



AGENTUR FÜR
QUALITÄTSSICHERUNG DURCH
AKKREDITIERUNG VON
STUDIENGÄNGEN E.V.

FINAL REPORT

**JUSTUS-LIEBIG-UNIVERSITY GIESSEN &
UNIVERSITY COLLEGE DUBLIN**

**GLOBAL CHANGE:
ECOSYSTEM SCIENCE AND POLICY
(MASTER OF SCIENCE)**

September 2024



Content

Decision of the Accreditation Commission of AQASFehler! Textmarke nicht definiert.

I. Preamble **5**

II. Accreditation procedure..... **5**

 1. Criteria..... 5

 2. Approach and methodology 5

III. General information on the universities **7**

IV. Assessment of the study programme **8**

 1. Eligibility 8

 2. Learning outcomes..... 10

 3. Study programme..... 14

 4. Admission and recognition 16

 5. Learning, teaching and assessment 17

 6. Student support..... 20

 7. Resources 21

 8. Transparency and documentation 22

 9. Quality assurance 23

V. Recommendation of the panel of experts..... **26**



DECISION OF THE AQAS STANDING COMMISSION ON THE STUDY PROGRAMME

“GLOBAL CHANGE: ECOSYSTEM SCIENCE AND POLICY” (M.SC.)

OFFERED BY UNIVERSITY COLLEGE DUBLIN (IRELAND) AND JUSTUS-LIEBIG-UNIVERSITY GIESSEN (GERMANY)

Based on the report of the expert panel and the discussions of the AQAS Standing Commission in its 22 meeting on 26 August 2024 as well as the circulation procedure of 27 September 2024, the AQAS Standing Commission decides:

1. The study programme “**Global Change: Ecosystem Science and Policy**” (**Master of Science**) offered by **University College Dublin, Ireland**, and **Justus-Liebig-University Giessen, Germany**, is accredited according to the Standards defined in the European Approach for Quality Assurance for Joint Programmes.

The study programme complies with the requirements defined by the criteria and thus the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and the European Qualifications Framework (EQF) in their current version.

2. The accreditation is given for the period of **six years** and is valid until **30 September 2030**.

The following **recommendations** are given for further improvement of the programme:

1. The ILOs should be more directly communicated to potential applicants and students on the website, and they should be included into the diploma supplement; both to also make them more easily available for other persons interested in the programme, e. g. employers and professional bodies.
2. Measures should be taken to increase the diversity of students..
3. There should be more support for students to find housing in Dublin and scholarships for students from low-income countries should be granted and special support to find and finance housing in Dublin.
4. The external examiner should look into detail if the assessments are adequate to meet the learning outcomes of every module, and (s)he should also get a chance to talk to students (online).
5. Implementing an external advisor’s board should be considered.

With regard to the reasons for this decision the Standing Commission refers to the attached experts’ report.

**EXPERTS' REPORT
ON THE STUDY PROGRAMME
“GLOBAL CHANGE: ECOSYSTEM SCIENCE AND POLICY”
(MASTER OF SCIENCE)
OFFERED BY
JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN (GERMANY)
UNIVERSITY COLLEGE DUBLIN (IRELAND)**

Visit to the university: 15 & 16 May 2024

Panel of experts:

Prof. Dr. Matthias Liess Head of Department System Ecotoxicology, UFZ – Helmholtz Centre for Environmental Research, Leipzig (Germany)

Dr. Terry R. Morley University of Galway, Assistant Professor, Co-Director BSc Geography and Geosystems, School of Geography, Archaeology and Irish Studies (Ireland)

Dr. Sigrid Kusch-Brandt Lecturer, Freelance Environmental Engineer and Independent Environmental Consultant, Ulm (Germany) (labour market representative)

Anna-Lena Puttkamer University of Cologne (Germany) (student expert)

Coordinator:
Ninja Fischer AQAS, Cologne, Germany

I. Preamble

AQAS – Agency for Quality Assurance through Accreditation of Study Programmes – is an independent non-profit organisation supported by more than 90 universities, universities of applied sciences and academic associations. Since 2002, the agency has been recognised by the German Accreditation Council (GAC). It is, therefore, a notified body for the accreditation of higher education institutions and programmes in Germany.

AQAS is a full member of ENQA and also listed in the European Quality Assurance Register for Higher Education (EQAR) which confirms that our procedures comply with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), on which all Bologna countries agreed as a basis for internal and external quality assurance.

AQAS is an institution founded by and working for higher education institutions and academic associations. The agency is devoted to quality assurance and quality development of academic studies and higher education institutions' teaching. In line with AQAS' mission statement, the official bodies in Germany and Europe (GAC and EQAR) approved that the activities of AQAS in accreditation are neither limited to specific academic disciplines or degrees nor a particular type of higher education institution.

II. Accreditation procedure

This report results from the external review of the study programme “Global Change: Ecosystem Science and Policy” offered jointly by University College Dublin and Justus-Liebig-University Giessen.

1. Criteria

The programme is assessed against the criteria defined by the European Approach for Quality Assurance of Joint Programmes. The criteria are based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) 2015.

2. Approach and methodology

Initialisation

The university consortium mandated AQAS to perform the accreditation procedure in June 2022. The university consortium produced a Self-Evaluation Report (SER). In October 2023, the consortium handed in a draft of the SER together with the relevant documentation on the programme and an appendix. The appendix included, e.g.:

- documents supporting the legal status of the universities,
- the cooperation agreement,
- CVs of teaching staff,
- general and special academic regulations,
- a matrix of the learning outcomes.

AQAS checked the SER regarding completeness, comprehensibility, and transparency. The accreditation procedure was officially initialised by a decision of the AQAS Standing Commission on 4 December 2023. The final version of the SER was handed in April 2024.

Nomination of the expert panel

The composition of the panel of experts follows the stakeholder principle. Consequently, representatives from the respective disciplines, the labour market, and students are involved. Furthermore, AQAS follows the principles for the selection of experts defined by the European Consortium for Accreditation (ECA). The Standing Commission nominated the aforementioned expert panel in December 2023. AQAS informed the university consortium about the members of the expert panel and the university consortium did not raise any concerns against the composition of the panel.

Preparation of the site visit

Prior to the site visit, the experts reviewed the SER and submitted a short preliminary statement including open questions and potential needs for additional information. AQAS forwarded these preliminary statements to the university consortium and to all panel members in order to increase transparency in the process and the upcoming discussions during the site visit.

Site visit

After a review of the SER, a site visit to the Justus Liebig University Giessen (JLU) took place on 15 and 16 May 2024. On site, the experts interviewed different stakeholders, e.g. the management of the higher education institution, the study programme management, teaching and other staff, representatives of the labour market, as well as students and graduates, in separate discussion rounds and consulted additional documentation as well as student work. The experts also visited some of the research and teaching facilities, including JLU sites which are used for practice-based teaching and where students are involved to carry out field work. The visit concluded by the presentation of the preliminary findings of the group of experts to the consortium's representatives.

Reporting

After the site visit had taken place, the expert group drafted the following report, assessing the fulfilment of the criteria. The report included a recommendation to the AQAS Standing Commission. The report was sent to the consortium for comments.

Decision

The report, together with the comments of the university consortium, forms the basis for the AQAS Standing Commission to take a decision regarding the accreditation of the programme. Based on these two documents, the AQAS Standing Commission took its decision on the accreditation on 26 August 2024. AQAS forwarded the decision to the university consortium. The university consortium had the right to appeal against the decision or any of the imposed conditions.

In October 2024, AQAS published the report and the result of the accreditation as well as the names of the panel of experts.

III. General information on the universities

University College Dublin (UCD) origins back to 1854 and is Ireland's largest university. The University Strategic Plan (2020–2024) states that the university's mission is to contribute to the flourishing of Dublin, Ireland, Europe and the world through the excellence and impact of our research and scholarship, the quality of our graduates and our global engagement; providing a supportive community in which every member of the university is supposed to be enabled to achieve their full potential.

Justus Liebig University Giessen (JLU) was founded in 1607 as Ludoviciana and is the oldest Hessian state university, which sees itself as a differentiated comprehensive university (full-scale university). JLU is organised in eleven faculties, including law and economics, social sciences, humanities and cultural studies, psychology and sports science, natural and life sciences as well as veterinary and human medicine.

UCD and JLU jointly offer the Master's programme "Global Change: Ecosystem Science and Policy" which started in winter semester 2012/13. Following the self-evaluation report (SER) and the information provided during the site visit at JLU in May 2024, the programme has its origins in a long-standing cooperation between the two universities in the field of ecology and climate impact research (e.g., through joint research projects, visiting professorships, the ERASMUS+ student exchange, joint PhD supervision). The goal of establishing the programme was to fill the gap of a specialized programme on the current topic of global environmental change at both universities. To this end, a working group led by the School of Biology and Environmental Science of UCD and Faculty 08 of JLU developed a concept for a jointly offered Master's programme, which was accredited in August 2012 and re-accredited in 2017.

UCD is organised into six colleges (Arts and Humanities, Business, Engineering and Architecture, Health and Agricultural Sciences, Social Sciences and Law, and Sciences) and 37 schools. UCD emphasizes in the SER that through strategic links with universities, international activities such as staff and student exchanges, the development of joint academic programmes, research collaboration and other collaborative initiatives are to be supported. It is explained that UCD's non-EU outgoing exchange numbers are constantly growing, and the international mobility of the students is said to remain a priority in the years to come. The Master's programme under review is supposed to support this strategy.

UCD's School of Biology & Environmental Science (SBES) is located in the O'Brien Centre for Science. The school also manages the UCD Rosemount Environmental Research Station which accommodates agricultural and environmental teachings and research that can be used within the programme. As a special feature of SBES, the interdisciplinary nature of its activities is highlighted in the SER which is supposed to provide students and scientists alike with critical knowledge and perspectives about modern biology, encompassing molecules through to eco-systems. At national level, SBES is to provide expertise to inform environmental and sustainable management policies and to support the agricultural, food and biomedical industries. The school's portfolio of teaching at undergraduate and graduate level is to be informed by its research which is described as being interdisciplinary in nature and covering ecosystems, global change and sustainability, evolution and population biology, plant sciences, and cellular systems. SBES describes itself as being actively engaged in four key areas of interlinked thematic research: ecosystem function and sustainable resource management, evolution and population biology, plant sciences and cell and molecular biology.

JLU sees the Global Change Master's programme as an important pillar in the portfolio of natural and life science Master's programmes. In terms of research, it is described as corresponding with the strategic research focus "Biodiversity and Global Change" of the Faculties 07, 08 and 09, and the programme additionally aims at supporting the university's overall sustainability strategy by teaching and research in corresponding areas. In addition, it is to contribute to JLU's internationalization strategy which aims at increasing the proportion of international Master's programmes to 50%.

Faculty 08 – Biology and Chemistry of JLU includes 38 professorships and the faculty’s research spectrum covers aspects such as the development of organic catalyser methods, nanostructured substances, analytical methods and high-performance batteries, as well as the isolation of novel enzymes, and the biotechnical production of natural aromas and active ingredients. Further central research areas in the faculty include interaction of enzymes and enzyme complexes with nucleic acids, the systems biological investigation of regulatory ribonucleic acids, stress research on phototrophic bacteria and plants, studies of biodiversity and global change and the influence of ecological conditions on genetic characteristics. The faculty is involved in international projects such as International Research Training Groups, Innovative Training Networks (Marie Curie Action) and the German-Colombian DAAD Excellence Center for Marine Sciences “CEMarin”. The faculty also has established “Marine Biology” and “Ecology and Global Change” as new divisions at the Giessen Graduate Centre for Life Sciences (GGL).

IV. Assessment of the study programme

1. Eligibility

1.1 The institutions that offer a joint programme should be recognised as higher education institutions by the relevant authorities of their countries. Their respective national legal frameworks should enable them to participate in the joint programme and, if applicable, to award a joint degree. The institutions awarding the degree(s) should ensure that the degree(s) belong to the higher education degree systems of the countries in which they are based.

1.2 The joint programme should be offered jointly, involving all cooperating institutions in the design and delivery of the programme.

1.3 The terms and conditions of the joint programme should be laid down in a cooperation agreement. The agreement should in particular cover the following issues:

- *Denomination of the degree(s) awarded in the programme*
- *Coordination and responsibilities of the partners involved regarding management and financial organisation (including funding, sharing of costs and income etc.)*
- *Admission and selection procedures for students*
- *Mobility of students and teachers*
- *Examination regulations, student assessment methods, recognition of credits and degree awarding procedures in the consortium.*

Description

According to the SER, both partners are recognised higher education institutions in their countries referring to Article 2 of Hessisches Hochschulgesetz (Hessian Higher Education Act) and Article 52 of Universities Act in Ireland, and by these regulations are legally allowed to participate in joint degree programmes, to award a respective degree, and to use the European Approach for accrediting study programmes.

The programme’s cooperation agreement covers regulations on the roles and responsibilities of both universities, the programme structure, and financial aspects. It specifies that the programme management lies within the Global Change Working Group with representatives from UCD and JLU. The group is responsible for the academic management of the programme and can make recommendations to the relevant governing boards and committees within each institution, including the Science Graduate School Board, the University Graduate Programmes Board and any other relevant subcommittees of Academic Council within UCD, and the Prüfungsausschuss (Examination Board), the Dekanat (Dean’s Office) and the Fachbereichsrat (Faculty Council) at JLU. A Chair and Vice-Chair of the programme is to be selected from the Working Group from both universities. The Working Group is responsible for ensuring that the respective quality assurance processes

are complied with, and it meets annually. It also holds responsibility for student pastoral support and guidance in consultation with offices in the relevant university.

The agreement also specifies regulations on admission (criteria and process), registration and fees, complaints and appeals, examination and quality assurance arrangements, the awarding of the degree, and the provision of teaching staff. It includes a depiction of the study plan which shows which curricular elements and modules are to be taken and at which university. The agreement contains links to further regulations such as admission regulations, examination regulations, etc.

Experts' evaluation

As explained above and shown in the documentation for the accreditation procedure, both universities are recognised higher education institutions (HEI) in Ireland and Germany according to the legislation and the respective national higher education system, are entitled to participate in a joint programme and to award a joint degree. The formal and legal basis for mutually offering the Master's programme is thus secured, and the accreditation based on the European Approach can be carried out within this framework.

The programme is based on a long-standing and robust cooperation of both HEI which forms the adequate basis for offering the programme successfully. This cooperation is based on the agreement as explained above which covers all relevant aspects for the accreditation. It includes formal aspects such as the degree awarded, the admission criteria and selection procedure, as well as specific arrangements on finances, responsibilities, boards and management of the programme. The documentation also includes legally binding documents such as general, academic and special regulations for the programme, and additional supporting documents such as the student handbooks.

As the description explains, the processes and boards as well as the underlying agreement secure an adequate joint delivery of the programme which was also jointly designed and is continuously developed by the departments involved at UCD and JLU. Both partners share the joint responsibilities equally.

The experts also want to emphasize at this point already, that they highly value the efforts both universities have taken to continue organising this programme mutually since its last accreditation. The Master's programme offers its students a very good experience. The level of networking of both universities is extraordinary, particularly achieved through the engagement of several persons at UCD and JLU. This impression became clear by the enthusiastic discussions with different stakeholders, the students' impressions and their high level of satisfaction with the programme. This also supports a strong network between students of a cohort as well as with graduates which shall also be highlighted here already.

Conclusion

The criterion is fulfilled.

2. Learning outcomes

- 2.1 The intended learning outcomes should align with the corresponding level in the Framework for Qualifications in the European Higher Education Area (FQ-EHEA), as well as the applicable national qualifications framework(s).
- 2.2 The intended learning outcomes should comprise knowledge, skills, and competencies in the respective disciplinary field(s).
- 2.3 The programme should be able to demonstrate that the intended learning outcomes are achieved.
- 2.4 If relevant for the specific joint programme, the minimum agreed training conditions specified in the European Union Directive 2005/36/EC, or relevant common trainings frameworks established under the Directive, should be taken into account.

Description

Graduates of the study programme are awarded a joint “Master of Science” degree (M.Sc.) by both universities. As stated in the SER, the degree corresponds to

- level 7 according to the European Qualifications Framework (EQF),
- the second cycle of the Framework for Qualifications of the European Higher Education Area (QF-EHEA) and the Qualifications Framework for German Higher Education Degrees (Qualifikationsrahmen für deutsche Hochschulabschlüsse),
- and level 9 according to the Irish National Framework of Qualifications (NFQ).

Referring to the UN International Standard Classification of Education (ISCED), the programme belongs to the field of study of natural sciences, mathematics and statistics (05).

The focus of the programme is defined as equipping its students with a generic skill sets in the areas of global change science, policy and communication, as well as data management, analysis and reporting. The learning outcomes of the programme aim at training students in scientific methods to study the effects of environmental change on ecosystems and to transfer the gained knowledge to policy-relevant information. In addition, students are supposed to acquire methodological and social skills that shall enable them to be successful in their profession. The philosophy of ‘policy-relevant evidence’ is described as the core of the Master’s programme, which is said to be equally suitable for graduates aiming at a scientific career as well as those aiming at contributing to evidence-based environmental policy making.

Against this background, the intended learning outcomes are specified as follows:

- **Global Change Science:** Based on basic knowledge from their undergraduate studies, the programme’s students are supposed to acquire a deeper and broader understanding of ecosystem science (key concepts, methods, research domains, etc.) underpinning the knowledge of global environmental change. They shall gain a comprehensive insight into the driving forces of global change arising as a many-faceted process from human and natural activities and are supposed to be able to derive its impacts on plants, populations and ecosystems.

Also, the students are supposed to gain profound knowledge about advanced scientific methods for analysing complex ecosystems, and they should be equipped to be able to design and carry out scientific experiments to study global change impacts (laboratory techniques, field methods). They shall be equipped to design and produce their own research projects that should include a rationale (literature review), management timeline and be underpinned by sound theoretical and methodological research design.

- Data Management, Analysis and Reporting: The students are supposed to acquire the competence to perform environmental work and research in a confident manner by applying relevant tools in data collection, management, analysis, and reporting. On this basis, they shall gain the competence to interpret scientific data and statements about the effects of global change and the adaptations of ecosystems.

Furthermore, the students are supposed to acquire a profound level of knowledge about the rationale, legal and procedural approaches to environmental impact assessment procedures and approaches of environmental management and be able to critically discuss the relative merits and flaws in different countries.

- Policy and Communication: The students are supposed to gain a very good overview of the principles and frameworks of environmental law and policy at national, European, and international levels and should be able to engage in a high level of debate on current policy-relevant challenges. They shall expand their insight into the field of policy consulting and be equipped to be able to reflect on the consulting activities of experts from academia, public and private organizations.

Additionally, the students are supposed to learn to reflect on the process of scientific knowledge generation on environmental problems and its relevance for society, and they shall be competent to communicate policy-relevant evidence to diverse target audiences in an unambiguous way. Based on their knowledge of global change issues, they are supposed to have the competence to promote the development of policy in terms of adaptation and mitigations for natural and managed ecosystems, thereby supporting sustainable livelihoods.

- Professional Work, Research Competence and Skills for Further Studies: The programme aims at providing students with soft skills to participate in professional life such as critical thinking, systematic problem solving, teamwork and self-management. The graduates are supposed to possess research competencies for further studies with a high degree of autonomy. Lifelong learning enthusiasm and competencies are also to be acquired to inform themselves about latest global change issues and continue their training in up-to-date research methods.
- Intercultural Training: A learning environment which combines academic and professional approaches at a cross-cultural setting are seen as fundamental for this programme by both universities. This environment is said to equip students with skills and competences to work in intercultural teams.

The curriculum depicts as follows:

Tab. 3: Schedule of the Master’s programme Global Change: Ecosystem Science and Policy

Module Name / Module Code	CP	Semester			
		1	T	2	3
1. Data Analysis and Interpretation ENVB40370	5	O			
2. Designing Global Change Research Projects BIOL40780	5	S			
3. Global Change Ecology ENVB40130	5	W			
4. Science and Policy BIOL40140	5	L			
5. Environmental Impact Assessment ENVB40040	5	P			
6. Environmental Law and Policy LAW30440	5	FT			
7. Optional module	5	L			
total CP 1. Semester	35	P			
8. Work Placement BIOL40120	20	S	WP		
total transition phase	20	W			
9. Global Change: Modelling and Advanced Techniques M-GC-GCM	5	L		L	
10. Adaptation to Global Change M-GC-AGC	3	S		S	
11. Political Consulting – Environmental Policy and Development Cooperation M-GC-PCE	6	P		P	
12. Resource Economics and Sustainable Management MK-080-EN-DI	6	L		L	
13. Biodiversity Informatics M-GC-BDI	3	S		S	
14. Sustainable Agroecosystems MK-096-EN	6	P		P	
15. Optional module	6	Ex		Ex	
Sum CP 2. Semester	35	L		L	
16. Research Project Thesis BIOL40130	30	S		S	T
total CP 3. Semester	30	P		P	
Total	120	Ex		Ex	

The learning outcomes in the area of “Global Change Science” are supposed to be delivered in the modules “Global Change Ecology”, “Adaptation to Global Change”, “Sustainable Agroecosystems”, and “Designing global change research projects”. For the ILOs in the field of “Data Management, Analysis and Reporting”, the modules “Data Analysis and Interpretation”, “Global Change: Modelling and Advanced Techniques”, “Biodiversity Informatics” and “Environmental Impact Assessment” are listed in the SER; for the ILOs in “Policy and Communication” the modules “Environmental Law and Policy”, “Resource Economics and Environmental Management”, “Political Consulting – Environmental Policy and Development Cooperation”, and “Science and Policy”. The modules “Work Placement” and “Designing Global Change Research Projects” are supposed to enable students to achieve the ILOs in the area of “Professional work, Research Competence and Skills for Further Studies”.

To prepare students for entering the labour market and working at the interface between science and policy, a work placement (internship) of six weeks minimum is integrated into the programme, to be conducted at the end of the first semester. Regarding employment of graduates of the study programme, it is explained in the SER that recent graduates are working in areas ranging from administrative public bodies involved in environmental planning, sustainability and agricultural research, to consulting work in environmental, engineering and development cooperation, and private environmental companies. Some graduates are also said to be working in media, community engagement, environmental education, and public relations as well as research and consulting in the private and public sector; some have pursued further postgraduate studies including PhDs.

The minimum agreed training conditions specified in the European Union Directive 2005/36/EC, or relevant common trainings frameworks established under the Directive, are not relevant for the programme under review.

Experts’ evaluation

The intended learning outcomes (ILOs) specified for the study programme are in line with the specifications for level 7 of the European Qualifications Framework (EQF) and the Framework for Qualifications in the European Higher Education Area (QF-EHEA), and they are also in line with the applicable national qualification frameworks of the partner universities in Ireland and Germany. Both the contents and the style of formulation of the ILOs comply with expectations of the qualification levels of the relevant frameworks. To make this clear, a matrix was included in the documentation that gives evidence on the alignment of the ILOs with the QF-EHEA and both national qualification frameworks.

The five ILOs (partially comprising two or three sub-points) are clearly formulated, and they adequately reflect the main goals of the study programme to equip the graduates with three key generic skill sets (global change science; policy and communication; data management, analysis and reporting). The ILOs include both disciplinary competences related to ecosystem and global environmental sciences and transferable skills such as intercultural and research skills, and this is, overall, very well balanced. The ILOs also reflect the jointness of the programme, in particular by emphasizing the cross-cultural setting as a shared approach of both universities.

During the accreditation procedure, convincing evidence (including list of theses, module descriptions and information by senior teaching staff, information by students, outlined professional profiles of earlier graduates) was provided that the programme successfully achieves the defined ILOs. The experts are thus convinced that the programme fully reaches the learning objectives and corresponding intended learning outcomes.

However, even though the ILOs are well formulated and documented for the evaluation as part of the accreditation process, they are currently neither presented in detail on the website of the study programme, nor in study programme brochures, nor in the student handbooks. They are also not included in the Diploma Supplement in the version the experts received (in this version, there is no category for the documentation of the ILOs, so they should be integrated into the programme details in the annex of the Diploma Supplement). The detailed ILOs of the study programme should therefore be more clearly communicated to potential applicants and students (e.g., on the website’s subpage on the composition of the programme), and thus should also be

more easily available for other persons interested in the programme's ILOs, for example employers or professional bodies (**Finding 1**).

Conclusion

The criterion is fulfilled.

3. Study programme

3.1 The structure and content of the curriculum should be fit to enable the students to achieve the intended learning outcomes.

3.2 The European Credit Transfer System (ECTS) should be applied properly and the distribution of credits should be clear.

3.3 A joint bachelor programme will typically amount to a total student workload of 180-240 ECTS-credits; a joint master programme will typically amount to 90-120 ECTS-credits and should not be less than 60 ECTS-credits at second cycle level (credit ranges according to the FQ-EHEA); for joint doctor-ates there is no credit range specified. The workload and the average time to complete the programme should be monitored.

Description

The programme accounts for 120 credit points (CP) according to the European Credit Transfer System (ECTS) and runs for a period of 16 months comprising three semesters and a transition phase between semesters one and two. Due to differing regulations at UCD and JLU, the number of hours per CP vary between both universities. For modules offered by UCD, it is 20 hours per credit, modules offered by JLU have a workload of 30 hours per credit. This is based on the country-specific implementation of the ECTS.

The programme starts each winter semester at UCD. The first semester comprises modules with a total of 35 CP (30 CP core, 5 CP optional module). The courses are held from September to December.

The first semester is followed by the so-called transition phase with a minimum six-week work placement (20 CP) in the period from January to March. This time also includes three weeks of self-study time to complete the final report/portfolio and prepare a presentation for the accompanying seminar. The module, which lies within the responsibility of UCD, is to be prepared during the first semester. The internship has to be done in a qualified institution in a country of the student's choice. A list of pre-approved employers is available to students; new employers have to be approved by the module coordinator. The application process starts in September as soon as the students have settled in UCD. A preparation component consisting of preparing a CV and cover letter as well as visiting the Career Office at UCD is part of the pre-placement procedure.

The second semester modules are held at JLU from March to July with a total of 35 CP (29 CP core, 6 CP optional module). The curriculum includes two optional modules for which the students are offered a list of modules students they can choose from at each university. These modules are supposed to give students the chance to explore or deepen their understanding in one aspect of the curriculum already taught in the main core modules.

The planning of courses for the respective semester as well as the teaching are the responsibilities of the university offering the modules.

In the third semester, students complete their Master's thesis (30 CP) in the timeframe between August and December. They can write the thesis in a working group at UCD or JLU, or at an external institution. The thesis module is coordinated by UCD.

According to the SER, qualitative data from student questionnaires (mid-term and end of programme) over the last six years have demonstrated that students are satisfied with the workload in terms of total time and balance

between institutions. It is also pointed out that almost all students completed the programme within the allocated time.

Experts' evaluation

The curriculum is well-structured and clearly defined, enabling students to acquire the necessary skills for the scientific analysis of ecosystems and effective data processing. Additionally, it fosters valuable transferable research competencies. The programme also encompasses theoretical and methodological skills in areas beyond the natural sciences and scientific data analysis. The study plan including the modules to be taken as depicted in chapter 2 is well balanced and shows that both partners are adequately involved in the delivery of the programme. In the 2018/2019 academic year, a new core module titled "Data Analysis and Interpretation" was introduced in the first semester at UCD. This addition, which focuses on data analysis and statistical foundations, has been well-received by students, who have provided highly positive feedback. In total, the curriculum is thus apt to secure that the ILOs are achieved by the students. This is reached by a sensibly composed curriculum and its modules that cover different aspects in the wide range of topics involved in the programme. By this, the students receive a well-balanced targeted training in different sub-areas which are reflected by the ILOs. By incorporating the partners' different focal points in teaching and research into the programme, a clear added value is created for the students. The programme is not just the sum of all parts, but a meaningful combination of the different foci of UCD and JLU.

Both universities effectively monitor the student workload through comprehensive measures, particularly by conducting surveys among students. The consortium also tracks the average time taken by students to complete the study programme and possesses detailed data regarding the time required and the circumstances that may cause delays for individual students.

The application of the European Credit Transfer System (ECTS) is robust and adequate, and national regulations have been appropriately considered. The distribution of credits is clearly detailed in both the self-evaluation report and the materials provided to students, which is commendable. The joint Master's programme comprises a total student workload of 120 ECTS credit points, and this is presented transparently. National regulations are correctly applied, acknowledging that Ireland and Germany measure credit points differently.

The workload and average time taken by students to complete the programme are monitored, and necessary adjustments are implemented. That the majority of students gains the degree within the allocated timeframe is a significant strength of the joint programme.

Conclusion

The criterion is fulfilled.

4. Admission and recognition

4.1 The admission requirements and selection procedures should be appropriate in light of the pro-gramme's level and discipline.

4.2 Recognition of qualifications and of periods of studies (including recognition of prior learning) should be applied in line with the Lisbon Recognition Convention and subsidiary documents.

Description

According to the Special Regulations, the admission criteria cover the following:

- (1) To qualify for admission to the Master's programme, applicants must hold a Bachelor's degree in one of the following scientific fields:
 - Biology
 - Agricultural science
 - Natural or environmental sciences
- (2) On an individual basis, UCD's Examination Board may accept other study programmes as equivalent and may also subject them to specific requirements.
- (3) To qualify for admission to the Master's programme applicants must have gained at least 180 CP and an average grade of at least 2.48 or better in a Bachelor's programme (UCD grade points).
- (4) As the entire study programme will be conducted in English, knowledge of written and spoken English is required. If the first-degree course was not completed in English, applicants must provide a certificate giving evidence of their proficiency in English (600 points (paper based) and 100 (internet base) in the TOEFL (Test of English as a Foreign Language) or 6.5 points in the IELTS Academic Test (International English Language Testing System).

With regards to paragraph 2, previous studies must demonstrate the following profile: broad scientific education with appropriate foundations in biology, mathematics/statistics and with a perceptible emphasis on ecology or ecology-related subjects. Applicants who do not meet these requirements but have substantial previous knowledge or work experience in the field can also be considered.

The examination offices, international offices and registrar's offices of both universities are described as working closely together on the administration of the Master's programme. The application and admission for the Master's programme are administered by UCD. Furthermore, UCD is responsible for issuing the Master's certificates. These certificates are awarded annually in June at the UCD conferring ceremony.

The Global Change Working group is responsible for reviewing all applications and may then impose requirements for making up for and proving missing knowledge. The proof must be provided by the end of the first semester. Admission numbers are based on the admission capacity of UCD.

Recognition of qualifications and periods of studies including the recognition of prior learning bases on each university's regulations and procedures. At JLU, recognition can be granted upon application by the Examination Committee based on the regulations in § 27 of the General Regulations for Bachelor's and Master's programmes at JLU. At UCD, admission and recognition are the remit of the Programme Working Group. After the approval of the Programme Board, recognition may be granted. Which board/committee is responsible depends on which university is responsible for the module recognition is applied for.

Experts' evaluation

The admission requirements are generally suitable and aligned with the educational level and disciplinary focus of the study programme.

The selection procedure for the programme is satisfactory. However, it has been observed that the student cohorts lack convincing diversity. Over 50% of all students enrolled from 2016/17 to 2023/24 held Irish nationality, and nearly 70% were from the EU, with German students being somewhat underrepresented in this setting (15% of all students enrolled from 2016/17 to 2023/24 held German nationality). The vast majority (> 90%) of students were from high-income countries, few students were from middle-income countries, and no student was from a low-income country during this period. This is not fully in line with the international and cross-cultural aspirations of the study programme. The study programme representatives' explanation that the Covid19 crisis had a negative impact on student mobility and as a result on the low diversity of enrolled students is in general convincing, and the study programme representatives also adequately broadened the picture by outlining the higher diversity of students over a longer period of time, i.e. since the start of the study programme. Nevertheless, it is essential to more proactively implement measures to achieve a more balanced distribution (**Finding 2**). By this, it should also be secured that the labour market in Germany has access to qualified staff who have been trained at a local university, among others.

Regulations concerning the recognition of courses taken at other universities and the acknowledgment of prior learning are appropriately and transparently documented as well as put into practice, in accordance with the Lisbon Convention. The recognition of qualifications and periods of study, including prior learning, is effectively addressed in the documentation, and according to the students the experts were able to talk to during the side visit the according processes are adequately carried out by both universities.

Conclusion

The criterion is fulfilled.

5. Learning, teaching and assessment

5.1 The programme should be designed to correspond with the intended learning outcomes, and the learning and teaching approaches applied should be adequate to achieve those. The diversity of students and their needs should be respected and attended to, especially in view of potential different cultural backgrounds of the students.

5.2 The examination regulations and the assessment of the achieved learning outcomes should correspond with the intended learning outcomes. They should be applied consistently among partner institutions.

Description

Learning and teaching

According to the SER, the programme's theoretical basics are mainly taught in lectures which may include an exercise sequence. In exercises and practical classes students are supposed to learn how to apply theoretical aspects in the respective study field, usually offered for small groups (max. 4–10 students). Apart from traditional field practicals, also computer aided practicals are included in teaching. Furthermore, current topics or new literature are said to be reviewed and presented by the students in seminars to foster discussions and conversation in more policy focused classes. Additionally, it is explained in the SER that tutorials are offered in various modules, and field trips are included during which the students either get to know the flora and fauna as well as the ecological relationships in the habitats or visit possible future fields of work. Practical scientific skills are supposed to be obtained via laboratory training and teamwork. In groups with students from other programmes, the Global Change students are supposed to learn how to transfer, discuss, and apply their skills.

The universities explain that students also attend seminars and workshops with members of various institutions, which may represent potential employers. In addition, the module 'Policy consultancy' is characterized as being taught by external consultants and politicians.

The work placement is supposed to allow the students to be immersed in 'real' work life with concrete issues and day-to-day activities and gain some work experience in a subject chosen by the students and make them more employable. A student work placement agreement (UCD contract) must be signed between the parties and will document amongst others (1) duration, dates, hours and location of work placement; (2) the nature of the work placement activities; (3) the learning objectives; (4) name and contact details of a mentor/supervisor.

Assessment

Written examinations, oral examinations, seminar presentations and written assignments are assessment methods used in the programme. While the first semester is described as having a higher proportion of written examinations, continuous assessment (such as presentations) is mainly used in the second semester.

During the internship, students are required to fill out a diary or logbook to be sent to the co-ordinator every week. Post-placement, the students have to hand in a portfolio or written essay on an aspect of their work. In addition, there is an 'oral examination' in the form of a seminar during which students will have to make a presentation.

For examinations that are taken at JLU, the Examination Board (Prüfungsausschuss) bears responsibility for the arrangements. The examination committees are responsible for the conduct of the individual examination. Students are supposed to be notified of the examination dates and repeat examination dates at the start of the modules via Stud.IP. If examinations are failed, students may retake the examination twice. Resit options are to be held at the end of the modules and should be completed before the start of the following semester. Students must retake failed module examinations within three months at the latest. Repeat examinations may be written or oral.

At UCD, the module coordinator is responsible for setting assessments and examinations, for stating remediation opportunities, and for ensuring that an appropriate process is in place for grading all forms of assessment. The module coordinator also accounts for assuring the quality of the grading process and ensuring that grades for a module are entered on the Student Information System. Examinations timetables are said to be circulated early to check for exam date clashes and spreading the workload evenly by the programme director. Students shall be informed on the timetable around two months before the examination period.

Where a student has failed to complete and pass a module, they may retake the assessment (during the next teaching semester, re-attendance is not required), repeat the module (second attempt at the module, through re-attendance when it is offered again), or substitute another module compatible with the credit requirements of the programme (requires Programme Board approval in case of a core module).

Compensation for disadvantages in assessments can be permitted to students if they have a longer-term or permanent physical impairment or disability and are unable to take all or part of an examination in the prescribed form. At JLU, students must apply to the Examination Board in writing for an allowance to be granted and the disability or impairment must be attested by a doctor's certificate and/or by presenting a disabled person's identity card. UCD has a programme called UCD Access and lifelong learning. Once a student is registered there and has completed an educational needs assessment, they can avail of personal and educational support.

In the Master's thesis, the students are supposed to approach a complex scientific question. This is to be worked on in a structured manner and solved independently using scientific working techniques. The students shall hereby be enabled to acquire new knowledge and skills and to transfer the scientific methodological

knowledge they have acquired during their studies to new questions and areas of application. It is explained in the SER that the final thesis is designed in such a way that science and policy aspects are interwoven and both aspects are to be considered.

Experts' evaluation

Overall, the programme well supports and covers the ILOs outlined in the programme's documentation by the learning, teaching and assessment methods applied. The ILOs are evenly distributed across the modules at each institution and offer complimentary reinforcement of each ILO. The ILOs of the programme are extensive enough (not as on module level, where they are formulated in detail) to give a broad overview of concepts that the students can learn so when they do their thesis, they can use some of the theory they learned in a module. Five general ILOs are outlined, with three 'main' as Global change science, Data Science, and Policy and Communication. They are well aligned with the Framework for Qualifications as well as both national qualifications frameworks (also see chapter 2).

Examination procedures are sound and transparent. Appropriate regulations are in place in case a student fails an examination. Assessment appeals and complaints procedure regulations are in place at both universities and to be found in the documentation.

The number of examinations and assignments is in general not seen as (too) high, the expectations for a graduate programme seem appropriate; from class to class the number of examinations is balanced and they prepare the students for professional life as to how to organise work and extracurricular activities appropriately. There is only one formal exam each at UCD and JLU, the other assessments/examinations are accomplished by presentations, technical reports, and essays. The students are well informed of exam and assessment due dates at the beginning of each semester. Based on feedback from the students, in the event that assessment deadlines clash, the administrative team has re-organised them, so they were manageable. Overall, it can therefore be said that the methods used are also convincing in terms of their implementation.

A grading conversion table can be found in the collaborative agreement. The conversion of grades is thus transparently defined for both partner universities for the programme and its students. The same applies to the calculation of the overall grade and the calculation formula used.

The programme has developed their contact with organisations and institutions outside the universities for excursions, speaks, etc. in Dublin and Giessen and surrounding areas. However, for the programme, the interlinkage with the industry and organisations could be strengthened. It is important to have a good balance of academics and practitioners. The network of the professors can also well be used to create contact to people working in different areas of interest, e.g. from the UN. There are already contacts that could now be successfully expanded following the long-standing implementation of the programme.

At UCD, the courses are well organised and constructed to bring students to a comparable level at the beginning of the programme since they have different disciplinary backgrounds with specific tailored aspects (e.g., infographics, introduction to data handling). In addition, there is a good interplay between individual and group projects. The experts specifically liked the student training to interview policymakers as part of one assessment. Also, at the beginning of the programme, students learn about good scientific practice to prepare them properly for writing the thesis in a workshop on biases, researching reliable information, guided essay writing, and critical paper evaluation. This equips the students with valuable critical thinking skills.

The programme has a specific focus on developing both theoretical and practical 'real-life skills' and there are ample examples of how this is reinforced throughout the programme. These include the use of mock exercises (e.g., developing a concept as consultants to build a wind turbine at UCD), technical writing via a mini-publication style report, poster presentations, and analysis and interpretation of ongoing experimental datasets.

The learning, teaching and assessment methods are well documented and transparent for students in the different documents such as regulations, the student handbooks as well as the module descriptions.

Conclusion

The criterion is fulfilled.

6. Student support

6.1 The student support services should contribute to the achievement of the intended learning outcomes. They should take into account specific challenges of mobile students.

Description

The students in the programme first enrol in UCD. The first semester (early September) then starts with an orientation week (another orientation week is organised by JLU in the second semester). Additionally, an International Student Welcome and Information Fair is organised by the UCD International Office. There are also specific events organised by the programme coordinators from both UCD and JLU during the first week of term. This is supposed to support the students to bond during the first days of getting together as well as get familiar with all the staff involved in the programme. The programme as a whole as well as the modules of the current semester, the elective options and the timetables are presented, and the team of lecturers is introduced. The students also receive an introduction to the electronic systems and study regulations. In addition, student assistants are supposed to help with organisational challenges (e.g., applying for visa). Additionally, there are special academic student advisory services at both universities which are supposed to advise students on content-related and organisational issues (such as finding housing). Students also receive student handbooks containing information on the programme, the organisation of their studies, and both universities.

The International Offices and Student Services of both universities are supposed to provide advice on how to find accommodation, on visa issues, enrolment, insurance, and funding opportunities. The UCD International Office provides advisory services and transcript of records. For international students, there is a dedicated website, and the UCD Global Experience Team is responsible for providing information, guidance, and support, such as support with complex immigration queries, cross-cultural advice, assistance during a crisis, or settling into life in Ireland. All students at UCD have a Student Adviser attached to their programme or with responsibility for specific cohorts. Student Advisers are supposed to offer support and information on personal, financial, and social matters. A specific Internship Manager is in charge of establishing links between UCD and the relevant industry.

At JLU, the International Office advises students on entry and visa regulations as well as insurance protection, especially before students arrive in Germany for their second semester. In addition, the International Office aims at supporting students in finding financial support for stays abroad to write their Master's thesis. Through a cooperation with the Studierendenwerk (Student Services), Global Change students can access a reserved room contingent in the students' residences in Giessen.

According to the SER, the programme's responsables were able to regularly acquire funding from the DAAD. These funds are used to provide students with scholarships and to hire assistants for the organisation of the programme and student support as well as trips to partner meetings and guest lecturers.

Experts' evaluation

The study programme is extraordinary in terms of student support. The students are supported in almost every possible way, and this not only if something has acutely happened, or if a student asks for help, but from the

beginning of the programme, informing students about possible problems and solutions; in this way, students can fully concentrate on their studies and thus on the achievement of the ILOs. The programme's support system also covers information on aspects such as finding accommodation (in Giessen), opening bank accounts, advice on how to get insurances and medical support, etc.

It is great that students find reserved housing in Giessen, and it would be important to create this kind of opportunity in Dublin, too, in order to not lose applicants during the search for (not too expensive) accommodation in Ireland. However, this is a general problem, and the housing market is tense so that no easy solution is to be found. Nevertheless, the experts recommend focussing more on the support for students to find housing in Dublin. Since the programme mainly attracts students from the EU and US but rarely from low-income countries, it is also recommendable to fund and grant specific scholarships for such students who would additionally need special support to find and finance housing (especially in Dublin) (**Finding 3**).

The mobility phase is an inherent part of the study programme and kept in mind throughout the whole organisational process. Students are supported with two different handbooks (one of each covering studying at UCD, the other the time spent at JLU) and with programme coordinators travelling to the respective other country to help the students to get in touch with them and the new environment. Even additional mobility phases are possible and supported by the programme, especially to fulfil the internship or master's thesis in a third country which is highly commendable.

Conclusion

The criterion is fulfilled.

7. Resources

7.1 The staff should be sufficient and adequate (qualifications, professional and international experience) to implement the study programme.

7.2 The facilities provided should be sufficient and adequate in view of the intended learning outcomes.

Description

Staff

Full-time personnel to provide teaching and mentoring for the students in the study programme include professors and scientific staff of UCD and JLU. They sum up to 15 from which four are professors at UCD and five are professors at JLU, the other scientific staff. They are supplemented by ten external lecturers with assignments between two and eight teaching hours.

According to the SER, didactic training and further possibilities to enhance didactic skills are offered at both universities. These include modules and programmes available through UCD Teaching & Learning to support the development of academic practice such as "Becoming a Better University Teacher". JLU refers to its personnel development concept and training offers. Additionally, JLU runs a network with other universities in which events for university didactic training and continuing education are offered.

Facilities

At UCD, responsibility for the provision of the appropriate facilities for the modules and other components of the Master's programme lies with the School of Biology and Environmental Policy. Where additional assistance or support is required, this is to be provided by the Room Allocations section of UCD Buildings and Services. At the UCD Rosemount Environmental Research Station, pomology teaching and research, vegetable production

demonstration and plant materials teaching as well as walk-in growth chambers are located which allow measuring the responses of living plants to controlled changes in experimental environments. The School is part of the UCD Earth Institute which also offers a biogeochemistry lab equipped with a Picarro CRDS Analyser for CO₂/CH₄/H₂O, IRGA, gas chromatograph, 13C in CO₂, as well as an Elemental analyser. In addition, the School has PEAC Environmental chambers. The Earth Institute has a dedicated Enterprise Officer whose purpose is to bridge the gap between academic research and commercial exploitation of research results.

At JLU, with the aim to strengthen the link between state-of-the-art global change research and practical training within the Master's programme, new teaching facilities were established, i.e., a teaching container at the climate change research station of the JLU in Leihgestern which includes a Free Air Carbon Dioxide Enrichment facility. Following the SER, methodological practical training at the research station includes stable isotope facilities and the methods for modern global change ecology, such as modern techniques to quantify climate relevant trace gas emission from terrestrial ecosystems. Additionally, the facilities and equipment of the Institute of Plant Ecology and the Institute for General and Special Zoology can be used for teaching, learning, and research in the Master's programme.

Experts' evaluation

The existing staff supports the programme adequately and is well balanced with respect to the organisation of the partnership being led by UCD. There is a very suitable breadth of expertise across the institutions in the main teaching staff and with external lecturers involved in the programme. Both institutions are leading universities with demonstrated existing facilities that will complement the programme very well. The existing facilities are well described, were (partially) shown during the site visit and Giessen and online and are a key selling-point for the programme.

The experts are very satisfied with the qualifications of teaching and support staff associated with each partner institution who are very well equipped to implement the curriculum to a high standard. As mentioned, one of the key aspects of the programme is that students are able to have access to these researchers and the existing facilities at each partner institution. The experts particularly were impressed with the access and research/thesis opportunities offered to students at the open-air carbon facility at JLU and the equipment and expertise offered at UCD for cutting-edge climate studies.

Conclusion

The criterion is fulfilled.

8. Transparency and documentation

8.1 Relevant information about the programme like admission requirements and procedures, course catalogue, examination and assessment procedures etc. should be well documented and published by taking into account specific needs of mobile students.

Description

At JLU, the General Regulations for modular and multi-stage study programmes as well as the Special Regulation for the programme in Global Change (including the study plan and module descriptions) are officially published online in the Announcements of the University Giessen (Mitteilungen der Universität Giessen). These include information on the structure of the programme, admission requirements, standard period of study, core and optional modules, forms of examination, start of studies, registration for examinations, preparation of the Master's thesis, grading, calculation of overall grades, as well as certification.

Explanations on the programme's modules is given in the module descriptions. These are supposed to document the contents and learning outcomes of the modules, their teaching and learning forms, participation requirements, the requirements for the award of credit points as well as the achievable credit points and grading.

Information for prospective students is also available on pages of the JLU Central Student Advisory Service and the DAAD database of international programmes.

Similarly, information about the programme, its structure and schedule, career perspectives, modules, facilities and resources, entry requirements, tuition fees, next intake, etc. is available on the UCD website. The application for the programme is also possible via this website. Furthermore, UCD Science provides a graduate taught courses brochure.

A specially designed website dedicated to the programme is also available where Frequently Asked Questions as well as graduates' testimonials are presented.

Experts' evaluation

All framework conditions are defined in an appropriate and binding way. The SER includes a variety of documents that mostly are also published, such as regulations, the cooperation agreements, CVs of core staff members, documents constituting the internal quality assurance system, student handbooks, etc. Moreover, the so-called „Spezielle Ordnung“ (special regulation) of JLU is provided in German and English, in order to make it easily accessible. The legally binding documents are complete and provided online.

The module handbook is well structured, the descriptions are complete and copious, containing all relevant information.

All relevant documents are easy to find on the internet, making them accessible for both students and people with interest regarding the Master's programme.

Conclusion

The criterion is fulfilled.

9. Quality assurance

9.1 The cooperating institutions should apply joint internal quality assurance processes in accordance with part one of the ESG.

Description

Following the description in the SER, the programme is subject to regular central quality assurance processes operated by each university as well as to decentralised programme specific evaluation measures. It is the responsibility of the Global Change Working Group to ensure that the respective quality assurance processes are complied with.

The JLU Senate has set up a permanent commission on study programmes to advise the faculties, to review the regulations and by-laws approved by the faculties, and to draw up recommended resolutions. In addition, all documents required for the accreditation of a study programme are submitted to the Senate Commission on study programmes for appraisal.

In course evaluations, students are asked about quantitative and qualitative aspects of their teaching experiences which includes a workload survey. The results are made available to the teaching staff, and they should be discussed with the students. The Deans of Studies receive overall evaluations on their faculties. There are

different questionnaires for different purposes which are all available in German and English. In addition, a special tool was developed to support the teachers in deriving the consequences from the students' feedback. The results of the central evaluation of JLU's programmes are said to be discussed with the Dean of Study Affairs. Likewise, the development of student numbers and study success, e.g., final grades, are regularly monitored.

At UCD, there are two primary mechanisms for quality assurance which are the annual programme reporting and the periodic review. The annual programme reporting process is designed to evaluate the continued effectiveness and quality of taught provision at UCD, and to identify future actions to address shortcomings and/or further enhance the quality of the student experience. Also, the programme coordinators and programme boards are asked to complete a short questionnaire evaluating aspects of the programme and identifying areas where changes and/or improvements may need to be made for the subsequent academic session. The annual programme reporting may also be used as a means of sharing good practice. For the Global Change programme, an annual programme monitoring report is sent to the Academic Council Committee on Quality analysing latest statistics as well as specific details, for example, thematic issues that have arisen. The University's formal periodic review process is described as complementing the process. Overall responsibility for the periodic review lies with the College Principal. This review process is supposed to provide a regular opportunity for rearticulation of strategic goals and is described as providing opportunities for determining instances where the programme should be discontinued.

The programme board (here: the programme Global Change Working Group) is responsible for conducting the annual programme review. On a periodic basis (approximately every five years) the relevant College Principal may initiate a periodic review of the programme. Additionally, a programme-specific quality control monitoring via student surveys (carried out after each semester) as well as questionnaires sent to module coordinators from both institutions and to work placement employers were developed. They comprise measures that have to be carried out according to UCD's QA system in every programme the university offers (such as the involvement of external examiners, Quality and Qualifications Monitoring Ireland, Curriculum Review and Enhancement, student feedback). In the peer feedback, a questionnaire is also sent annually to all module coordinators at both institutions asking for specific (logistics, assessment). The students are asked to take part in three surveys during the course of the programme (after semester 1 in UCD; after summer semester in JLU in the form of a focus group discussion with the students; at the end of the programme). The first two surveys are supposed to focus on practical, logistical and content of module issues while the final questionnaire is more an overview assessment (e.g., did the programme meet their expectations and what modules were most useful vs. what modules they most enjoyed etc.).

Following each student work placement during the first semester, a questionnaire is sent to the host institution aiming at receiving feedback for future course development. The host institution is encouraged to give additional comments or suggestions on the general structure and assessment of the work placement as well as on the Master's programme in general. A questionnaire is also sent to the student to get some feedback as to the quality of the work tasks provided by the institution and general comments.

According to the SER, all feedback is discussed regularly (in March at JLU and in June and/or September at UCD) by the common Global Change Working Group. The group is responsible for carrying out actions identified in the reviews and the improvement of the programme.

As explained in the SER, student feedback has shown that the study schedule including workload, timetable of modules, work experience and the research thesis, as well as assessment formats have been suitably designed so that students can complete the programme in the required time. According to the SER, with the exception of three students who studied one semester longer, all completed their studies on time and achieved very good results. Two students dropped out of the programme due to illness or personal reasons. It is also

explained that the programme has experienced minimum failure rate over the range of examinations, and it is stated in the SER that there were no totally failed modules so far.

Experts' evaluation

The cooperating institutions have adequate procedures in place to regularly evaluate the quality of the overall study programme and the quality of all modules. Both universities have implemented quality assurance processes which are in line with the respective national regulations and include the information of stakeholders. While each of the universities follows their own procedures and there is no formal joint quality assurance as such, the Global Change Working Group effectively brings together the different evaluation elements conducted at both universities and identifies any changes required to the study programme or individual modules based on the results. In this context, the production of the annual monitoring report by the management of the study programme is a very good instrument to actively enhance programme quality and standards, and it is positively noted that this report is also used to look forward to the upcoming year.

The evaluation procedures adequately cover student perspectives, through student surveys (questionnaires at module/course level) and by more generally encouraging students to provide feedback about their satisfaction with the study programme during their studies (e.g., surveys after 1st, 2nd and 3rd semester). During the site visit, the students confirmed that regular feedback is being collected by the two universities from students through appropriate formal measures, but also during informal discussions. However, in this context it is noted that at UCD, one external academic examiner provides an annual evaluation report for the study programme which is based on the national QA system. While this in general is very suitable (and the latest report was also included in the documentation), it is recommended that the external examiner in the future should also get a chance to talk to students, in person or online, to further increase effectiveness of this measure. So far, it seems that the external academic examiner has not been asked to include the students' perspective and evaluation of the programme. Therefore, the experts encourage developing a respective concept. Also, the experts suggest evaluation the assessment methods used in each module to regularly check if they are (still) adequate to verify the acquaintance of knowledge and skills each modules aims at according to its learning outcomes (**Finding 4**).

The SER and information obtained during the different discussion rounds of the site visit (including with the senior management and labour market representatives) provided clear evidence that the study programme's target skills (as documented in the ILOs) meet the requirements of future employers and that graduates can robustly apply the acquired skills when starting and developing their careers. The programme in general also has effective measures in place to obtain programme-related feedback from graduates, alumni and potential employers. For example, several graduates have maintained strong involvement with the study programme by being external lecturers in practice-oriented teaching. The programme benefits from a strong network of international and national organisations which is further intensified through the work placements (internships) of the students. Although these measures are effective, it is noted that non-academic perspectives on the study programme are primarily obtained through informal measures, while a more structured approach would add additional value to the programme's quality assurance.

As a more structured approach to better integrate external and non-academic perspectives, the programme should therefore consider the implementation of an external advisory board (**Finding 5**). This would further support the management of the programme to understand and adequately consider the needs of potential employers active in the area of global change, including international organisations such as FAO, UNEP, IP-BES, on a higher level. For example, the members of such an external advisory board should validate the study programme's ILOs against the current and future needs of the practice regularly.

Conclusion

The criterion is fulfilled.

V. Recommendation of the panel of experts

The panel of experts recommends accrediting the study programme “Global Change: Ecosystem Science and Policy” offered University College Dublin (Ireland) and Justus-Liebig-University Giessen (Germany) without conditions.

Commendation:

The experts highly value the efforts both universities have taken to continue organising a programme mutually that offers students a very good experience. The level of networking of both universities is extraordinary, and the engagement of several persons involved must be highlighted. This also supports a strong network between students of a cohort as well as with graduates.

It is also to commend that students are well supported to find housing in Giessen which should be a good example for UCD to find solutions for the general problem of finding accommodation for students (which is not an original problem of the programme).

Furthermore, the experts point at the high linkage of topics on the local and global scale that are addressed in the programme which helps preparing for ‘real-life’ problems they will probably face regularly in their work after graduation. Preparing students adequately for the future is also supported by the applied and practical nature of assessments used in the programme. Also, the interdisciplinary approach of the programme and the respective diversity in the student body contributes to a comprehensive education.

Findings:

1. The ILOs should be more directly communicated to potential applicants and students on the website, and they should be included into the diploma supplement; both to also make them more easily available for other persons interested in the programme, e. g. employers and professional bodies.
2. Measures should be taken to increase the diversity of students, including the number of German students in the programme.
3. There should be more support for students to find housing in Dublin and scholarships for students from low-income countries should be granted and special support to find and finance housing in Dublin.
4. The external examiner should look into detail if the assessments are adequate to meet the learning outcomes of every module, and (s)he should also get a chance to talk to students (online).
5. Implementing an external advisor’s board should be considered.