geodesy and Architecture as of September 28, 2012; Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture as of March 27, 2015; and the EUR-ACE® Framework standards and guidelines for their assessments.

The Bachelor's Programme Water Sector and Land Reclamation is an 8-semester programme with 240 ECTS to acquire. Admission occurs annually in September with an average cohort size of 50 students. The programme is offered in Uzbek, Russian, and English; students may choose which language of instruction they prefer at the beginning of their study programme. The programme is associated with the specifics of the activities of the water industry and respective organisations and services that use and manage water resources.

As was said before, water is a scarce resource in Uzbekistan and neighbouring countries, which is why the whole water system is part of the curriculum as well as the reclamation of land, e.g. from salinization. The programme aims at training specialists in designing and improving technologies for a reliable and sustainable use of the water management system in the region.

The four Master's degree programmes under review here all have 120 ECTS to acquire within the course of four semesters. Language of instruction for all Master's degree programmes is only English. This is a recent development in which the government requires all Master's programmes throughout the country to be taught exclusively in English. This decree was put into practice in 2022 and at TIIAME, there are currently about 70 % of courses taught in English. In the same year, admission procedures were increased to biannual openings, i.e. in January and September, after being exclusively offered annually in September. The average cohort in the first semester is six students. The following lists a brief summary of each programme under review:

The Master's degree programme Land Reclamation and Irrigated Agriculture is associated with the activities of respective enterprises, research, and higher education organisations and services in the region. The country is currently experiencing population growth with an industry growing equally as fast, while ecological conditions of arable land are deteriorating due to climate change, exacerbated water scarcity and further uncertainties emerging therein. The programme's goal is to train new experts and researchers who are able to, based on a scientific approach, find and organise solutions to the problems of irrigation in a deteriorating landscape. The focal points are sustainable land and water management, improve ameliorative conditions while raising productivity.

Operation and Maintenance of Hydromeliorative Systems, the second Master's degree programme under review, focuses on hydromelioration in its curriculum. Hydromeliorative systems comprise canals, hydraulic structures, reservoirs and pumping stations, which have a great importance throughout the regions of Uzbekistan and transnationally in the whole area. Graduates are supposed to find solutions to problems of sustainable maintenance and improvement of these systems while keeping in mind natural and anthropogenic impacts.

The programme Water-Saving Irrigation Technologies emphasises the increasing deficit of water resources in the region. Its goal is to train experts and researchers who are supposed to introduce modern water-saving technologies, especially in irrigated agriculture. This is in line with the development plan of the country, which plans to strategically introduce water-saving technologies on 2 mio hectares of irrigated land, from 250,000 ha today.

The last Master's degree programme under review here is called Water Resources Planning and Management and brings into focus the importance of water resources on regional, intersectoral and transboundary levels. Water scarcity furthers conflicts between all levels of political actors, so water resource management needs to be conducted keeping in mind all political and social parties. The programme aims at training experts and researchers who use their knowledge to further responsible resource management.

For the assessors, the learning outcomes are well-tailored to each respective programme. The difference between the Bachelor's and Master's programme is discernible, and the learning outcomes are presented in a concise manner. An exception to this is the Master's degree programme Water Resources Planning and Management which is, at times, redundant and could be shortened for a more stringent appearance. As an example, LO5 reads "work on modern scientific equipment while conducting scientific research in the field of water resources management" while LO9 slightly refocuses the subject of research as "choose research methods, plan and conduct necessary experiments, interpret results and draw conclusions." The experts agree that the learning outcomes fit the subject of the degree programme but could be condensed into a more stringent list. Other than that the expert team welcomes that the learning outcomes presented for the programmes are a good representation of their goals.

The learning outcomes are reviewed annually, both at an university-internal level and with stakeholders. Industrial stakeholders may give feedback to the faculty about the expected competencies and whether the graduates actually meet this expectation. During the audit, representatives of relevant industries are present and confirm their involvement with the learning outcomes.

Generally, the auditors are satisfied with the programme learning outcomes as outlined in the official curriculum documents. They conclude that, in formulating the intended learning outcomes, the university has followed the EUR-ACE® framework and the Subject-Specific Criteria of the involved ASIIN Technical Committees. The auditors confirm that the study aims and learning outcomes of the two programmes correspond with level 6 and 7 of the European Qualifications Framework (EQF) respectively. They are further satisfied that the learning objectives are regularly reviewed by TIIAME, its students as well as external stakeholders and adapted to the needs of the industry.

Criterion 1.2 Name of the Degree Programme

Evidence:

- Diploma supplement
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
All names of the programmes correspond to a "State educational standard of higher education", which are approved of by the government. While it might appear that the names of the Master's study programmes are quite similar and have a great overlap, the names of the programmes are sufficiently varied to represent an individual emphasis on technologies or social and political issues arising from water scarcity. The names of the study programmes are a great representation of the important role of water resources in the region.

According to the experts, both the Bachelor's and the Master's degree programmes fulfil the requirements. The names of the study programmes are expressive and, for the Master's degrees, highlight the specialisations that are offered within the context of water resources and irrigation. Throughout the documents, the names of the study programmes are used consistently, e.g. in the diploma supplement.

Criterion 1.3 Curriculum

Evidence:

- Official curriculum overview
- Module handbooks
- Statistical data about international mobility
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
Content and structure of the programmes:

The general structure of the Bachelor's degree programme follows the State Educational Standard of the Republic of Uzbekistan, and consists of four "cycles":

1. Cycle of humanities and natural-scientific disciplines (76 ECTS);

2. Cycle of general professional disciplines (108 ECTS);
3. Cycle of profile disciplines (51 ECTS);
4. Final certification (writing and defence of a thesis, 5 ECTS).

This amounts to 240 ECTS total. Each module taught in this programme is categorised according to these cycles. The Bachelor's degree programme is comprised of eight semesters. The first six semesters contain six courses, the seventh five and the eighth amount to four courses. The last semester also encompasses the thesis à 5 ECTS. Part of the process of writing the thesis (i.e., data collection and statistical analysis) is done in a separate course, which amounts to 5 ECTS as well. The second, fourth, sixth, and eighth semester also include an internship, explained below in greater detail.

The Bachelor's degree programme begins with a general introduction to several fields, i.e. a foreign languages, higher mathematics, physics, and, following government regulations, a course on the newest history of Uzbekistan, a course on Uzbek or Russian language and physical education. The second semester furthers knowledge in mathematics and the foreign language while introducing engineering and chemistry to the schedule. Starting with the third semester, water management is implemented in the curriculum. Beginning here, each semester contains at least one elective course to be chosen, usually out of three course offers. The courses get increasingly more specific and especially the elective courses further students' special interest. For example, in the seventh semester, students may choose two electives, one between the courses "chemical reclamation", "digital control systems", and "forecasting crop yields based on water use", and a second one between "soil leaching technology", "ameliorative monitoring", and "land reclamation and protection".

The internships that take place every other semester are self-contained units that fulfil a specific purpose within the degree programme. Each internship can be taken with a collaborating industrial partner, and the students remain under the supervision of a staff member of the university. The first internship, in the second semester, is an introductory internship. The students, in groups, spend four weeks under the mentorship of a professor in a preselected organisation to get acquainted with the workings in their field. Two week are reserved for land surveying, and another two weeks for soil science. In the fourth semester, the students take part in an educational internship, where they are supposed to improve their skills in laboratory and technological work for four to six weeks. This internship is supposed to connect the acquired academic knowledge with work the way it is actually done in the industry. The third internship after the third year is the qualification internship. There, students work under the mentorship of leading experts and perform professional duties, such as water resources calculation, water resources use planning, operation and maintenance of irrigation and land reclamation facilities, water resources management,

and use documentation. Collaborating industries are, e.g., irrigation system management authorities, irrigation service companies, and the Department of the Ministry of Water Resources. After their time during the internship the students are evaluated by the organisation. The last internship is the pre-diploma work internship. It is scheduled for the second part of the fourth year for ten weeks total. Students are supposed to enhance the acquired skills and collect data for their diploma work. The internships are well integrated into the curriculum and have a specific purpose that is obvious from the structure and placement within the degree programme.

The four Master's degree programmes are two-year programmes that also feature cycles, predefined by the government. They are as follows:

1. Cycle of mandatory disciplines (32 ECTS);
2. Cycle of elective disciplines (18 ECTS);
3. Scientific activities (70 ECTS).

The scientific activities are standards such as a professional and a qualification internship, as well as research work, resulting in a mandatory Master's thesis (cf. criterion 2 for its structure). The total amount of ECTS to acquire is 120. There is no specific order in which specific modules need to be taken. There are eight mandatory courses, among them six that further the understanding of the respective focus of the study programme. The other two are about research methodology and specific subject teaching methods. Additionally, there are five elective courses to be taken. Students can choose elective courses from pre-selected course lists. Upon inquiry of the assessors, the programme coordinators state that it is also possible to take courses that are not present in this pre-selection (i.e., from other study programmes). According to the coordinators, there has not yet been such a precedent.

The scientific internship accompanies the study programme by allocating two days per week for work and three for studying (called the "3+2 approach"). During this time students work in research activities or projects at university to acquire research skills (among them literature review, defining research goals, and planning or conducting experiments) and also to collect data for their Master's thesis. Academically, the students are supported by mandatory courses on research methodology. Corresponding industries vary among the degree programmes, but they all include Ministries within Uzbekistan, other governmental institutes, and private enterprises. A clear focus in all programmes is put, however, on government work. A second internship takes place after the first year. Here, students are distributed among research centres, both nationally and internationally, to do research and educational work under the mentorship of experts in the respective field. The first internship is worth 30 ECTS, the second 8 ECTS.

The assessors agree that, structurally, all degree programmes under review here represent a well-matched unit of teaching and learning, with each module listing times to be reserved for lectures, practical and laboratory work, projects, as well as self-study and research activities. There are no structural peaks that would hamper a smooth progress. As established by the cycles, it is obvious which courses are supposed to further which general competence. The experts find that the degree programmes are structured in a way that grants an all-encompassing understand of the general fields of study and offers enough flexibility – especially in the Master's degree programmes – to allow for individual focal points. During the audit, the students, too, point out that the workload is evenly distributed. They consider the structure of the programmes logical. The student in the Bachelor's degree programme, in which the structure is more premeditated, cannot point out certain courses that appear too hard to follow.

Content-wise the assessors initially opine that the curricula of all study programmes meet the requirements in general, except for the issue of sustainable water management, which is an important understanding to be had in an environment where water becomes a much scarcer resource. During an internal discussion, the experts were certain that bits and pieces are present in the curricula but there is no focal point on this issue, which is to become a professional problem for all graduates of either degree programme. During the discussions with the programme coordinators and the lecturers, it becomes obvious, however, that the teaching content regarding sustainability is sufficiently covered already in the Bachelor's degree programme, meaning that the Master's students begin their study programmes with a foundational knowledge on this topic. All courses that feature teaching units about sustainability in the Bachelor's degree programme are interconnected throughout the curriculum. The lecturers confirm that they design their teaching units on sustainability based on the pre-existing knowledge. Furthermore, the students present during the audit, both in the Bachelor's and Master's degree programmes, prove keenly aware of the issues about modern way of sustainable water management. This is especially due to the industrial and research internships that bring students into contact with the topic of sustainability on a day-to-day basis.

Another issue that is discussed during the audit are courses on water treatment. The expert team find this to be lacking in the curricula, but not without reason: as of now, the assessors and the programme coordinators agree that experts in the field do not need to focus on water treatment, but this might become a more pressing issue in the future as water might need to be multi-purposed in the industry. The assessors are of the opinion, however, that the university might do well to keep this issue in mind for future revisions of the curricula. During the discussion with the industrial partners, the assessors learn that the industry thinks much of students and graduates from TIIAME. They are described as having a "good

and solid engineering education" and as being sufficiently trained in interdisciplinary work expected of graduates in their field.

The assessors hence are certain that all curricula fully satisfy the requirements both structurally and content-wise. This is also confirmed by the students, who admit to being content with the curriculum, especially the elective courses, and the alumni, who felt well prepared for their professional career.

Student mobility:

TIIAME is currently undergoing rapid internationalisation, which is a process also present in other parts of the country, especially on an academic level. As was already mentioned, the government of Uzbekistan decreed in 2022 that all Master's degree programmes be taught in English exclusively. TIIAME adapted quickly, restructuring the Master's programmes under review to have English as their only language of instruction. Many lecturers at the university studied for their PhD abroad so they have a very good grasp of English both conversationally and regarding professional vocabulary. For the Bachelor's degree programme, too, there is a possibility to study in English next to native Uzbek and Russian. This is, for one, a great opportunity for inward mobility, since the language barrier is less constrictive, but it also furthers much needed linguistic competency for outgoing students.

The university has over 100 international memorandums and agreements with universities for collaboration, research, and education purposes. Notably, TIIAME has an ongoing partnership with University Obuda (Hungary), the University of Life Sciences (Slovenia), Kazakh National Research Agrarian University (Kazakhstan), Kazakh-German University (Kazakhstan), Moscow University of Land Development (Russia), and Wageningen University (Netherlands), in the area of the study programmes to be accredited.

International mobility for students is organised in various ways. The Erasmus+ programme supports students at TIIAME with outward mobility, while it also allows for students from abroad to study in Tashkent. For students of the Bachelor's degree programme, it is recommended to take part in an exchange programme after the first year of study. For the Master's degree programmes, the students may go abroad after completing the first semester. The following table showcases the amount of students in the respective degree programmes who take part in mobility programmes. There is a sharp decline in the numbers between 2020 to 2022 due to the COVID-19 pandemic; the numbers have stabilized afterwards. The amount of Master's students who go abroad is particularly notable given that the cohorts are relatively small with an average of six students per admission.

		2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
1	60812300-«Water Sector and Land Reclamation»	3	4	0	2	4
2	70812302-«Land reclamation and irrigated agriculture»	6	4	0	3	3
3	70812305-"Operation and maintenance of hydromeliorative systems»	3	2	0	1	1
4	70812306–«Water-saving irrigation technologies»	2	2	0	2	2
5	70812307-«Water resources planning and management»	2	3	1	2	2
		16	15	1	10	12

1Amount of students going abroad in each study programme (taken from the self-assessment report, p. 61).

Further opportunities, which TIIAME promotes and supports, are participation in national and international conferences and other external projects, and establishing contact with further universities from the US, the EU, and pan-Asian countries.

During the audit, the students seem keen on spending time abroad, either to get to know other cultures and languages, or to profit from the expertise in specific fields. They know where to get information about exchange programmes, which shows that dissemination of information about outward mobility at TIIAME is working well. During the audit, the students who have experiences overseas give only positive opinions about their time abroad and its organisation. There appears to be no problems with credit transfer or general funding. The assessors are fully satisfied with the mobility of students and the general course of internationalisation of TIIAME.

Periodic review of the curriculum:

The curriculum is reviewed regularly, in a greater fashion every five years, but smaller changes or improvements can be adapted more frequently. The university develops

changes internally at first, but asks for feedback from industries, agencies, private partners, and international partners from higher education. Afterwards, the feedback is integrated and students and other stakeholders are asked for suggestions. This way, TIIAME ensures that all expectations of internal and external stakeholders are met. Internal feedback from academic staff regarding the curriculum is welcome and is considered. Structural changes, like credit balance etc., can only be changed during the bigger review process.

The experts can ascertain that curricular changes are announced and documented. The university states that all changes are published on their website. The experts approve of the way the periodic review of the curriculum is performed at TIIAME.

Criterion 1.4 Admission Requirements

Evidence:

- Several decrees of the President of Uzbekistan on student admission
- Qualification requirements for all study programs
- Regulations on the procedure for admission
- Webpage TIIAME https://tiiame.uz/en
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The admission requirements at TIIAME generally follow the “National educational standards for higher education”, “Classificatory of majors and directions of Higher Education”, and “National Qualification Framework of the Republic of Uzbekistan”. These regulations state that citizens of the Republic of Uzbekistan, foreign citizens, and stateless people with secondary general (general secondary), primary vocational (technological and innovative), secondary vocational, and higher education can be admitted to educational organisations of the Republic of Uzbekistan that implement vocational training programs for higher education, which applies for the Bachelor’s degree programme under review here.

Admission follows a quota that is given by the Republic of Uzbekistan, which considers general market research and the current and expected need of experts in a specific field. Everything above this quota is regulated by the State Commission. A national exam, conducted by the State Testing Center, is the foundation for admission. Students receiving state grants based on their achievements in the admission tests gain priority admission. TIIAME admits

the remaining students based on their test results within the fee-contract quota. Special admission regulations are in place for women, people with disabilities and children from low-income families, which receive specific state grants to support diversity. Admission quotas are posted on the website of the State Testing Center when the relevant decision is announced. During the admission test, students can choose up to five undergraduate programs of their interest. Based on the selection of their study programs, the application system will select related questions suitable for the desired qualification. The application usually takes place at the end of June, beginning of July. Students have to pay a fee to take part in state admission test.

Admission to the Master's degree programmes is regulated by the State Commission for Admission to Educational Institutions of the Republic of Uzbekistan. The Commission considers the results of the national tests and previous studies. The competition is kept separate within the specialties of the Master's degrees, languages, and teaching forms. To apply, students must hand in documents in July via the website magistr.edu.uz, where they enter their higher education institution and specialisation of choice. Acceptance of students for the Master's degree programmes takes into account grade point average (GPA) as well as English proficiency. Students must prove at least a B2 level in English proficiency according to the Common European Framework of Reference. Generally, testing of English proficiency is conducted via Cambridge or IELTS. The students present during the audit all have a good grasp of spoken English and manage to communicate their thoughts both interpersonal and professional without great problems.

For students from abroad there are announcements and explanatory work on the website and on social media, as well as at international educational exhibitions that attract international students. If accepted, an Admission Commission conducts interviews in the middle of August where students are selected.

The amount of applicants from 2018 to 2022 is given in the table below. It shows that, most strikingly, all Master's courses are particularly small with only two applicants and enrolments in 2022. This sharp decrease can be explained with the COVID-19 pandemic. The auditors ask TIIAME to provide the numbers for 2023 to verify that the decrease is indeed not a structural problem and that the numbers have bounced back to their pre-COVID state. The Master's degree programmes are relatively small according to the experts. They discuss the feasibility of four degree programmes with so little a student body and agree that these courses are viable. For one, the industrial partners confirm that Master's students in all specialisations are valuable in the industry. Furthermore, most professors that teach in the Master's courses operate in the Bachelor's degree programme, too.

Academic year	Applicants	Enrolled
60812300-«Water sector and land reclamation»		
2018	824	164
2019	755	148
2020	602	106
2021	1217	64
2022	480	77
70812302-" Land reclamation and irrigated agriculture" (Ma)		
2018	22	6
2019	23	11
2020	27	8
2021	24	10
2022	2	-
70812305-"Operation and maintenance of hydromeliorative systems" (Ma)		
2018	20	4
2019	18	7
2020	15	9
2021	36	11
2022	2	2
70812306-"Water-saving irrigation technologies" (Ma)		
2018	15	4
2019	19	11
2020	23	8
2021	44	11
2022	2	2
"70812308-Water resources planning and management" (MA)		
2018	12	4
2019	11	6
2020	24	14
2021	29	9
2022	2	2

2Applicants and enrolled students 2018-2022 (taken form the self-assessment report, p. 87)

TIIAME can prove that procedures for admissions as well as the requirements are binding and transparent. The rules are clearly defined and pose no uncertainties during the admissions. The students present at the audit confirmed that rules and regulations for admissions were clear to them. The experts acknowledge the access and transparency of admission requirements and do not see a need for change.

Criterion 1.5 Workload and Credits

Evidence:

- Self-assessment report
- Official curriculum document of each study program
- Module handbook of each study program
- Discussion during the audit

Preliminary assessment and analysis of the experts:
As part of their internationalisation strategy, TIIAME recently adapted the ECTS for all study programmes, which, in general, is rare at Uzbek universities. This implementation is supposed to facilitate international partnerships and exchange programmes. Thus, 1 ECTS is equal to 30 hours at TIIAME. The Bachelor's degree programme totals 240 ECTS, and all Master's degree programmes amount to 120 ECTS. In each curriculum document, the modules are listed with their total number of ECTS and how they break down into credits to be reserved for lectures, practical and laboratory work, projects, as well as self-study and research activities. The module handbooks, too, list the total workload per module in hours, and divide the sum into contact hours, lectures, practical lessons, and self-learning.

As was discussed before, the Bachelor's degree programme at hand features four years with 30 ECTS to acquire per semester on average. There are four internship integrated in the curriculum to be taken at the end of the first three years and during the last semester. Their purposes and length vary and so does the amount of credits to acquire. There are no structural peaks in the workload, which is confirmed by the students.

The Master's degree programmes all encompass 120 ECTS that are subdivided into mandatory and elective courses. In comparison to the Bachelor's degree programme the schedule is more flexible. As part of the curriculum the students take part in two internships that are organised as a 3+2 model, i.e., three days are reserved for studying and two days for the internship. Due to the general flexibility, there are no structural peaks in the Master's degree programmes, which, again, is confirmed by the students.

The students generally confirm during the audit that the workload for either programme under review is adequate. It is not too heavy to manage – even temporarily – but, at the same time, it remains challenging. The experts can confirm that the workload is well calculated and a realistic estimation of actual work to be performed by the students. The credits awarded for each module are monitored by TIIAME in the form of student surveys to ensure that they represent the actual workload of the students.

The drop-out rate for the Bachelor's degree programme was 39 students in the academic year of 2018/2019. This rate has steadily decreased with the lower student numbers until 2023. Students usually drop out in the first or second year of study, a trend that TIIAME sees all over the Bachelor's courses. For the four Master's degree programmes there have been none to two drop-outs per year over the last five years.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Module handbooks

- Student surveys
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
TIIAME states in their self-assessment report that didactics are an ever-developing system, which is why teaching methodology needs to be frequently reassessed and adapted. The contact hours at the university are either lectures or practical training, i.e. laboratory work. The general structure of lectures are a general introduction to the subject at hand, which comes with a contextualisation of previously learnt material and its relevance in the field. The main part of the lecture consists of a problem formation, in which main concepts are presented and discussed. These parts of the lecture contain various teaching methods, e.g. lecturers, discussions in the classroom or in small groups and presentations. At the end of the lesson, the new information is summarised and contextualised. Practical training has a similar structure being composed of an introduction to the topic, a short motivation to engage with the problem at hand, and a short assessment of the students' knowledge of the field. Then, the students are given a problem that they can solve individually, in groups, or with the help of the lecturer. The lesson is completed with a summary of the topic.

The teaching methodology has, according to the teaching staff, shifted to a more interactive approach in which ex-cathedral teaching is becoming less common. The lecturers favour a more modernised way of instruction, in which soft skills are trained, e.g. by allowing for group discussions and presentations, individual problem solving, and quizzes.

The encouragement of independent scientific work is especially pronounced in the four Master's degree programmes at hand. Students begin with a course on research methodology in their first semester and spend the entire programme to work on a coherent Master's thesis, from finding their own research topic, to finding literature and collecting data (cf. criterion 2 for a more detailed description). In the Bachelor's degree programme, there is no entire course on research methodology. During perusal of the final theses, the experts come across some inconsistencies in scientific standards that might be ascribed to a lack of instruction. This, too, is depicted in greater detail in criterion 2. The discussion with the students shows that the Bachelor's students appear quite uncertain about the usage of databases to find current, international scientific papers. The experts recommend that the students be taught more concisely the utilisation of these library tools for independent scientific work.

The teaching staff states during the audit that teaching methodologies are regularly discussed in staff meetings. In these meeting, they also review whether the utilised learning and teaching methods support the achievement of the programme objectives. Generally,

the experts are content with the teaching methodology at TIIAME, notwithstanding the shortage of introduction to scientific work in the Bachelor's degree programme.

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

The experts consider criterion 1 to be fulfilled for all programmes.

2. Exams: System, Concept and Organisation

Evidence:

- Decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 824 of December 31, 2020, "On measures to improve the system related to the organization of the educational process in higher education institutions"
- Regulation on exams
- Module handbooks
- Exemplary exams and final theses
- Statistics on academic performance of students
- Student surveys
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

Module assessment

Each module in the study programmes at hand terminates with a final exam. These exams can take several forms, e.g. written or oral tests, standardised tests, and written reports or assignments. Topics and questions for the examinations are developed and discussed in department meetings and need to be approved by the Dean. When the questions for the examinations are being decided upon, the department arranges them into different levels of difficulty (simple, average, complex) to assure that each exam begins with simple questions that gradually get more challenging. The exams are conducted at the end of each semester throughout a period of two weeks. The timeframe of the exam weeks is promul-

gated in the beginning of the semester. Generally, students take five to six courses a semester which means that the workload during the exam week is manageable. This is confirmed by the students during the audit. According to the regulation on exams, there should be an interval of two days between two exams and there should be no more than two exams with high complexity in one week. During the audit, the students state that this regulation is met.

As a preparation for the final exams, students are tasked with smaller exercises throughout the semester, as well as a mid-term exams. The mid-terms are short tests that might take the form of quizzes, written or oral examinations. They serve to encourage continuous learning throughout the semester and prepare the students for the final exam in time. The assessors wonder if the mid-terms are actually helping or just time-consuming. The students unanimously attest to the positive effect on the mid-term exams and state that it helps them with managing the lessons and preparing the lessons. The assessors agree that the mid-term exams can be a great help to advance the intended learning objectives evenly. However, they find that there are mid-term exams throughout the five study programmes under review, in which the effort for the mid-term exam is disproportionately more demanding than that of the final exam. For example, the course “Geoinformation Systems and Technologies” in the Bachelor’s degree Water Sector and Land Reclamation features two mid-term exams à 80 minutes and a final exam à 80 minutes. It is unclear why the mid-terms are supposed to be more laborious than the final exam. This exact method of assessment, in which there are two mid-term assessments that take 80 minutes each and one final exam that takes 80 minutes, is found in all study programmes at hand in at least one course. The experts recommend to reassess the effectiveness of this form of examination and lower the workload for the mid-term examinations. This is especially important when taking into account the calculation of the final grade: While 40% of the grade is made up of the final examination, there are 20% allocated each for working in the classroom, self-study tasks, and the mid-term exam.

To pass a test, students must at least get a score of 60%. TIIAME uses the following grading scales in their assessments (as printed in the self-assessment report):

The "5 scores" grading system	100 points evaluation system	GPA average
“5”	90-100	4,46-5,0
“4”	70-89,9	3,46-4,45
“3”	60-69,9	3,0-3,45
“2”	0-59,9	0-2,99

General rules about the final exams are given in official documents (regulation on exams) that the students have access to. In it, it is officialised how different kinds of exams are held

(which includes, e.g., time allotted for the exam, disallowed paraphernalia, etc.), and what counts as an attempt to cheat on a test. Moreover, the regulation describes the procedure of each kind of examination, how grades are calculated, and how remedial exams are organised. Students who are absent from final examinations due to illness or force majeure receive another opportunity for a test later in the semester with the allowance of the Dean of the faculty. Those who fail an exam may also take a remedial exam at a later date, and are encouraged to take a course in a summer school against a fee that is calculated along the credits the student occupies. Taking these additional courses is not mandatory. During the audit, the students cannot give more information on these courses since none of them have taken part in it. The lecturers confirm that this offer is rarely taken up on. This is corroborated by statistics in which the academic performance of students throughout all degree programmes is very high chronologically. During the audit the experts survey the exams and their grading and find that the topics and questions are well-interlocked with their respective course description and the learning outcomes. The composition of the exams (both written and oral) show an intended learning curve in which is well put into practise. The exams are not too easy to solve but prove an adequate challenge to the students.

When students feel that their grade on a final test is not correct they may appeal the decision to an appeal commission which will consider the complaint. To do so the students have one day's time after the results are published. The assessors find this timeframe to be very short and the programme coordinators agree. They state that this short period of time is a government regulation which they have to conform to.

The assessors find the regulations postulated by TIIAME to be sensible and transparent. They do not endorse the short time period given to the students to appeal but understand that the regimentation is out of their hands.

Final theses

Each degree programme under review here has a mandatory final thesis tied to the curriculum. For the Bachelor's degree programme Water Sector and Land Reclamation this thesis is scheduled for the eighth semester, and for each of the four Master's degree programmes the thesis is to be written in the fourth semester. A Bachelor's thesis is calculated with 5 ECTS according to the module handbooks. This includes only the writing process and a "state attestation" in which the student has to present the thesis for 20 minutes and answer questions for about an hour. The preparatory work of the thesis is made in the "internship" module, that is also worth 5 ECTS. In this module, students are supposed to collect data or information about a selected topic in the range of nature, climate, or technology in manufacturing enterprises as a basis for their thesis. Master's students on the other hand select a topic for their master's thesis during the first semester. Each student may

choose a personal mentor who will help them throughout their studies. In the second semester, students are supposed to explore the theoretical part of the thesis, i.e., they select literature and review it, and they propose an analytical framework as well as research questions and objectives. This is supposed to be the basis for a methodological approach they then propose. In the third semester the students start their independent research and conduct experiments the results of which they analyse and interpret. This work culminates in finishing the research and submit a Master's thesis, which they then must defend. All this work is designated under the module "research work and master's thesis (final state attestation)", which amounts to 40 ECTS. Both Bachelor's and Master's degree students feel well prepared for their final attestation and feel well taken care of by their supervisors. The assessors, too, have a generally positive opinion of the handling of the final thesis.

When perusing the final theses the assessors find that there are mistakes in some of the works, especially in Bachelor's theses, that show a poor implementation of scientific standards. This includes, among others, improper citations, missing legends and scales in maps, and wholly missing references for figures. While it is generally not worth mentioning that academic work of students might be flawed, the grading of the theses at hand are all good or exceptionally good. The assessors find that the formal flaws are not sufficiently reflected in the grading when they should be. They opine that the grading of final theses should account for flaws in scientific writing. At the same time, the experts want to move into focus the preparatory courses for scientific writing that might not be enough to consolidate the foundational requirements of academic work in Bachelor's degree students. This observation does not hold true for the Master's degree programmes. Here, the experts agreed with the grading. Both, Bachelor's and Master's thesis, however, demonstrate that students were able to conduct research on their own that aligned to EQF Level 6 and 7 respectively.

Regular review

TIIAME is required by law to evaluate the quality of exams and theses after the completion of the programme. This includes measuring how the student achievements comply with the learning outcomes for each examination, whether the exam meets its general purpose, and whether the lecturers take into account the advantages and drawbacks of each form of examination. The success of the students is traces throughout the courses, taking into account the small exercises, the mid-term, as well as the final examinations. Apart from these statistics TIIAME also surveys the students regularly to receive feedback about the examination.

In summary, the assessors prove content with the examinations. Each module finishes with an examination, and a final thesis is a prerequisite in all degree programmes. The regulations on examinations are transparent and the programmes are reviewed regularly. The assessors criticise that the mid-term examinations may take up more time than the final exams and that flaws in scientific writing are not sufficiently reflected in grading.

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

The experts consider criterion 2 to be fulfilled for all programmes.

3. Resources

Criterion 3.1 Staff and Staff Development

Evidence:

- Staff handbook
- List of research work
- Presidential degree No. PF–5789 "on introducing a system of continuous professional development of management and teaching staff of higher educational institutions"
- Student surveys
- Self-assessment report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The staff development of the last five years shows that the personnel in all but one degree programmes at hand have increased. The exception is the Master's degree programme Land reclamation and irrigated agriculture in which the personnel has remained steady. In their self-assessment report, TIIAME gives the following teaching capacities:

Academic year	Total number including external part-time teachers	Doctor of science	PhD, candidate of science	Master	No degree	Degrees, %
60812300-«Water Sector and Land Reclamation» (BSc)						
2018/19	62	5	24	8	25	46,7
2019/20	64	5	26	6	27	48,4
2020/21	66	6	30	3	37	54,5
2021/22	67	7	33	4	36	60,0
2022/23	67	8	33	3	23	61,2
70812302-" Land reclamation and irrigated agriculture" (MSc)						
2018/19	14	5	9	-	-	100
2019/20	13	4	9	-	-	100
2020/21	14	6	8	-	-	100
2021/22	14	6	8	-	-	100
2022/23	14	6	8	-	-	100
70812305-"Operation and Maintenance of Hydromeliorative Systems" (MSc)						
2018/19	9	2	11	-	-	100
2019/20	9	2	11	-	-	100
2020/21	10	3	7	-	-	100
2021/22	12	3	9	-	-	100
2022/23	12	3	9	-	-	100
70812306-"Water-saving irrigation technologies" (MSc)						
2018/19	7	2	5	-	-	100
2019/20	7	2	5	-	-	100
2020/21	8	3	5	-	-	100
2021/22	8	3	5	-	-	100
2022/23	8	3	5	-	-	100
70812308-"Water resources planning and management" (MSc)						
2018/19	12	3	9	-	-	100
2019/20	12	3	9	-	-	100
2020/21	11	4	7	-	-	100
2021/22	13	4	9	-	-	100
2022/23	13	4	9	-	-	100

3Teaching cpacities 2018-2023 (taken from the self-assessment report, pp. 107)

In the Uzbek higher education landscape, a Doctor of Science is a higher degree than a PhD. The latter is, however, equivalent to a doctorate degree in Europe. All in all, this amounts to 17 professors and 44 associate professors. 63.1% of faculty members hold a scientific degree, and the ratio between staff and student in 2023 was 15.8. The amount of professors and associate professors is adapted each academic year based on the annual academic load and staff schedule. As part of their internationalisation strategy, TIIAME employs foreign professors as guest lecturers, that up until 2023 consisted of up to five professors per study programme. Especially in the Master's degree programmes, where English is the predominant language of instruction, the guest professors make up up to 40% of the teaching staff, which helps with English as a spoken language not only for the students but also

among the staff. In return, staff mobility for the personnel at TIIAME is equally as supported. If a teacher can support their time financially (e.g. international grants or funding from the Ministry of Uzbekistan), they are encouraged to spend time abroad. Short exchanges and international conferences are supported by TIIAME. Lastly, TIIAME counts on its industrial partners to take part in teaching in all degree programmes as specialists. There are up to seven specialists per degree programme. All in all, the assessors opine that the number and academic knowledge of the teaching staff is adequate for the five degree programmes under review here.

The teachers themselves appear very satisfied with their respective workload. They say that their three main tasks are teaching, research and supervision of students, which they all should undertake in equal parts. If a teacher feels like their workload is skewed or too high, they are free to talk to the Head of Department to negotiate how to better accommodate the teacher's needs. According to the teachers present during the audit, this method of scheduling the workload works very well. The students, too, are under the impression that they are sufficiently taken care of. The mentoring system is well developed, leaving no calls for improvement among the students. They find that the teachers are at all times approachable and responsive when it comes to personal questions or worries.

According to Presidential Decree, Uzbek universities are tasked to regularly train their teaching staff every three years. This training last for six months total and needs to be passed by each teacher. TIIAME offers further advanced training courses in which they learn and refresh pedagogical knowledge, as well as organisational skill regarding research work and scientific projects, or how to write and publish journal articles. Young teachers are trained more extensively with didactics courses to help them with a solid foundation of good teaching practices. An additional offer is discounts on English courses. As was mentioned above, Uzbekistan has switch holistically to English as the language of instruction in all Master's degree programmes throughout the country. So, in order to teach at a Master's level, it is necessary that the lecturers are proficient in English with an IELTS of 6.5 or higher. Lecturers who give courses in English exclusively get a 25% raise to their salaries. This and the discounted English courses offered by TIIAME is, according to the teaching staff, a great opportunity to strive towards internationalisation.

Finally, the quality of the teaching is surveyed every semester. The students are asked to fill out an questionnaire about the knowledge and teaching methods in every course taken. Results are published on the TIIAME website anonymously and used within the department to gauge effectiveness of personnel policy.

All in all, the experts find that the staff development is working well. The workload per teacher appears appropriate as to take part in research activities, teaching, and supervision. The students confirm that they do not feel left behind. The assessors welcome the working conditions of the staff.

Criterion 3.2 Funds and equipment

Evidence:

- Financial report
- Tour of campus facilities
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

According to the rector, the main source of income for TIIAME are tuition fees (30.3%), followed by 26% of governmental funding. External grand funds make up 19.6% of TIIAME's finances and 12.2% are made up of internal grand funds. Lastly, TIIAME offers training courses, consulting services and other activities to third parties, which generates the remaining 11.9%. Since 2021, all these sources of income have increased, leading to a total growth rate of 43.6%. This income has been mostly used in reconstruction and overhaul (cf. fig. 4), which has grown from about 600,000€ in 2019 to 1,800,000€ in 2022.

During the audit, the experts receive a tour of the campus facilities and get a thorough glimpse into the infrastructure of the university. The classrooms and auditoriums are all modernised and have enough room to accommodate the amount of students in the study programmes. The campus houses several laboratories that are meant for teaching and research alike. In it students see models for engineering that range from simple devices (measurements for salinity or turbidity in fluids) to pump structures or drip-irrigation systems in agriculture. The labs comply with ISO standards since 2013. TIIAME has partnerships with several global players, among them Huawei and John Deere. Both partners sponsored special class rooms and collaborate with the university in smart agriculture. In one laboratory, TIIAME has a scale model of the Chirchiq river, in which generation of hydroelectric power is demonstrated. Furthermore, it shows how different agents along the way of the river influence its volume downstream, e.g. drinking water treatment plants, dams, and irrigation systems, as well as stakeholders from neighbouring countries when a meander courses into foreign territories. This scale model is supposed to showcase how important the concept of water treatment is socially as well as politically.

Budget year Expenditure category		2018	2019	2020	2021	2022
Labor remuneration	Total	4183,4	4092,5	4756,1	5217,2	5959,6
	Faculty members	3359,6	3289,3	3849,7	3759,5	4291,8
Research and development contracts		92,9	142,4	387,7	195,5	262,8
State budget funded research and development		1796,8	3647,2	3885,6	7152,1	10319,1
Scholarships and student welfare		1906,9	1977,8	1350,6	1308,9	1865,3
Reconstruction and overhaul		47,6	642,5	129,9	1618,2	2715,2
Publishing activities		24,8	39,6	43,3	46,4	59,3
Internet		4,3	5,6	6,4	8,6	12,3
Communication services		2,9	4,3	3,1	3,7	6,2
Business trips		11,2	13,5	9,8	12,1	24,3

4University financing in thousand €, taken from the self-assessment report, p. 119

Apart from the novel purchases from 2023, the equipment in the laboratories is described by the assessors as a little old but solid.

The library offers a wealth of books in Uzbek and Russian but literature in English is less frequent. For one, the rapid internationalisation is still tangible with most literature being present in the main languages of the country. 90 % of all literature for the five study programmes is from at least 2000. The library is currently being digitised so that many books and journal articles are accessible online. The students prove enthusiastic about the university during the audit, stating that they have enough space to learn in the library as well as access to licenced programmes such as Matlab and GIS. They especially welcomed the places for extracurricular activities such as the gym.

The experts conclude that the university offers sufficient resources for the study programmes under review here and has built an infrastructure that can accommodate all students.

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

The experts consider criterion 3 to be fulfilled for all programmes.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions

Evidence:

- Module descriptions
- Discussions during the audit
- Self-assessment report

Preliminary assessment and analysis of the experts:
The module handbooks include the title and the semester in which the module is taught as well as the language of instruction. It gives information about teaching methods, its relation to the curriculum (compulsory or elective courses), and the workload in hours and ECTS, as well as the assessment forms and study and examination requirements. The prerequisites for each course are listed as well as the module objectives and intended learning outcomes. Each module contains a list of recommended literature.

During the audit, students and lecturers alike state that they have full access to the module handbooks. The assessors find the module handbooks well structured, however they are not able to find them on the website. The programme coordinators show that the curricula are available but they feature less information and are scans that cannot be searched. It would prove helpful for third parties to get access to the module handbooks. As a final remark, all handbooks lack the date of the last amendment. This should be included in future versions.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Exemplary diploma supplement
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
Upon graduation the students receive a diploma and a diploma supplement. The assessors look through exemplary documents and can confirm that all necessary information is provided. For one, it includes a transcript of records with the individual marks as well as tables that include grading systems in comparison and a grade distribution table.

Criterion 4.3 Relevant Rules

Evidence:

- Rules and regulations
- Student handbook
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The rights and obligations of the students are regulated by the Charter of the National Research University TIIAME last approved in 2021 by the Order of the Minister of Higher and Secondary Special Education, and the Code of Honor, approved in 2023 by the University Council. The Code of Honor describes basic rules for appropriate behaviour at university, emphasising democratic and respectful standards for the university community and scientific practice. Students receive a student guide which contains the Code of Honor as well as all rules and regulations.

The students at the audit stated that they have easy access to all necessary rules via the university website, however, this content requires a log-in to be accessible. The assessors have trouble finding rules and regulations freely accessible in either language offered on the webpage. This might either be a problem of unintuitive navigation or simple lack of the documentation for third parties. The assessors recommend that rules and regulations of the university should be accessible to third parties as they might be of interest to both students and collaboration partners. This includes, of course, an English translation of all documents to be made accessible to third parties.

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

TIIAME has, in the meantime, made the module handbooks accessible on their webpage. The experts consider criterion 4 to be fulfilled for all programmes.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- State educational standard of higher education
- Student surveys
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

TIIAME has an internal quality management system at the university level as well as for each study programme. At the university level, the university is responsible for monitoring the quality of education and find measures to improve issues concerning quality. For one, they design and conduct questionnaires for various surveys. Among them is an annual survey of students and graduates in which their overall satisfaction with teaching, contents and facilities is measured. The university also conducts surveys with employers and industrial partners. They expect regular feedback and hold annual meetings to find concerns and room for improvement. The industrial partners that are present during the audit confirm that these meetings take place regularly and appreciate the work. The industrial partners state that they discuss curricular issues such as recent developments and their integration into the teaching matter, and equipment the students should know how to handle. The industrial partners exemplify that the constant exchange keeps the content of the curriculum modern. They add that the recent modernisation of laboratories and equipment was discussed prior in one of their meetings.

On a department level, students are encouraged to give feedback in anonymous online-surveys each semester. The surveys are opened throughout the whole semester and data is collected at the end. Results of the surveys are published on the university website alongside measures that will be taken to remedy issues that are worth improving. The students unanimously consider their feedback appreciated, saying that they feel being taken seriously. The students concede, however, that change takes a while to be implemented which, in the most part, is due to university regulations. Changes to the curriculum can only be made every five years and funding needs discussions in beforehand. Still, the students prefer to talk to their lecturers directly. They appear to have a generally familiar relationship to their professors which grants them the opportunity to give feedback directly. The lecturers, too, want to foster this atmosphere because it results in a good learning environment.

The assessors welcome the thoroughness of quality management at TIIAME at the different levels of university management. The university works well with its industrial partners and considers both its personnel and its students in its decisions and improvement.

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

The experts consider criterion 5 to be fulfilled for all programmes.

D Additional Documents

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

„No additional documents needed“

E Comment of the Higher Education Institution (28.05.2024)

The following quotes the comment of the institution:

The Tashkent Institute of Irrigation and Agricultural Mechanization Engineers–National Research University has read ASIIN experts' report and noted the material's detailed structuring and valuable recommendations.

At the same time, TIIAME-NRU makes essential clarifications regarding the structure of bachelor’s degree program - Water Sector and Land Reclamation

and master’s degree programs Land Reclamation and Irrigated Agriculture; Operation and Maintenance of Hydromeliorative Systems; Water-saving Irrigation Technologies; Water Resources Planning and Management.

1. The report of ASIIN experts on page 24 states, " When students feel that their grade on a final test is not correct, they may appeal the decision to an appeal commission which will consider the complaint. To do so the students have one day’s time after the results are published. The assessors find this timeframe to be very short".

It is worth to note that this short period of time is a government regulation which the university must follow. By paragraph 32 of the Regulation on the System of Control and Assessment of Students' Knowledge in Higher Educational Institutions, approved by the order of the Minister of Higher and Secondary Special Education of the Republic of Uzbekistan No. 19-2018, dated August 9, 2018, students who disagree with the assessment results have the right to file an appeal within 24 hours of receiving the results. A copy of the Regulation is attached (see points 29-34). The Appeals Commission will consider the student's appeal within two days, with the chairperson and at least four other commission members who did not participate in the student assessment. The university has taken measures to ensure that this short, allocated period does not affect the quality of the appeals, including creating conditions for accelerated application filing and increasing the number of teachers involved in the appeals process. The order that approves the subjects, timing, and composition of the assessment committee also endorses the composition of the appeals committee. The appeals committee reviews video recordings of the exam, written work, and other materials from the exam. During this process, the student is allowed to participate in the

review of their appeal. Based on the appeal results, the appeals committee decides whether the student has succeeded.

2. The report of ASIIN experts on page 25 states that « …assessors find that there are mistakes in some of the works, especially in the bachelor's thesis…. This includes, among others, improper citations, missing legends and scales in maps, and wholly missing references for figures...".

We argue that such errors, which are rarely found on the theses of students of the bachelor's educational program, are non-systemic, but isolated cases. Special topics on the fundamentals of scientific research are included in the curriculum of specialized disciplines, along with guidelines for the design of research papers to ensure the development of students' understanding of the basics of scientific standards and skills for applying them. Additionally, students at the university learn how to use the rules for registering research papers during course projects in specialized disciplines during their studies. The thesis is the final independent project of students at the university where they apply their knowledge, including by the standards of research papers. The overall grade for the graduation project considers the points earned for the completed project, the knowledge demonstrated during the defense, and the work registration.

3. The report of ASIIN experts on page 31 states that «…the module handbooks well structured, however they are not able to find them on the website».

The module handbooks for all education degree programs are structured according to modern requirements and located on the website of the university and HEMIS systems. Each student provided with ID and password to access the full version of materials and information. A shorter version of information that includes module handbooks are open to third parties that can be accessed on https://tiiame.uz/en/content/syllabuses-programs-subjects.

4. The report of ASIIN experts on page 32 states that «… assessors have trouble finding rules and regulations freely accessible in either language offered on the webpage».

All necessary documentation, including rules and regulatory documentation, is posted on the university's website. There may have been issues related to navigation, which have now been eliminated. All necessary documents can be accessed using the links below. https://ti-iame.uz/en/content/normative-and-methodical-documents-education.

We attach the curricula of the bachelor’s and master's degree educational programs and copy of the Regulation on the System of Control and Assessment of Students' Knowledge in Higher Educational Institutions.

As part of the accreditation procedure, the university will make every effort to implement the recommendation of the ASIIN expert group.

F Summary: Expert recommendations (28.05.2024)

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

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Water Sector and Land Reclamation	Without requirements	EUR-ACE®	30.09.2029
Land Reclamation and Irrigated Agriculture	Without requirements	EUR-ACE®	30.09.2029
Operation and Maintenance of Hydromeliorative Systems	Without requirements	EUR-ACE®	30.09.2029
Water-saving Irrigation Technologies	Without requirements	EUR-ACE®	30.09.2029
Water Resources Planning and Management	Without requirements	EUR-ACE®	30.09.2029

Requirements

For all programmes

none

Recommendations

For all programmes

E 1. (ASIIN 1.6): It is recommended to increase students' skills for using databases to find current, international scientific papers.

E 2. (ASIIN 2) It is recommended to reassess the courses in which the time spent on the mid-term exams is greater than the final exams.

E 3. (ASIIN 4.1): It is recommended to extend the English version of the TIIAME website for international (prospective) students.

E 4. (ASIIN 4.1) It is recommended to include the date of the last amendment in all module handbooks.

For the Bachelor's degree programme Water Sector and Land Reclamation

E 5. (ASIIN 2): It is recommended to put greater emphasis on conventions of scientific writing (citations, legends etc.) in students' final theses.

For the Master's degree programme Water resources planning and management

E 6. (ASIIN 1.1) It is recommended to consider more precise learning outcomes.

G Comment of the Technical Committee 08 – Agriculture, Forestry and Food Sciences (04.06.2024)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the accreditation procedure and follows the assessment of the experts without any changes.

Assessment and analysis for the award of the EUR-ACE® Label:
The Technical Committee deems that the intended learning outcomes of the degree programme do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 08 – Agriculture, Forestry and Food Sciences.

The Technical Committee 08 – Agriculture, Forestry and Food Sciences recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Water Sector and Land Reclamation	Without requirements	EUR-ACE®	30.09.2029
Land Reclamation and Irrigated Agriculture	Without requirements	EUR-ACE®	30.09.2029
Operation and Maintenance of Hydromeliorative Systems	Without requirements	EUR-ACE®	30.09.2029
Water-saving Irrigation Technologies	Without requirements	EUR-ACE®	30.09.2029
Water Resources Planning and Management	Without requirements	EUR-ACE®	30.09.2029

Requirements

For all programmes

none

Recommendations

For all programmes

E 1. (ASIIN 1.6): It is recommended to increase students' skills for using databases to find current, international scientific papers.

E 2. (ASIIN 2) It is recommended to reassess the courses in which the time spent on the mid-term exams is greater than the final exams.

E 3. (ASIIN 4.1): It is recommended to extend the English version of the TIIAME website for international (prospective) students.

E 4. (ASIIN 4.1) It is recommended to include the date of the last amendment in all module handbooks.

For the Bachelor's degree programme Water Sector and Land Reclamation

E 5. (ASIIN 2): It is recommended to put greater emphasis on conventions of scientific writing (citations, legends etc.) in students' final theses.

For the Master's degree programme Water resources planning and management

E 6. (ASIIN 1.1) It is recommended to consider more precise learning outcomes.

H Comment of the Technical Committee 03 – Civil Engineering, Geodesy and Architecture (10.06.2024)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the main topics of the procedure and takes into account that TIIAME has fulfilled the requirement regarding the module descriptions in the course of the statement. Apart from that, the TC follows the assessment of the experts without any changes.

Assessment and analysis for the award of the EUR-ACE® Label:
The Technical Committee deems that the intended learning outcomes of the degree programme do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 03 – Civil Engineering, Geodesy and Architecture.

The Technical Committee 03 – Civil Engineering, Geodesy and Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Water Sector and Land Reclamation	Without requirements	EUR-ACE®	30.09.2029
Land Reclamation and Irrigated Agriculture	Without requirements	EUR-ACE®	30.09.2029
Operation and Maintenance of Hydromeliorative Systems	Without requirements	EUR-ACE®	30.09.2029
Water-saving Irrigation Technologies	Without requirements	EUR-ACE®	30.09.2029
Water Resources Planning and Management	Without requirements	EUR-ACE®	30.09.2029

Requirements

For all programmes

none

Recommendations

For all programmes

E 1. (ASIIN 1.6): It is recommended to increase students' skills for using databases to find current, international scientific papers.

E 2. (ASIIN 2) It is recommended to reassess the courses in which the time spent on the mid-term exams is greater than the final exams.

E 3. (ASIIN 4.1): It is recommended to extend the English version of the TIIAME website for international (prospective) students.

E 4. (ASIIN 4.1) It is recommended to include the date of the last amendment in all module handbooks.

For the Bachelor's degree programme Water Sector and Land Reclamation

E 5. (ASIIN 2): It is recommended to put greater emphasis on conventions of scientific writing (citations, legends etc.) in students' final theses.

For the Master's degree programme Water resources planning and management

E 6. (ASIIN 1.1) It is recommended to consider more precise learning outcomes.

I Decision of the Accreditation Commission (28.06.2024)

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

The Accreditation Commission discusses the procedure and follow the assessment of the expert panel and the two Technical Committees. The commission changes the wording in E2 and E3 for more clarity.

Assessment and analysis for the award of the EUR-ACE® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture and Technical Committee 03 – Civil Engineering, Geodesy and Architecture.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Water Sector and Land Reclamation	Without requirements	EUR-ACE®	30.09.2029
Land Reclamation and Irrigated Agriculture	Without requirements	EUR-ACE®	30.09.2029
Operation and Maintenance of Hydromeliorative Systems	Without requirements	EUR-ACE®	30.09.2029
Water-saving Irrigation Technologies	Without requirements	EUR-ACE®	30.09.2029
Water Resources Planning and Management	Without requirements	EUR-ACE®	30.09.2029

Requirements

For all programmes

none

Recommendations

For all programmes

E 1. (ASIIN 1.6): It is recommended to increase students' skills for using databases to find current, international scientific papers.

E 2. (ASIIN 2) It is recommended to reassess the courses in which the estimation of time spent on the mid-term exams is greater than the final exams.

E 3. (ASIIN 4.1): It is recommended to extend the English version of the TIIAME website for (prospective) international students.

E 4. (ASIIN 4.1) It is recommended to include the date of the last amendment in all module handbooks.

For the Bachelor's degree programme Water Sector and Land Reclamation

E 5. (ASIIN 2): It is recommended to put greater emphasis on conventions of scientific writing (citations, legends etc.) in students' final theses.

For the Master's degree programme Water resources planning and management

E 6. (ASIIN 1.1) It is recommended to consider more precise learning outcomes.

Appendix: Programme Learning Outcomes and Curricula

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Water Sector and Land Reclamation:

LO1 Analyze information of philosophical and historical content, methods of discussion and controversy.

LO2 Express a thought, reasonably defend one's own opinion on issues of social significance.

LO3 Demonstrate proficiency in written, oral, and non-verbal communication.

LO4 Search and process information using ICT.

LO5 Express knowledge of holistic personality in economic and legal environment.

LO6 Apply methods of ensuring the safety of social systems in order to preserve, develop and function effectively of an individual, society and the state.

LO7 Own the basic methods, tools and means of obtaining, storing, processing information.

LO8 To understand the essence and importance of information in the improvement of modem water-environmental and land reclamation technologies and systems.

LO9 Apply the skills of organization and management activities, performing solutions, the organization of the work of the team.

LO10 To implement international standards of quality management system in production and to show the skills of public speaking.

LO 11 Interpret different physical and chemical concepts, laws, conduct experiments, summarize the results.

LO 12 To use the acquired knowledge in complex engineering activity for the purpose of modeling the objects and technological processes in water and land reclamation sector.

LO13 To have the skills for conducting activities to assess the state of natural-man-made objects.

LO14 To understand the natural laws and importance of information in the improvement of modem water and ameliorative technologies.

LO 15 Demonstrate knowledge and apply methods of calculation for the design of irrigation networks and the ability to use computational techniques and technologies.

LO16 Demonstrate knowledge and apply methods and technologies of land reclamation in irrigated water resources management.

LO17 Demonstrate knowledge and skills for applying the advanced methods in the development and improvement of water management and land reclamation activities, ensuring safe, sustainable production.

LO18 Demonstrate knowledge and ability to apply modern, effective methods of land reclamation of lands and recovery of salty lands.

LO19 Demonstrate knowledge and skills in irrigation and drainage systems and infrastructure design with the application of resource-saving technologies.

LO20 Demonstrate knowledge and skills in land reclamation and salinized lands recovery methods and technologies.

LO21 Demonstrate knowledge and skills to design modern irrigation techniques and technologies, to carry out construction processes.

LO22 Demonstrate knowledge of sustainable on basin level and multipurpose water resources use, planning and management skills, and basin plan development skills.

The following **curriculum** is presented:

0 Appendix: Programme Learning Outcomes and Curricula

№	1 semestr	2 semestr	3 semestr	4 semestr	5 semestr	6 semestr	7 semestr	8 semestr
1	XT1115 Foreign Languages 7 credits (ECTS)	XT1115 Foreign Language 8 credits (ECTS)	GG2105 Geology and Hydrogeology 5 credits (ECTS)	GID2110 Hydraulics 5 credits (ECTS)	GID2110 Hydraulics 5 credits (ECTS)	IM3111 Irrigation and Land Reclamation 5 credits (ECTS)	IM4111 Irrigation and Land Reclamation 6 credits (ECTS)	GTF4105 Use of hydromelioration systems 5 credits (ECTS)
2	MAT1115 Higher Mathematics 7 credits (ECTS)	MAT1115 Higher Mathematics 8 credits (ECTS)	NM2105 Theoretical Mechanics 5 credits (ECTS)	AT2106 Information technology 6 credits (ECTS)	IK3104 Engineering Structures 4 credits (ECTS)	NNS3105 Pumps and pump stations 5 credits (ECTS)	SRF4106 Multi-purpose water resources use 6 credits (ECTS)	Elective subject №9 5 credits (ECTS)
3	FIZ1105 Physics. 5 credits (ECTS)	MKG1104 Engineering and Computerised Graphics 4 credits (ECTS)	SXK2104 Introduction to Water and Land Reclamation 4 credits (ECTS)	TD2105 Soil Sciences and Farming 5 credits (ECTS)	MQU3105 Construction and Land Reclamation Machines 5 credits (ECTS)	QYS3104 Rural and Pasture water supply 4 credits (ECTS)	GET4105 Organization and technology of hydromelioration works 5 credits (ECTS)	Elective subject №10 5 credits (ECTS)
4	O'YAT1104 The new history of Uzbekistan 4 credits (ECTS)	IG1105 Engineering Geodezi 5 credits (ECTS)	FAL2105 Philosophy 5 credits (ECTS)	QGI2105 Hydrology 5 credits (ECTS)	GI3105 Hydrotechnical construction 5 credits (ECTS)	HFX3104 Safety of life activities 4 credits (ECTS)	Elective subject №7 5 credits (ECTS)	BMI4105 Internship 5 credits (ECTS)
5	TIL1104 Uzbek (Russian) language 4 credits (ECTS)	KIM1103 Chemistry 3 credits (ECTS)	MQ2105 Strength of Materials 5 credits (ECTS)	QM2103 Construction mechanics 3 credits (ECTS)	Elective subject №3 5 credits (ECTS)	Elective subject №5 5 credits (ECTS)	Elective subject №8 5 credits (ECTS)	DA4105 Thesis 5 credits (ECTS)
6	JTS1102 Physical education and sports 2 credits (ECTS)	PR1102 Internship 2 credits (ECTS)	Elective subject №1 5 credits (ECTS)	Elective subject №2 5 credits (ECTS)	Elective subject №4 5 credits (ECTS)	Elective subject №6 5 credits (ECTS)		
				PR1106 Internship 6 credits (ECTS)		PR1108 Internship 8 credits (ECTS)		
	29 ECTS	**30 ECTS**	**29 ECTS**	**35 ECTS**	**29 ECTS**	**36 ECTS**	**27 ECTS**	**25 ECTS**

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Land reclamation and irrigated agriculture:

LO1 Demonstrate skills in conducting scientific research in the field of management of land ameliorative conditions, processing the obtained data, analyzing the results of the experiments carried out, and understanding their scientific meaning.

LO2 Possess communication skills to effectively implement professional activities.

LO3 Prove foreign language skills for communication in society and in the professional environment.

LO4 Demonstrate skills in application methods of organizing field research and knowledge of research organization.

LO5 Demonstrate skills in the assessment of reclamation parameters and knowledge of the acquisition of modern methods of process analysis.

LO6 Demonstrate knowledge of theoretical concepts, methods of assessment and analyses, and practical skills of processes management taking place in irrigation and land reclamation.

LO7 Analyze the entire technological cycle, develop proposals for improving technological processes in irrigation and land reclamation.

LO9 Manage projects, justify the purpose, need and possible scheme of studies in irrigation and land reclamation.

LO10 Demonstrate knowledge of the economic aspects of land use, the application of methods to determine the effectiveness of land reclamation.

LO11 Demonstrate skills to conduct scientific research using modern Geoinformation technologies and knowledge in introducing their results into the management system.

LO12 Demonstrate knowledge and skills to apply methods to analyze, evaluate and compare theoretical and practical research results in the improvement of irrigated land's ameliorative conditions and irrigation development.

LO13 Demonstrate skills in choosing research methods, planning the research activities and experiments, conducting the study, interpreting the results, and concluding.

The following **curriculum** is presented:

#	1 semestr	2 semestr	3 semestr	4 semestr
1	IMD 5332 Research work and preparation of Master's thesis Research activity 8 ECTS	IMD 5332 Research work and preparation of Master's thesis Research activity 8 ECTS	IMD 5332 Research work and preparation of Master's thesis Research activity 16 ECTS	PR6330 Researh activity (Internship) 30 ECTS
2	IPS5308 Scientific pedagogical work and scientific seminar Research activity 2 ECTS	IPS5308 Scientific pedagogical work and scientific seminar Research activity 2 ECTS	IPS5308 Scientific pedagogical work and scientific seminar Research activity 4 ECTS	
3	ITM5102 Research methodology 2 ECTS	MYR5108 Recultivation and Land Reclamation 4 ECTS	TOS6104 Soil-plant-climates interaction 4 ECTS	
4	MTD5104 Ameliorative Soil Scince 4 ECTS	GTQ5104 Operation and Maintanence of Hydromeliorative Systems 4 ECTS	MFO6102 Special subjects teaching methods 2 ECTS	
5	MIU5104 Research methods in Land Reclamation 4 ECTS	IMG5104 GIS in Irrigation and Drainage Systems 4 ECTS	Elective 5 4 ECTS	
6	MYR5108 Recultivation and Land Reclamation 4 ECTS	Elective 3 4 ECTS		
7	Elective 1	Elective 4		
	4 ECTS	4 ECTS		
8	Elective 2 2 ECTS			
	Electives 6 ECTS (20%)	**Electives 8 ECTS (26.6 %)**	**Electives 4 ECTS (13.3 %)**	
	30 ECTS	**30 ECTS**	**30 ECTS**	**30 ECTS**

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Operation and Maintenance of Hydromeliorative Systems:

LO1 Demonstrate skills in apply modern computed model to process and analyses research data, analyzing the results of the experiments carried out, and understanding their scientific meaning.

LO2 Possess skills to analysis, evaluation and comparison of various theoretical concepts in the field of water management and land reclamation and implement effectively professional activities.

LO3 Possess skills in operating a hydromeliorative systems development and improvement project's theoretical and technological calculation.

LO4 Demonstrate skills in application and development of water saving irrigation technologies.

LO5 Knowledge and skills in planning and conducting research activities on new technology development in hydromelioration.

LO6 Demonstrate skills in the assessment of reclamation parameters and knowledge of the acquisition of modern methods of process analysis.

LO7 Demonstrate knowledge of theoretical concepts, methods of assessment and analyses, and practical skills of processes management taking place in irrigation and land reclamation.

LO8 Analyze the entire technological cycle, develop proposals for improving technological processes in irrigation and land reclamation.

LO9 Manage projects, justify the purpose, need and possible scheme of studies in irrigation and land reclamation.

LO10 Demonstrate knowledge of the economic aspects of land use, the application of methods to determine the effectiveness of land use in different units.

LO11 Demonstrate skills to conduct scientific research using modern Geoinformation technologies and knowledge in introducing their results into hydromeliorative systems.

LO12 Demonstrate knowledge and skills to apply methods to analyze, evaluate and compare theoretical and practical research results in sustainable operation and maintenance of hydromeliorative systems.

LO13 Demonstrate skills in choosing research methods, planning the research activities and experiments, conducting the study, interpreting the results and concluding.

The following **curriculum** is presented:

#	1 semester	2 semester	3 semester	4 semester
1	IMD 5332 Research work and preparation of Master's thesis Research activity 8 ECTS	IMD 5332 Research work and preparation of Master's thesis Research activity 8 ECTS	IMD 5332 Research work and preparation of Master's thesis Research activity 16 ECTS	PR6330 Research activity (Internship) 30 ECTS
2	IPS5308 Scientific pedagogical work and scientific seminar Research activity 2 ECTS	IPS5308 Scientific pedagogical work and scientific seminar Research activity 2 ECTS	IPS5308 Scientific pedagogical work and scientific seminar Research activity 4 ECTS	
3	ITM5102 Research methodology 2 credits (ECTS)	GMM5110 Modernization of irrigation and drainage systems 5 credits (ECTS)	RIT6104 Resource-saving irrigation technologies 4 credits (ECTS)	
4	GMM5110 Modernization of irrigation and drainage systems 5 credits (ECTS)	GFA 5110 Automation of irrigation and drainage systems 5 credits (ECTS)	MFO6102 Special subjects teaching methods 2 credits (ECTS)	
3	GFA 5110 Automation of irrigation and drainage systems 5 credits (ECTS)	DTU5104 Planning experimental field research 4 credits (ECTS)	Elective 5 4 credits (ECTS)	
4	Elective 1 4 credits (ECTS)	Elective 3 4 credits (ECTS)		
5	Elective 2 2 credits (ECTS)	Elective 4 4 credits (ECTS)		
	Electives 6 ECTS (21.4%)	**Electives 8 ECTS (25 %)**	**Electives 4 ECTS (13.3 %)**	
	28 ECTS	**32 ECTS**	**30 ECTS**	**30 ECTS**

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Water-saving Irrigation Technologies:

LO1 Demonstrate skills in applying modern computed model to process and analyses research data, analyzing the results of conducted experiments carried out, and understanding their scientific meaning.

LO2 Possess skills to analysis, evaluation and comparison of various theoretical concepts in the field of modern irrigation technologies and implement effectively professional activities.

LO3 Demonstrate skills in the application of research methods in the organization of water use and land resources and conducting scientific research and experiments to improve the irrigation management system.

LO4 Demonstrate skills in application and development of water saving irrigation technologies.

LO5 Knowledge and skills in planning and conducting research activities on modern water saving irrigation technology development.

LO6 Demonstrate knowledge of theoretical concepts, methods of assessment and analyses, practical skills of processes management taking place in irrigation a development.

LO7 Analyze the entire technological cycle, develop proposals for improving technological processes in irrigation development.

LO8 Manage projects, justify the purpose, need and possible scheme of studies in irrigation development.

LO9 Demonstrate knowledge of the economic aspects of irrigation, the application of methods to determine the effectiveness of different irrigation technologies.

LO10 Demonstrate skills to conduct scientific research using modern methods, information technologies and knowledge in introducing their results into irrigation systems development.

LO11 Demonstrate knowledge and skills to apply methods to analyze, evaluate and compare theoretical and practical research results in water saving irrigation.

LO12 Demonstrate skills in choosing research methods, planning the research activities and experiments, conducting the study, interpreting the results and concluding

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Water Resources Planning and Management:

LO1 Comprehend the philosophical concepts of natural science, the role of natural science in the development of scientific worldview.

LO2 Possess communication skills to implement effectively professional activities.

LO3 Justify foreign language skills for communication in society and in the professional environment.

LO4 Possess skills for work with modem computer technologies applied for processing the results of scientific experiments.

LO5 Work on modern scientific equipment while conducting scientific research in the field of water resources management.

LO6 Management of real processes in the field of planning and management of water resources, in addition to the ability of managing water demand and the water supply system.

LO7 Manage projects, justify the purpose, need, and possible scheme of financing technologies for procurement of products.

LO8 Use the appropriate methods of theoretical and technological calculations on assessing water quality processes and equipment in practice.

LO9 Choose research methods, plan and conduct necessary experiments, interpret results and draw conclusions.

LO10Evaluate data and draw conclusions, choose methods and use tests, analyze Basic water management models.

LO11 Analyze, evaluate and compare different theoretical concepts in the field of WRPM.

LO12 Justify foreign languages kills for communication in society and in the professional environment.

LO13 Possess skills some work with modem computer technologies applied for processing the results of scientific experiments.

LO14 Work on modern scientific equipment while conducting scientific research in the field of water resources management.

LO15 Management of real processes in the field of planning and management of water resources, in addition to the ability of managing water demand and the water supply system.

LO16 Manage projects, justify the purpose, need and possible scheme of financing technologies for procurement of products.

LO17 Use the appropriate methods of theoretical and technological calculations on assessing water quality processes and equipment in practice.

LO18 Choose research methods, plan and conduct necessary experiments, interpret results and draw conclusions.

LO19 Evaluate data and draw conclusions, select methods and conduct tests, analyze Basic models for planning and managing water resources.

LO20 Analyze, evaluate and compare different theoretical concepts in the field of planning and managing water resources.

LO21 Choose research methods, plan and conduct necessary experiments, interpret results and draw conclusions.

LO22 Evaluation of data, the ability to draw conclusions and the choice of methods for analyzing water security processes and water protection models.

The following **curriculum** is presented:

0 Appendix: Programme Learning Outcomes and Curricula

No	1 semester	2 semester	3 semester	4 semester
1	IMD5332 Research work and preparation of Master's thesis Research activity 8 ECTS	IMD5332 Research work and preparation of Master's thesis Research activity 8 ECTS	IMD5332 Research work and preparation of Master's thesis Research activity 16 ECTS	PR6330 Research Internship 30 ECTS
2	IPS5308 Scientific pedagogical work and scientific seminar Research activity 2 ECTS	IPS5308 Scientific pedagogical work and scientific seminar Research activity 2 ECTS	IPS5308 Scientific pedagogical work and scientific seminar Research activity 4 ECTS	
3	ITM5102 Research methodology 2 credits (ECTS)	SFM 5108 Multi-purpose water resources use and protection 4 credits (ECTS)	EE6104 Environmental expertise 4 credits (ECTS)	PR6330 Internship 30 credits ECTS
4	SSY5104 Water Treatment 4 credits (ECTS)	SKB 5108 Water cadastre and integrated water resources management 4 credits (ECTS)	MFO6102 The teaching methods of special subjects' 2 credits (ECTS)	
5	SFM 5108 Multi-purpose water resources use and protection 4 credits (ECTS)	XSM5104 International and national water relations 4 credits (ECTS)	Elective 5 4 credits (ECTS)	
6	SKB 5108 Water cadastre and integrated water resources management 4 credits (ECTS)	Elective 3 4 credits (ECTS)		
7	Elective 1 2 credits (ECTS)	Elective 4 4 credits (ECTS)		
8	Elective 2 4 credits (ECTS)			
	Electives 6 ECTS (20%)	**Electives 8 ECTS (26.6 %)**	**Electives 4 ECTS (13.3 %)**	
	30 ECTS	**30 ECTS**	**30 ECTS**	**30 ECTS**