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Transforming Graduate Education for Green and Sustainable Future

(T-Green)



Training Package

**Transforming Graduate Education
for Green and Sustainable Future**

Country: Poland

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Part 1. Polish Qualifications Framework (PQF)

1.1 General Information

The PQF has eight levels of qualifications, as does the European Qualifications Framework (EQF). Each PQF level has been characterized by general statements about the learning outcomes required for a given qualification level. In determining the PQF level, it does not matter whether a qualification required learning outcomes are attained within a structured education system or in another way. The PQF descriptors refer to the full range of required learning outcomes for a qualification in the categories of knowledge, skills and social competence. The descriptors of successive PQF levels reflect the increasing requirements in these areas.

A unique Polish solution for the PQF is the development of two stages of level descriptors. First stage level descriptors (universal) apply to all types of education. These are then further developed in second stage level descriptors:

- descriptors typical for general education, established by the regulation of the Minister of National Education of 13 April 2016,
- descriptors typical for qualifications attained after the awarding of full qualifications at PQF level 4, established by the regulation of the Minister of National Education and the Minister of Science and Higher Education of 17 June 2016,
- descriptors typical for qualifications attained in higher education, established by the regulation of the Minister of Science and Higher Education of 26 September 2016,
- descriptors typical for qualifications attained in vocational education, established by the regulation of the Minister of National Education of 13 April 2016.

The first and second stage descriptors should be read together.

All descriptors are presented in detail in the Appendix A1.

PQF User Guide is presented in Appendix 2.

1.2 Integrated Qualifications Register

The Integrated Qualifications Register was established in mid-2016 pursuant to the Act of 22 December 2015 on the Integrated Qualifications System (Journal of Laws of 2018, items 2153 and 2245, and of 2019, item 534). The IQR acts as a special link between different qualifications systems that have been in use autonomously up to now. It gathers important information about all qualifications included in the Integrated Qualification System.

The registry provides information on, among other things, specific requirements which need to be met in order to obtain a given qualification and what institutions are authorised to award it.

This information is particularly important for qualifications obtained outside school and university, i.e. those obtained in the course of work or through various courses and training.

The IQR is a public register which contains up-to-date, complete and reliable information on qualifications, which is ensured by implementing appropriate procedures. The register covers all the qualifications included in the IQS independently of other qualifications list in Poland created for the needs of particular ministries, government departments, sectors, communities and institutions. This makes the information about qualifications easily accessible in one place for the interested parties and all the institutions that work together within the Integrated Qualifications System.

The IQR is designed to serve everyone – to be an easily accessible knowledgebase of qualifications in Poland for learners, employees planning to gain new qualifications, career advisors, employers, schools and universities, training companies and employment offices.

Through the IQR, Polish qualifications will be included in a wider area of European qualifications. Information about the Polish Qualifications Framework (PQF) and Polish qualifications will be exported through the register to European LOQ and ESCO portals.

Since 2018, running the IQR has been the task of the Educational Research Institute (IBE). In addition to the ongoing administration of the register, the Institute is working on introducing new functionalities and improving the register to make it more useful and easier to use. In the future, it will be accompanied by special applications useful in planning professional development.

The overview of the Register is presented in the Appendix A2.

Part 2. Professions and recognition of qualifications

2.1 Professions in Poland

Polish term “zawód” , often translated as “profession”, is officially called “occupation”. The Polish Classification of Occupations and Specializations (Appendix A4) is a structured collection of occupations and specializations on the labour market. It is a "physical inventory" of occupations identified on the labour market. The classification was developed based on the International Standard Classification of Occupations ISCO-08. The classification is updated every 2–3 years by amending the Regulation on the Polish Classification of Occupations and Specializations for the Labour Market Needs and its Applicability Scope to adapt to the changes taking place on the labour market (Polish and European) by introducing new occupations/specializations into it.

For the Polish Classification of Occupations and Specializations, an occupation was defined as a set of tasks (occupational activities) isolated as a result of the social division of labour, carried out permanently or with minor changes by the individuals and requiring relevant competences (expertise and skills) acquired by education or practice. The specialization was defined as a result of the division of labour within an occupation and it includes some activities of a similar nature (relating to the function performed or subject of labour) requiring extended or extra expertise and skills acquired by extra training or practice.

2.2 Recognition of professional qualifications

All the Member States of the European Union, the Swiss Confederation and the Member States of the European Free Trade Association are bound by Directive 2005/36/EC of 7 September 2005 on the recognition of professional qualifications. This Directive was implemented into the Polish legal system by the Act of 22 December 2015 on the rules for recognising professional qualifications acquired in the Member States of the European Union.

Regulated professions

Regulated professions are those for which it is necessary to have a special certificate, qualification or licence (special training, exams passed, etc.).

Professional qualifications are recognised on the basis of EU regulations. Each EU Member State decides how to regulate access to a given profession. Therefore, the same profession may be regulated in one EU country and not in another. Examples of regulated professions in Poland - out of 361 jobs - are archaeologists, lawyers, teachers, speech therapists or mountain guides.

Automatic recognition of qualifications and/or training obtained in EU/EFTA countries applies to seven regulated professions: doctor (general and specialist), dentist, pharmacist, general nurse, midwife, veterinary surgeon and architect.

Regulated vs. unregulated

If the profession is regulated in Poland, a person who has obtained a qualification in another Member State must have it officially recognised by the competent Polish authorities. Recognition of a professional qualification is a prerequisite for the full right to practise given profession.

In the case of non-regulated professions, it is up to the employer to employ a person with a qualification obtained in another EU Member State. They may require an opinion on the foreign diploma, proof of education at the corresponding level or a certificate of equivalence of the foreign document with its Polish equivalent.

EU vs. non-EU countries

If given qualifications were **obtained in an EU or EFTA country or in Switzerland**, they have to be recognised by the competent authority in that country. If there are significant differences between the qualifications required, one will need to complete an adaptation period or take a test in Poland. The recognition procedure has to be initiated by the applicant. One should submit an application for recognition of his/her qualifications to a Polish organisation competent for the recognition of qualifications for the particular regulated profession.

If the qualifications were **obtained outside of the above countries**, they will be recognised in Poland in accordance with Polish national legislation. This means that if one is interested in practising a regulated profession in Poland, he/she should first have a diploma or certificate recognised by the relevant Polish authority, either by nostrification or by the international agreement. Then one can apply for professional rights according to the regulations of the given profession.

Automatic recognition of qualifications based on professional experience

The **industrial, craft and commercial** activities covered by [Directive 2005/36/EC](#) (Chapter II of Title III) are subject to **automatic recognition of qualifications based on professional experience**.

The factors taken into consideration for the recognition of professional experience are its duration and form (e.g. self-employment, as an employee, manager of an enterprise).

The system based on recognition of professional experience is subject to the conditions set out in list I, II and III of Annex IV, referring to various sectors, such as:

- textile, chemical and oil, printing, manufacturing, construction industry
- manufacture of transport equipment
- activity connected with transport
- telecommunications
- photographic studios
- restaurants and hotels
- services: postal, personal, for local communities, leisure

2.3 Recognition of academic qualifications

Recognition of qualifications means recognition of higher education documents (academic diplomas, degrees or titles) required for the purpose of further education, employment and career development in Poland. In general, it is the employer who decides whether to accept given documents at the recruitment stage. If the employer is not certain about the validity of given diploma/certificate, they can request a confirmation of given educational qualifications from the Polish National Agency for Academic Exchange (NAWA).

Scientific degrees awarded by an authorised institution operating in one of the **EU, EFTA and OECD countries** are recognised as equivalent to a corresponding Polish scientific degree. However, it should be noted that there is no system of automatic recognition of academic diplomas and degrees, even within the European Union. It is therefore advisable to make sure that given diploma will be recognised in Poland.

For this purpose, NAWA has created a **free database** called KWALIFIKATOR, available in Polish and English. It enables automatic checking of general information on selected diplomas, degrees and certificates. It allows you to assess the level and status of given qualifications in the country where they were awarded and to find out how a particular foreign diploma or degree is recognised in Poland. It also indicates a specific legal basis on which the holder of the qualifications derives specific rights.

In addition, one can also obtain the information on how given diploma/degree is recognised in Poland through **the NAWA on-line system called SYRENA**. The search result, known as a recognition statement, can be saved as a PDF document (*issued in Polish*) signed electronically and submitted to

a Polish university or employer. The reliability of the information is guaranteed by NAWA's electronic signature.

Nostrification procedure

The equivalence of a foreign academic degree with the corresponding Polish degree may be established either on the basis of international agreements or, in the absence of such agreements, on the basis of Polish national legislation. If, after verification of the diploma in the KWALIFIKATOR system, it turns out that the diploma or professional title cannot be recognised as the Polish equivalent on the basis of an international agreement, this means that the nostrification procedure is required. During the procedure the foreign qualification is compared with its Polish equivalent. However, the foreign title of professor can be recognised in Poland only on the basis of an international agreement. In the absence of such an agreement, the Polish equivalence cannot be obtained through the nostrification procedure.

A degree and title awarded by an accredited institution **outside the European Union, OECD or EFTA** and not recognised as equivalent under international agreements is subject to nostrification. It is initiated at **request of the interested party** and carried out by a higher education institution with an academic category of A+, A or B+ in the relevant discipline. The institution will charge a fee for carrying out the procedure and issuing the certificate. The certificate states that the submitted diploma/degree obtained abroad is equivalent to a specific Polish diploma/degree.

Part 3. Polish system of higher education

3.1 General Overview

Polish system of higher education and science is regulated by the Act of 20 July 2018 - The Law on Higher Education and Science (Appendix A5). Short characteristics of the system is presented in Appendix A6.

The system of higher education and science is composed of:

1. higher education institutions;
2. federations of entities of the higher education system and science, hereinafter referred to as „federations”;
3. the Polish Academy of Sciences, acting on the basis of the Act of 30 April 2010 on the Polish Academy of Sciences, hereinafter referred to as „PAN”;
4. scientific institutes of PAN, acting on the basis of the Act referred to in point 3, hereinafter referred to as „PAN institutes”;
5. research institutes, acting on the basis of the Act of 30 April 2010 on research institutes;
6. international scientific institutes established on the basis of separate acts operating on the territory of the Republic of Poland, hereinafter referred to as „international institutes”;
 - a. Łukasiewicz Centre, operating under the Act of 21 February 2019 on the Łukasiewicz Research Network;
 - b. institutes operating within the Łukasiewicz Research Network, hereinafter referred to as „institutes of the Łukasiewicz Network”;
7. Polish Academy of Arts and Sciences, hereinafter referred to as „PAU”;
8. other entities conducting mainly scientific activities on an independent and continuous basis.

The following entities work for the benefit of the higher education system and science:

- 1) Polish National Agency for Academic Exchange (NAWA), acting on the basis of the Act of 7 July 2017 on the Polish National Agency for Academic Exchange;
- 2) National Centre for Research and Development (NCBiR), acting on the basis of the Act of 30 April 2010 on the National Centre for Research and Development;
- 3) National Science Centre (NCN), acting on the basis of the Act of 30 April 2010 on the National Science Centre;
- 4) Medical Research Agency, operating under the Act of 21 February 2019 on the Medical Research Agency.

The basic tasks of higher education institutions shall be:

- 1) providing education as part of studies;
- 2) providing education as part of post-graduate studies or other forms of education;
- 3) conducting scientific activities, providing research services and transferring knowledge and technology to the economy;
- 4) providing education as part of doctoral studies;
- 5) educating and promoting the staff of a higher education institution;
- 6) creating conditions for people with disabilities to participate fully in:
 - a) the admission process to the higher education institution for the purpose of education,
 - b) education,
 - c) the conduct of scientific activities;
- 7) educating students in the sense of responsibility for the Polish state, national tradition, strengthening of democratic principles and respect for human rights;
- 8) creating conditions for the development of students' physical culture;
- 9) disseminating and multiplying scientific and cultural achievements, including through the collection and provision of library, information and archival collections;
- 10) acting for the benefit of local and regional communities.

The basic task of a non-university-type higher education institution is also to provide specialist education.

A higher education institution providing education in medical sciences or health sciences or in veterinary sciences may also be given the task of participating in the provision of medical or veterinary care within the scope and in the forms specified in the legislation on medical activities or animal health care facilities.

A higher education institution shall be:

- 1) a public higher education institution if it is established by a state authority;
- 2) a non-public higher education institution if it is established by a natural person or a legal person other than a local government unit or a state or local government legal person, hereinafter referred to as „the founder”.

A higher education institution shall be a university-type higher education institution or non-university-type higher education institution.

3.2 Institutional Authorities

The authorities of a:

- 1) public higher education institution are a council of the higher education institution, rector and senate;
- 2) non-public higher education institution are rector and senate.

The statutes of a higher education institution may also provide for other authorities of the higher education institution.

3.2.1 The Council

The tasks of the council of the higher education institution include:

- 1) giving an opinion on the draft strategy of the higher education institution;
- 2) giving opinion on the draft statutes;
- 3) monitoring the financial economy of the higher education institution;
- 4) monitoring the management of the higher education institution;
- 5) identifying candidates for the rector, after the Senate has given its opinion;
- 6) giving an opinion on the report on the implementation of the strategy of the higher education institution;
- 7) performing other tasks specified in the statutes.

The council of the higher education institution shall be composed of:

- 1) 6 or 8 people appointed by the senate;
- 2) the president of the student council.

Persons from outside the community of the higher education institution shall constitute at least 50% of the persons mentioned in point 1.

3.2.2 The Rector

The rector shall be responsible for matters concerning the higher education institution, except for matters reserved by this Act or the statutes for the competence of other authorities of the higher education institution. The tasks of the rector include in particular:

- 1) representing the higher education institution;

- 2) managing the higher education institution;
- 3) preparing the draft statutes and the draft strategy of the higher education institution;
- 4) reporting on the implementation of the strategy of the higher education institution;
- 5) performing tasks required by the labour law;
- 6) appointing and dismissing persons holding managerial positions in the higher education institution;
- 7) implementing a personnel policy at the higher education institution;
- 8) creating studies in a specific field of study, level and profile;
- 9) creating doctoral schools;
- 10) conducting financial management of the higher education institution;
- 11) ensuring the implementation of regulations applicable in the higher education institution.

The rector shall provide organisational regulations, which shall specify:

1. the organisational structure of the higher education institution and the distribution of tasks within that structure;
2. organisation and rules of operation of the administration of the higher education institution.

The rector of:

- 1) a public higher education institution is elected by the electoral college;
- 2) a non-public higher education institution is appointed by the founder or elected by the senate or another authority of the higher education institution set out in the statutes,

3.2.3 The Senate

The senate's tasks include:

1. adoption of the statutes;
2. adoption of study regulations;
3. adoption of the strategy of the higher education institution and approval of the report on its implementation;
4. appointment and dismissal of members of the council of the higher education institution;
5. provision of opinions on the candidates for the rector;
6. evaluation of the functioning of the higher education institution;

7. formulation of recommendations for the higher education institution council and the rector with regard to the tasks performed by them;
8. granting of scientific degrees and degrees in art;
9. awarding of the title of doctor honoris causa;
10. establishment of the conditions, mode and date of commencement and completion of recruitment for studies and specialist education;
11. development of study programmes, postgraduate studies and specialist education;s. 16/261
12. development of curricula in doctoral schools;
13. determination of the manner of verification of learning outcomes;
14. indication of the candidates for representative institutions of the higher education and scientific community;
15. performance of tasks related to:
 - a) assigning levels of the Polish Qualifications Framework, hereinafter referred to as „PRK”, for qualifications awarded after the completion of post-graduate studies,
 - b) inclusion of the qualifications awarded on completion of post-graduate studies and other forms of education in the Integrated Qualification System
16. performing other tasks specified in the statutes.

The Senate shall be composed of:

1. in a public university-type higher education institution:
 - 1) professors and professors of higher education institutions who make up no less than 50% of the senate,
 - 2) students and doctoral students who make up no less than 20% of the senate,s. 17/261
 - 3) academic staff employed in positions other than those referred to in letter (a) and non-academic staff, who make up no less than 25% of the senate;
2. in a public non-university-type higher education institution:
 - 1) academic teachers having at least a degree of doktor, who make up at least 50% of the senate,
 - 2) students, who make up no less than 20% of the senate,
 - 3) academic staff who do not have a degree of doktor and non-academic staff, who make up not less than 25% of the senate.

The rector shall be the president of the senate.

3.3 The Statutes

1. The statutes shall lay down the rules for the organisation and operation of a higher education institution, in particular:
 1. the manner of appointment and dismissal of authorities of the higher education institution, including entities authorised to submit candidates for the rector, and the method of organising elections to the authorities of the higher education institution;
 2. the composition of the council of the higher education institution and the senate;
 3. rules and mode of the functioning of the council of the higher education institution, senate and electoral college;
 4. rules for internal supervision of documents issued by the authorities of the higher education institution;
 5. types of organisational units of the higher education institution;
 6. management functions in the higher education institution;
 7. mode of awarding of the title of doctor honoris causa;
 8. rules of conducting business activity by the higher education institution;
 9. rules of disposing of the property of the higher education institution;
 10. mode of enacting organisational regulations;
 11. order regulations for holding meetings.

The types of organisational units of a higher education institution, referred to in point 5, may, in particular, include faculties, institutes, departments, units, centres and colleges.

3.4 Conducting studies

A higher education institution shall conduct studies in a specific field of study, level and profile. The higher education institution shall assign a field of study to at least 1 discipline. If a field of study is assigned to more than one discipline, the leading discipline shall be indicated, as part of which more than half of the learning outcomes shall be achieved.

Appendix A7 provides a list of fields of study and disciplines (subject areas).

The establishment of studies in a specific field of study, level and profile shall require the minister's permission.

A university-type higher education institution may establish studies in a field of study whose curriculum specifies learning outcomes within the disciplines in which the higher education

institution has a scientific category A+, A or B+, falling within at least 3 fields, without the minister's permission.

A university-type higher education institution with scientific category A+ or A in at least four disciplines falling within at least two fields may provide individual interdisciplinary studies. Individual interdisciplinary studies are studies organised in such a way as to enable the obtainment of a degree in more than one field of study.

A higher education institution may provide joint degree programmes with another higher education institution, a PAN institute, a research institute, an international institute, a foreign higher education institution or a scientific institution. The rules of cooperation shall be laid down in a written agreement.

A higher education institution may implement dual degree programmes which are practical programmes conducted with the participation of the employer. The course of studies is specified in a written agreement.

The studies are conducted in the form of:

1. full-time programmes, where at least half of the ECTS credits included in the curriculum are obtained in classes directly involving academic teachers or other lecturers and students;s. 39/261
2. part-time programmes indicated in a resolution of the senate, where less than half of the ECTS credits included in the curriculum may be obtained with the direct participation of academic teachers or other lecturers and students.

Classes in full-time programmes are conducted separately from classes in part-time programmes.

The following levels of studies are conducted:

1. first-cycle programmes;
2. second-cycle programmes;
3. long-cycle programmes.

The following profiles of studies are conducted:

1. practical profile, where more than half of the ECTS credits are allocated to classes developing practical skills;
2. general academic profile, where more than half of the ECTS credits are allocated to classes related to the scientific activity conducted in the higher education institution.

Full-time first-cycle programmes shall last for at least 6 semesters, and if the curriculum includes learning outcomes that enable the acquisition of engineering competences – at least 7 semesters. Full-time second-cycle programmes shall last from 3 to 5 semesters. Full-time long-cycle programmes shall last from 9 to 12 semesters. Part-time studies may last longer than the relevant full-time studies.

An academic year shall run from 1 October to 30 September and shall be divided into 2 semesters. The statutes of a higher education institution may provide for a detailed division of the academic year within the framework of the semesters.

Studies shall be conducted in a specific field of study, level and profile on the basis of a curriculum that specifies:

1. the learning outcomes referred to in the Act of 22 December 2015 on the Integrated Qualification System, taking into account the universal characteristics of the first level specified in this Act and the characteristics of second-cycle programmes specified in the regulations issued
2. the description of the process leading to the achievement of learning outcomes;
3. the number of ECTS credits allocated to classes.

ECTS credits are a measure of student's average workload necessary to achieve learning outcomes. An ECTS credit corresponds to 25-30 hours of student's work comprising classes organised by the higher education institution and their individual work related to these classes.

If the specificity of the studies in a particular field of study so allows, some of the learning outcomes included in the curriculum may be achieved through classes conducted with the use of distance learning methods and techniques as well as infrastructure and software ensuring synchronous and asynchronous interaction between students and lecturers conducting the classes.

The curriculum of studies with a practical profile shall provide work placement of at least:

1. 6 months - in the case of first-cycle programmes and long-cycle programmes;
2. 3 months - in the case of second-cycle programmes.

In study programmes preparing for the professions of:

1. a doctor,
2. a dental practitioner,
3. a pharmacist,

4. a nurse,
5. a midwife,
6. a laboratory diagnostician,
7. a physiotherapist,
8. a paramedic,
9. a veterinary surgeon ,
10. an architect,
11. a teacher,

educational standards shall be taken into account. An educational standard is a set of rules and requirements within the scope of education, concerning the organisation of education, the persons providing it, the general and specific learning outcomes, as well as the verification of the learning outcomes achieved. Points 1 to 8 shall be determined, by way of a regulation, by the minister responsible for higher education and science in consultation with the minister for health, point 9 shall be determined, by way of a regulation, by the minister responsible for higher education and science in consultation with the minister for agriculture, point 10 shall be determined, by way of a regulation, by the minister responsible for higher education and science in consultation with the minister responsible for construction, spatial planning and development and housing, point 11 shall be determined, by way of a regulation, by the minister responsible for higher education and science in consultation with the minister responsible for education and upbringing, bearing in mind the need to ensure the high quality of education and the appropriate choice of learning outcomes in order to prepare for the pursuit of the profession, taking into account its specificity, and in the case of education preparing for the teaching profession, also the duration and the appropriate choice of learning outcomes at post-graduate level.

A higher education institution may confirm the learning outcomes achieved in the learning process outside the study system for persons applying for studies in a particular field of study, level and profile, if it has a positive assessment of the quality of education at these studies, or scientific category A+, A or B+ within the scope of the given discipline. Learning outcomes shall be confirmed to the extent that they correspond to the learning outcomes set out in the curriculum. Learning outcomes may be confirmed for a person who has:

1. the documents referred to in Art. 69 sec. 2 of HE Act (maturity certificate or other equivalent document), and at least 5 years of professional experience – when applying for admission to first-cycle programmes or long-cycle programmes;

2. a full level 5 PQF qualification or a foreign higher education qualification corresponding to level 5 of the European Qualifications Framework– when applying for admission to first-cycle programmes or long-cycle programmes;
3. a full level 6 PQF qualification and at least 3 years of professional experience after the completion of first degree studies – when applying for second-cycle programmes;
4. a full level 7 PQF qualification and at least 2 years of professional experience after the completion of second-cycle programmes or a long-cycle programmes – when applying for admission to subsequent first or second-cycle programmes or long-cycle programmes.

As a result of the confirmation of learning outcomes, no more than 50% of the ECTS credits allocated to the classes included in the study programme can be credited.

Classes shall be conducted by academic staff employed in a given higher education institution who have the competence and experience enabling the proper conduct of classes and by other persons who have such competence and experience. Within the framework of studies with a:

1. practical profile – at least 50% of classes shall be taught by academic staff employed in that higher education institution as the primary place of employment;
2. general academic profile – at least 75% of classes shall be taught by academic staff employed in that higher education institution as the primary place of employment.

Lectures in a higher education institution shall be open to the public unless its statutes provide otherwise.

In order to complete studies and obtain a diploma of completion of studies, it is necessary to:

1. achieve the learning outcomes set out in the curriculum, to which at least:
 1. 180 ECTS credits are assigned in the case of first-cycle programmes,
 2. 90 ECTS credits are assigned for second-cycle programmes,
 3. 300 ECTS credits are assigned in the case of long-cycle programmes comprising 9 or 10 semesters,
 4. 360 ECTS credits are assigned in the case of long-cycle programmes comprising 11 or 12 semesters;
2. take the diploma examination;
3. receive a positive assessment of the diploma thesis – in the case of second-cycle and long-cycle programmes, and in the case of first-cycle programmes, if the study programme so provides.

A thesis is an independent elaboration of a scientific, artistic or practical issue or a technical or artistic achievement, presenting the student's general knowledge and skills associated with the studies in a given field of study, level and profile, as well as the ability to analyse and draw conclusions independently. The graduate receives a higher education graduation diploma in a given field of study and profile, which confirms their higher education and professional title:

1. licencjat, inżynier or equivalent degree confirming higher education of the same level – in the case of first-cycle programmes;
2. magister, magister inżynier or equivalent degree confirming higher education of the same level – in the case of second-cycle programmes or long-cycle programmes.

Director of the Polish National Agency for Academic Exchange shall authenticate:

1. graduation diplomas and diploma supplements;
2. copies of the documents referred to in point 1, including copies in a foreign language;
3. duplicates of the documents referred to in point 1;
4. certificates of completion of studies.

Documents other than those shall be authenticated by the higher education institution which issued them and, in the event of a need to comply with the requirements laid down by another country or in other justified cases, by the director of the Polish National Agency for Academic Exchange.

3.5 Post-graduate studies, specialist education and other forms of education

Post-graduate studies shall last no less than 2 semesters and allow for obtaining partial qualifications at level 6, 7 or 8 of the Polish Qualifications Framework. The curriculum of post-graduate studies shall specify learning outcomes for partial qualifications, taking into account the characteristics of the second level of the Polish Qualifications Framework at level 6, 7 or 8, as defined in the regulations issued on the basis of Art. 7 sec. 3 and 4 of the Act of 22 December 2015 on the Integrated Qualification System; it shall also enable the collection of at least 30 ECTS credits.

A post-graduate student may be a person who has a full qualification at least at level 6 obtained under the system of higher education and science.

Specialist education shall last no less than 3 semesters and enable the obtaining of a full qualification at level 5 of the Polish Qualifications Framework. The curriculum of specialist education shall determine learning outcomes taking into account the universal characteristics of the first level specified in the Act of 22 December 2015 on the Integrated Qualification System and the

characteristics of the second level laid down in the provisions issued on the basis of Art. 7 sec. 2 of the aforementioned Act. The curriculum provides for classes developing practical skills. A person who has completed specialist education shall receive either a certificate of qualified specialist or a certificate of qualified technology specialist. Templates of certificates shall be determined by the higher education institution.

3.6 Evaluation of the quality of education

The quality of education at the degree programmes is subject to evaluation carried out by the Polish Accreditation Committee. Evaluation shall take the form of a programme or comprehensive evaluation. Programme evaluation consists in a cyclical evaluation of the quality of education in the given field of study. When carrying out the programme evaluation, special consideration shall be given to the following:

- 1) degree programmes curricula and education standards;
- 2) teaching and scientific staff;
- 3) infrastructure used when implementing curriculum;
- 4) cooperation with the socio-economic environment;
- 5) internationalisation;
- 6) supporting students in the learning process.

Programme evaluation ends with either a positive or negative evaluation. A positive programme evaluation is given for a period of up to 6 years.

Comprehensive evaluation consists in evaluating the activities for ensuring the quality of education in a higher education institution. When carrying out the comprehensive evaluation, particular consideration shall be given to the effectiveness of the efforts to ensure the quality of education in a higher education institution in all the fields in which education is conducted.

When carrying out a programme or comprehensive evaluation, the Polish Accreditation Committee may:

1. give an evaluation on the basis of an assessment, accreditation or certificate of the entity carrying out evaluation of the quality of education:
 - a) registered in the European Quality Assurance Register for Higher Education (EQAR) or

- b) with which the Polish Accreditation Committee has concluded an agreement on recognition of evaluations;
2. consider the assessment, accreditation or certification of an international or national entity carrying out evaluation of the quality of education.

In case of degree programmes conducted with a foreign higher education institution or scientific institution, evaluation of the quality of education shall be carried out by the Polish Accreditation Committee or another entity registered in the European Quality Assurance Register for Higher Education (EQAR), indicated in the agreement referred to in this provision. Evaluation shall be carried out in accordance with international standards for quality assurance in joint degree programmes.

The detailed information on the PKA regulations, including accreditation criteria and standards, is provided in PKA statutes (Appendix A8).

3.7 Foreigners in the system of higher education and science

Foreigners may undertake and complete studies, education at doctoral schools, post-graduate studies, specialist education and other forms of education, and participate in scientific activity or teaching, on the basis of the following:

- 1) international agreements, pursuant to the rules specified therein;
- 2) agreements concluded with foreign entities by higher education institutions, pursuant to the rules specified therein;
- 3) decision of the minister;
- 4) the decision of the director Polish National Agency for Academic Exchange with regard to its scholarship holders;s. 164/261
- 5) the decision of the director of the National Science Centre to allocate financial resources for basic research in the form of a research project, internship or scholarship, selected for funding through competition;
- 6) the administrative decision of the rector, the director of the Institute of Polish Academy of Sciences, the director of a research institute or the director of an international institute.

The minister may grant a foreigner a scholarship, fund or co-finance the costs of educational services and a lump sum for the costs of travel, living and accommodation. The financial resources are paid through Polish National Agency for Academic Exchange.

A foreigner may be exempt from the fees, pursuant to the rules laid down in an agreement between higher education institutions or an international agreement. A foreigner may also be exempt from these fees on the basis of the following:

- 1) an administrative decision of the rector, the director of an institute of Polish Academy of Sciences or the director of a research institute;
- 2) the decision of the minister or of the director Polish National Agency for Academic Exchange with regard to its scholarship holders;

The following persons shall not be charged fees:

- 1) a foreigner- a citizen of the Member State of the European Union, the Swiss Confederation or of the Member State of the European Free Trade Agreement (EFTA) - the parties to the European Economic Area Agreement as well as members of their family living in the Republic of Poland;
- 2) a foreigner who has been granted a residence permit or the EU long-term residence permit;
- 3) a foreigner who has the status of refugee granted in the Republic of Poland or is under temporary protection or subsidiary protection in the Republic of Poland;
- 4) a holder of the Polish Charter or a person who has been issued a decision on the determination of the Polish origin;
- 5) a foreigner who is a spouse, ascendant or descendant of a citizen of the Republic of Poland, living in the Republic of Poland;

A diploma issued by an authorised higher education institution operating in the higher education system of a Member State of the European Union, the Organisation for Economic Cooperation and Development (OECD) or the European Free Trade Agreement (EFTA) - parties to the European Economic Area (EEA) Agreement, certifying the completion of:

- 1) three-year studies or first-cycle programmes lasting at least 3 years - confirms in the Republic of Poland the education at the level of first-cycle programmes;
- 2) second-cycle studies - confirms in the Republic of Poland the education at the level of second-cycle programmes;
- 3) at least four years of long-cycle programmes - confirms in the Republic of Poland the education at the level of second-cycle programmes if it is deemed equal to a second-cycle graduation diploma in the country of issue.

At the request of an interested party, the director of Polish National Agency for Academic Exchange shall provide written information about the diploma issued by the foreign higher education institution, the level of studies and the status of the institution.

A diploma certifying the completion of studies abroad may be recognised as equivalent to the relevant Polish diploma and professional title on the basis of an international agreement specifying equivalence, or in the absence thereof, by means of a recognition procedure.

considering the need to ensure the efficient conduct of procedures and the variety of documents confirming the award of degrees in different countries.

Part 4. Studies at the Jagiellonian University

The rules for creating and abolishing studies, guidelines for designing study programs and rules for changing study programs for first-cycle studies, second-cycle studies and uniform master's studies are determined by the JU Rector's Order No. 70 of July 7, 2021 based on Article. 23 section 1 of the Act of July 20, 2018 - Law on Higher Education and Science (Journal of Laws of 2021, item 478, as amended) – Appendix A7a., with amendment – Appendix A7b.

4.1 Creating studies

The Rector creates studies for a specific field, level and profile. An application to the Rector to establish studies is submitted by the Dean. The application for the establishment of studies includes in particular:

1. the name of the field of study adequate to the expected learning outcomes and the discipline or leading discipline;
2. characteristics of the field of study, including: level, profile, form and discipline or disciplines;
3. the concept of education;
4. information on scientific activities, ongoing research and infrastructure;
5. description of the expected learning outcomes;
6. description of the study program;
7. study plan, including a list of course coordinators and e-mail addresses in the uj.edu.pl domain;
8. the amount of the fee for educational services, and in the case of part-time studies and studies in a foreign language - the approved cost estimate;
9. qualification criteria along with the description of studies and the graduate's profile;
10. indication of persons intended to perform the functions of the course manager and course coordinator.

The Dean appoints a head of studies for each field of study and defines the detailed scope of his responsibilities. The head of studies is responsible for ensuring the quality of education in the field of study, and in particular:

1. is responsible for the correct preparation of the application for the establishment of studies;
2. accepts the final draft of the study program for the newly created field of study;

3. ensures the correctness of the study program, including updating syllabuses;
4. ensures monitoring and improvement of study programs, with particular emphasis on the program evaluation criteria specified by the Polish Accreditation Committee;
5. is responsible for the proper preparation of the self-assessment report for PAC and participates in the accreditation process;
6. is responsible for preparing documentation and organizing the course of accreditation conducted by entities other than PKA;
7. approves the proposed changes in the study program.

The course coordinator is responsible for:

1. timely and correct introduction of changes to the study program at the request of the head of studies;
2. coordinating, in cooperation with the head of studies, the timely completion of syllabuses.

The course coordinator is responsible for timely and correct completion of the syllabi in the software indicated by the Rector.

An application for the establishment of a field of study together with a draft study program generated from the software indicated by the Rector should be submitted via EZD, in accordance with the instructions for the circulation of correspondence in EZD regarding the application for launching a field of study.

2. The application must be accompanied by the opinion of the Team regarding the draft study program, subject to section 3.

3. An application for an opinion on the draft study program should be submitted to the Team on the form available on the CWD website no later than April 15 of the year preceding the academic year in which the studies are to begin.

4. In justified cases, including obtaining financial resources for conducting studies from external sources after the deadline specified in section 3, the application must be submitted within the deadline set by the Rector.

5. Within 14 days from the date of submitting the application, the Team establishes a work schedule with the Dean regarding the draft study program.

6. Before issuing an opinion, the Team may submit comments to the Dean on the draft study program and recommend that they be taken into account.

The Dean submits to the Rector an application containing the draft study program together with completed syllabuses and the opinion of the Team referred to in § 5 section 2, the opinion of the competent body of the Jagiellonian University Student Government and a reference to any comments by November 15 of the year preceding the academic year in which the studies are to begin.

The Rector submits an application for the establishment of a field of study, including a draft study program for review by the relevant Senate committee. Based on the opinion of the committee referred to in section 3, the Rector issues an order on the establishment of studies at a specific field, level and profile, and submits the draft study program to the Senate of the Jagiellonian University.

4.2 Guidelines for designing study programs

The study program meets the conditions specified in the Act and regulations. The study program must include:

1. BHK training – in first-cycle studies, second-cycle studies and uniform master's studies;
2. physical education classes - not less than 60 hours - during full-time first-cycle studies and full-time long-cycle master's studies;
3. the number of ECTS points that the student is to obtain as part of classes in the field of humanities or social sciences, not less than 5 ECTS points - in the case of fields of study assigned to disciplines in fields other than humanities or social sciences, respectively;
4. modern foreign language classes.

The program of full-time second-cycle studies and long-cycle master's studies requires the student to complete a course in a foreign language of at least 30 hours and be awarded at least 3 ECTS points.

The subject indicated in the study plan is defined by:

1. name of the item;
2. hours;
3. the semester/semesters in which the subject is taught;
4. form(s) of classes within the subject;
5. the number of ECTS points expressed in integers;
6. scientific discipline(s) to which the subject is assigned;

7. ISCED classification number;
8. language(s) of instruction(s);
9. forms of verification of the obtained learning outcomes.

2. In exceptional and justified cases, it is allowed to indicate the general name of the subject, but it is necessary to indicate the program content of this subject in the syllabus. The number of ECTS points assigned to such subjects cannot be more than 10% of the number of ECTS points required to complete studies.

A subject with the same name offered in more than one field of study, with the same subject learning outcomes, is assigned the same number of ECTS points.

ECTS points are not awarded for passing the diploma examination.

Foreign language classes

Modern foreign language classes are classes included in the study program, organized and conducted by the Jagiellonian Language Center. The minimum number of hours of modern foreign language classes at full-time studies is:

1. 120 hours for first-cycle studies;
2. 60 hours in the case of second-cycle studies;
3. 180 hours in the case of uniform master's studies.

For passing a modern foreign language course confirmed by an exam or certificate, 2 ECTS points are awarded for every 30 hours of classes.

Practical profile

The study program with a practical profile indicates in the scope of classes developing practical skills, including professional internships, in particular:

1. purpose of internship;
2. internship-specific learning outcomes;
3. methods of checking and verifying the learning outcomes achieved by the student as a result of the internship;
4. rules for crediting internships;
5. ECTS points assigned to internships;
6. dimension and form of internships;

7. units whose scope of activity corresponds to the areas of professional activity typical of graduates of a given field of study.

The above applies also for studies with a general academic profile, for which the study program includes internships. The minimum number of internships for studies with a practical profile is specified by law.

Course syllabus

A syllabus is prepared for the subject covered by the study plan. The course coordinator is responsible for preparing the course syllabus. The course syllabus includes in particular:

1. general information about the item, including:
 - a. data referred to in § 8 section 1,
 - b. name of the field of study within which the subject is conducted,
 - c. entry requirements for participation in the subject,
 - d. information on the connection with scientific research - in the case of studies with a general academic profile;
2. educational objectives within the subject;
3. subject-specific learning outcomes and their connection with specific learning outcomes;
4. program content implemented within the subject;
5. teaching methods used during classes;
6. methods of verifying the achieved learning outcomes;
7. balance (settlement) of ECTS points taking into account the principles specified in the Act;
8. indication of verification methods in relation to the learning outcomes referred to in point 3;
9. conditions for passing the subject;
10. name and surname of the course coordinator and, if possible, people teaching the course;
11. required literature.

The program content is consistent with the learning outcomes and takes into account, in particular, the current state of knowledge and research methodology in the discipline or disciplines to which the field of study is assigned, as well as the results of the scientific activity of the Jagiellonian University in this discipline or disciplines.

Subject syllabuses are prepared in Polish. In the case of subjects taught in foreign languages, syllabuses may also be prepared in the language of study or in English.

Change of study program

The study program is subject to systematic evaluation and improvement. In order to improve the study program, changes may be made to it, taking into account the principles set out in the regulation. Changes to the study program necessary to be introduced in the current education cycle are introduced by the CWD at the request of the Dean addressed to the Rector, after obtaining the Rector's consent. The application together with the justification and the opinion of the competent body of the Jagiellonian University Student Government must be submitted by March 1 via EZD.

3. Changes in study programs for the new education cycle are introduced in accordance with the schedule specified by the Rector, which is published on the CWD website.

4.3 Joint/Double Diplomas at the Jagiellonian University

Erasmus Mundus joint/multiple programmes

- Euroculture: Society, Politics and Culture in a Global Context (coordinated by University of Groningen)
- European Politics and Society (EPS): Vaclav Havel (consortium members: Prague, Krakow, Barcelona, and Leiden)
- EuroPubHealth: European Public Health Master
- International Master in Central & East European, Russian & Eurasian Studies (coordinated by University of Glasgow)
- Advanced Spectroscopy in Chemistry

DoubleDegrees

- European Studies Double Degree Masters Programme (consortium with University of Strasbourg)
- European Studies Double Degree Masters Programme (consortium with University of Padova)
- European Studies / Governance, Leadership and Democracy Studies (consortium with Universidade Católica Portuguesa)
- International Masters in Economy, State and Society (IMESS) (coordinated by University College of London)

An example of Double Degree Student Agreement is provided in the Appendix A9c.

5.1 Country information

With the score of 81,80/100 Poland is quite high in the overall ranking on SDG achievement, 9th place among 193 UN Member States (<https://dashboards.sdgindex.org/rankings>). The 2030 National Environmental Policy is presented in the Appendix A10 and A11. Appendix A12 contains the 2023 National report on implementation of SDGs in Poland.

Sustainability and environmental issues appear at different levels:

- ⇒ National one (as presented in A12)
- ⇒ Regional – voivodeship and county level (determined by local strategies)
- ⇒ Institutional, sectoral, communitarian (determined by the relevant institutions, enterprises, local communities, NGOs etc.)
- ⇒ Personal, involving citizens at large

There are many mutually interacting bottom-up and top-down initiatives, but there is still a need for more holistic and integrating approach. One of attempts in this direction is creation of RCEs – it will be presented in Section 5.2.4.

5.2 Education for Sustainable Development at the Jagiellonian University

5.2.1 Jagiellonian University Strategy

Environmental issues are anchored in the Jagiellonian University Development Strategy 2030.

Objective V: efficient management of organizational, financial and investment processes; Point 4. Counteracting climate change and protecting the natural environment in the University's activities and investment policy

Actions:

- ❖ establishing the Jagiellonian University Climate Council and developing the University's Climate Strategy,
- ❖ undertaking research and expert work related to climate and environmental protection,
- ❖ support for educational activities in the field of climate and environmental protection addressed both inside and outside the University,
- ❖ conducting a purchasing policy and managing resources in an environment- and climate protection-friendly manner,
- ❖ implementation of investment activities while maintaining the greatest possible biodiversity, limiting the cutting of trees on university areas and ensuring the highest possible energy efficiency of facilities,
- ❖ reducing the emission intensity of the University's infrastructure by building support systems for supplying facilities with energy from alternative sources (photovoltaics),

modernizing automatic building control management systems (BMS), increasing the scope of power supply from the so-called urban energy, as well as analyzing the possibility of achieving zero emissions for university buildings,

- ❖ creating pocket parks at the University,
- ❖ creating solutions supporting sustainable transport at the university: planning bicycle paths, bicycle service stations, canopies, chargers for electric cars, and also managing parking lots, including the entrance to parking lots, in order to optimize the occupied spaces.

A proposal for the Jagiellonian University (JU) Climate and Ecology Strategy 2030 is now under discussion. It is presented in Appendix A13.

5.2.2 Studies “Chemistry of Sustainable Development” at the Jagiellonian University

GENERAL DESCRIPTION

The aim of the Chemistry of Sustainable Development studies is to educate chemists with extended competences in the field of modern pro-environmental technologies, ready to work in the area of specialized analysis and environmental monitoring, modern low-emission eco-energy and innovative technologies for the production of functional materials.

The current environmental policy, taking into account the commitments made by Poland (e.g. the Climate Summit in Paris in 2015 - a commitment to reduce CO₂ emissions), will require the restructuring of the Polish industry in the future, including the energy sector.

Certainly, specialized staff will be necessary to carry out such restructuring and, later, to service modernized or new enterprises. The concept of the studies is part of filling the gap in the education of chemical specialists with competences in the field of modern pro-ecological technologies, necessary for future challenges in the field of modern environmentally friendly technologies.

The field of Chemistry of Sustainable Development ensures the acquisition of reliable knowledge in the field of chemical sciences focused on issues related to broadly understood environmental chemistry, pro-environmental technologies, processes of obtaining, converting and storing energy, and obtaining modern functional materials for applications, among others, in environmental protection and energy. In the study program, the main emphasis was placed on developing the ability to practically apply the acquired knowledge and competences.

This is ensured by a significant share of laboratory classes planned in the study program carried out in modern laboratories using specialized measuring equipment. Practical skills combined with the knowledge acquired during lectures prepare the graduate to work independently in positions specializing in:

- planning and implementation of laboratory and field analyses, with particular emphasis on environmental analyzes and environmental monitoring, also taking into account the development of appropriate expert opinions and assessment of environmental threats, as well as modern environmental remediation technologies;
- the use of innovative technologies that take into account the principles of sustainable development and are aimed at, among others, the production of modern functional materials with designed properties, recycling, production of raw materials for the chemical industry based on renewable raw materials;
- modern low-emission eco-energy including the use of, among others, renewable energy sources, energy production and storage.

FIRST CYCLE STUDIES

The first level of studies covers 6 semesters. In the first 4 semesters, classes are compulsory for all students.

They include:

- block of basic subjects (basics of chemistry, mathematics, physics, analytical chemistry with elements of environmental analysis, physical chemistry, organic chemistry, inorganic chemistry with solid state elements, electrochemistry, elements of quantum chemistry and molecular modelling, basics of polymer chemistry);
- specialized courses (sustainable development and environmentally friendly technologies, environmental chemistry, elements of chemical technology and engineering, work environment safety, chemistry and technology of functional materials, physicochemical methods in materials research, synthesis and characterization of functional materials, environmental monitoring, physical chemistry of solids, chemistry and functional materials technology, physicochemical methods of materials testing, electronic components - application in chemistry, risk analysis and environmental risk management, recycling and waste management, renewable sources of raw materials, environmental aspects of energy production, conversion and management, sustainable management of raw materials and chemicals);
- a block of general subjects (English language, information technology, humanities and social sciences as well as courses in economics and entrepreneurship, protection of intellectual property, physical education).

The program of the last two semesters is largely carried out as part of optional classes.

In addition to compulsory courses for all, students take classes in one of the three proposed modules (materials technology, environmental chemistry, energy) and elective courses. The study program includes mandatory 4-week internships with employers operating in areas consistent with the study profile.

Moreover, in the last semester, students prepare a bachelor's thesis.

Chemistry of Sustainable Development – Syllabus

Basic information:

Faculty name: Faculty of Chemistry

Level: first cycle

Profile: General academic

Form: full-time degree programme

Language of study: polish

Discipline: Chemical sciences

Programme

ISCED classification: 0531

Number of semesters: 6

Professional title awarded to graduates: Bachelor degree

Description of the program implementation:

Compulsory courses are completed during three years of studies (in the third year to a reduced extent). In the third year of studies, there are three specialization modules to choose from: environmental chemistry, materials technology and energy. Each module is divided into a core and an extension; the student is obliged to choose one entire module (core + extension) and the core of another module. In the third year of studies, optional courses are also conducted outside the modules.

Graduation:

1. The condition for completing studies is to pass all courses, submit a diploma thesis and obtain a positive grade in it and in the oral diploma examination.
2. The diploma thesis is an independent study of a specific scientific issue presenting the student's general knowledge and skills related to a given field of study, level and profile of education, as well as the ability to independently analyze and draw conclusions.
3. The diploma thesis is submitted in writing.
4. A first-year student must complete courses in the humanities and social sciences, including a course in economics and entrepreneurship for 2 ECTS. With the dean's consent, the student may take any available subjects in the field of humanities and social sciences. Optional classes are conducted in the third year. The student is obliged to obtain 5 ECTS from the major elective courses.

Subject	Number of hours	ECTS points	Form of verification
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Health and Safety in Education	4	-	assessment
Mathematics I	120	9	exam
Principles of chemistry	60	4	exam
Principles of chemistry - laboratory class	75	5	assessment
Physics	105	6	exam
Physics - laboratory class	30	3	assessment
Information technology	45	3	assessment
Introduction to statistical handling of experimental data	15	1	assessment

1 SEMESTER

2 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Mathematics II	75	6	exam
Sustainable development and environmentally friendly technologies	30	2	assessment
Analytical chemistry with environmental analysis elements	45	3	exam
Analytical chemistry with environmental analysis elements - laboratory class	60	4	assessment
Inorganic and Fundamental Solid State Chemistry	60	4	exam
Inorganic and Fundamental Solid State Chemistry - Laboratory Class	60	4	assessment
Environmental Chemistry	30	3	assessment
Protection of Intellectual Property Rights I	15	1	assessment

3 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Physical Chemistry	60	4	exam
Physical Chemistry - laboratory class	60	4	assessment
Fundamentals of chemical technology and engineering	30	3	exam
Fundamentals of chemical technology and engineering - laboratory class	45	3	assessment
Organic Chemistry	60	4	exam
Organic Chemistry - laboratory class	60	4	assessment
Safety at Work	50	3	assessment
Elements of quantum chemistry and molecular modeling	50	3	assessment
<u>English Course</u>	60	-	assessment
Physical Education	30	-	assessment

4 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Chemistry and technology of functional materials	45	3	exam
Physicochemical methods in materials characterization	60	3	exam
Environmental Monitoring	30	2	exam
Environmental Monitoring - laboratory class	30	2	assessment
Electrochemistry	15	1	assessment
Electrochemistry - laboratory class	30	2	assessment
Principles of polymer science	30	2	exam
Physical chemistry of solid state	60	4	assessment
English Course	60	-	assessment
Physical Education	30	-	assessment

Synthesis and characterization of functional materials - open laboratory	90	8	assessment
Industrial apprenticeships	150	5	assessment

5 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Elements of electronics - application in chemistry	45	3	assessment
Environmental Aspects of Production, Conversion and Use of Energy	45	3	assessment
Recycling and waste management	20	1	assessment
Recycling and waste management - laboratory class	30	2	assessment
Renewable sources of raw materials for chemical industry	20	1	assessment
Renewable sources of raw materials for chemical industry - laboratory class	20	1	assessment
English Course	60	4	assessment
Microbial fuel cells and other bioelectric and bioelectronic systems in industrial and analytical applications	30	2	exam
Application of the LabVIEW environment in chemical experiments	45	3	exam

Each module is divided into a core and an extension. The student is obliged to choose one entire module (core + extension) and the core of another module. For the Environmental Chemistry module, the core consists of the following courses: Methods of remediation and reduction of emissions of chemical environmental pollutants, Instrumental methods in environmental chemistry, Catalysis in sustainable technologies. The extension includes courses: Methods of remediation and limiting emissions of chemical environmental pollutants - laboratory, Instrumental methods in environmental chemistry - laboratory, Environmental biomonitoring. For the Energy module, the core consists of the following courses: Advanced Electrochemistry, Energy acquisition, conversion and storage, Materials for the energy industry. The extension is the course: Energy conversion and storage - laboratory. For the Materials Technology module, the core consists of the following courses: Catalytic Process Technology, Nanoporous Materials, Metal-Organic Networks: Universal Porous Materials, Adsorption

Processes in Environmental Protection, Photomaterials. The extension includes courses: Technology of catalytic processes - laboratory, Nanoporous materials - laboratory.

6 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Hazard analysis and environmental risk management	30	2	assessment
Introduction to organization of teamwork and presentation techniques	30	2	assessment
Sustainable economy of raw materials and chemicals	20	1	assessment
Wpływ chemicznej degradacji środowiska na owady zapylające	15	1	exam
Anthropogenic threats to the protected areas in Poland	15	1	assessment
Environmental protection and the investment process	30	2	assessment
Diploma Laboratory Class	90	15	assessment
Specialist Seminar	30	2	assessment

Alumni Profile

A graduate of first-cycle studies in the field of Chemistry of Sustainable Development has knowledge and skills in the field of chemistry and chemical technology, including understanding the environmental aspects of the functioning of the chemical and energy industries and methods of environmental analysis and monitoring, as well as environmental remediation technologies.

A particularly important element of education are competences in the field of low-emission eco-energy and energy production and storage, as well as the production of functional materials for applications, among others. in modern chemical technologies and energy.

The studies prepare you to work both in various types of chemical laboratories, specializing in particular in environmental research, and in administrative positions.

The graduate is prepared to work in organizations, enterprises and units related to environmental monitoring and protection, has competences to work as a consultant, advisor or specialist in the field of environmental protection, has competences to manage the management of raw materials, chemical substances and waste (practical knowledge of the REACH regulation and CLP).

The emphasis placed during studies on practical skills and access to specialized measurement equipment opens up professional opportunities in positions related to broadly understood chemical

analytics, design and synthesis of new materials, planning, implementation and implementation of new technologies, as well as problems of modern energy.

Knowledge and basic skills in the analysis and processing of measurement data, their interpretation, assessment and identification of threats, as well as data collection and preparation of reports, create opportunities to work in administrative positions. Knowledge of occupational safety rules and occupational risk assessment as well as the safe use of chemicals and waste management is an additional advantage of the graduate. After completing studies, the graduate is able to use the acquired competences in practice, develop professionally, both in individual and team work, respecting the law, ethical principles and taking into account the principles of green chemistry and sustainable development.

Completing first-cycle studies and preparing a bachelor's thesis allows you to continue your studies at second-cycle studies in the field of Chemistry of Sustainable Development or related fields. After completing the Chemistry of Sustainable Development studies, the graduate can work in:

- analytical laboratories (environmental analysis, food and cosmetics testing);
- monitoring stations, environmental protection units, occupational health and safety inspectorates and National Labor Inspectorate bodies;
- units designing, producing and testing innovative materials or implementing modern technologies;
- the modernization and implementation of new technologies in the energy sector and entities dealing with renewable energy sources;
- chemical industry, plants producing and distributing chemicals, cosmetics and pharmaceuticals.

SECOND CYCLE STUDIES

Second-cycle studies in Chemistry of Sustainable Development, which are a continuation and extension of first-cycle studies in this field, are aimed at educating specialists supporting energy and industrial transformations aimed at achieving sustainable development goals.

The most important challenges of the modern world include the responsible implementation of the sustainable development goals formulated by the UN (General Assembly Resolution A/RES/70/1: 2030 Agenda for Sustainable Development). Specialists in exact, natural and technical sciences should play a special role in achieving these goals. An interdisciplinary approach to these challenges is also important. The profile of a graduate of second-cycle studies in Chemistry of Sustainable Development meets these expectations.

The second cycle of studies covers 4 semesters.

Compulsory courses are taken mainly in the first year of studies. In addition to compulsory subjects, students take optional classes in the first and second year from the group of major courses and from the humanities and social sciences. The second year of studies is devoted largely to research work within the master's laboratory.

A large share of practical classes, including those with the participation of industry practitioners, will guarantee very good preparation of graduates for entering the labour market, especially in areas

consistent with their education. The study program includes laboratory classes in the form of research projects, which, on the one hand, will prepare students to independently solve research problems and, on the other hand, will enable them to develop competences in adapting to changing working conditions, including continuous improvement of professional competences.

Chemistry of Sustainable Development – Syllabus

Basic information

Faculty name: Faculty of Chemistry

Major name: Sustainable Chemistry

Level: second cycle

Profile: General academic

Form: full-time degree programme

Language of study: polish

Leading discipline: Chemical sciences

Programme

ISCED classification: 0531

Number of semesters: 4

Professional title awarded to graduates: magister

Description of the program implementation

Compulsory courses are mainly implemented in the first year of study. In addition to the compulsory courses, the student pursues optional courses in the first and second year. The second year of study is largely devoted to research work within the framework of the master's thesis. Interested students have the opportunity to take additional classes to prepare them for a teaching qualification in chemistry.

Graduation

- 1) A prerequisite for graduation is the successful completion of all courses, the submission of a diploma thesis, and a satisfactory grade in both the thesis and the written diploma examination.
- 2) The diploma dissertation is an independent study of a specific scientific issue presenting the student's general knowledge and skills related to a given field of study, level and profile of education as well as his/her independent analysis and reasoning skills.
- 3) The diploma thesis shall be submitted in a written form.

In addition to the obligatory subjects, the student takes optional courses from the group of directional courses in the first and second year for a total of 11 ECTS. Two of the optional courses must be completed by examination, including at least one 30-hour course for 3 ECTS in English. Additionally,

during the whole study period, the student must obtain no less than 5 ECTS credits from courses in the humanities and/or social sciences, of which 3 ECTS are obtained by the student from obligatory subjects (Sustainable Development Management - 2 ECTS and Protection of Intellectual Property II - 1 ECTS). Two additional ECTS must be obtained by the student from optional subjects from the humanities and social sciences course group. For the completion of the first year, the student is required to obtain 5 ECTS from the group of optional directional courses. Any excess points obtained in optional subjects from the group of courses in the humanities and/or social sciences shall be credited towards the second year of study. With the approval of the dean, students may pursue optional subjects in accordance with the course of study and optional subjects from the humanities and social sciences course group outside the above catalogue. The optional course "Molecular modelling of materials - a conversion course" is a suggested course for students wishing to pursue a research project and/or thesis in the field of modelling/theoretical chemistry.

1 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Analytics for sustainable development	40	3	graded credit
Crystal structure analysis and crystallochemistry	30	3	exam
Crystal structure analysis and crystallochemistry - laboratory class	30	2	graded credit
Spectroscopic methods	32	3	exam
Spectroscopic methods - laboratory class	45	4	graded credit
Molecular modeling of materials	45	3	graded credit
Statistical and chemometric data analysis	30	2	graded credit
Health and Safety in Education	4	-	assessment
Optional classes from the humanities and social group			
Green chemical technologies	40	3	graded credit
Sustainable technologies for energy	40	3	graded credit

Optional classes from the group of major courses

During the first and second year, the student takes optional classes from a group of specialized courses for a total of 11 ECTS points. Two of the optional major courses must be completed with an examination, including at least one 30-hour course for 3 ECTS points in English.

Subject	Number of hours	ECTS points	Form of verification
Challenges of Modern Chemistry: Emerging Contaminants	30	3	exam
Commercial lithium-ion batteries: build-test-disposal	30	2	graded credit
Molecular Modeling of Materials - discussion class	30	2	graded credit
3D design and printing	15	1	graded credit
Smart materials	30	3	exam
Electrochemical techniques in materials and environmental research	30	2	graded credit

Foreign language course

The student completes one subject.

Subject	Number of hours	ECTS points	Form of verification
English for Chemistry B2+	30	2	graded credit
English for Chemistry C1+	30	2	graded credit

2 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Analytics for sustainable development - laboratory class	30	2	graded credit
Biotechnologia przemysłowa	60	4	exam

Circular economy	15	1	graded credit
Molecular aspects of catalysis phenomenon	30	3	exam
Molecular aspects of catalysis phenomenon - laboratory class	60	4	graded credit
Protection of intellectual property II	15	1	graded credit
Practical aspects of sustainable development	15	1	graded credit
Practical aspects of sustainable development - workshops	15	1	graded credit
Practical aspects of sustainable development	15	1	graded credit
Practical aspects of sustainable development - laboratory class	60	5	graded credit
Sustainable management	20	2	graded credit

3 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Contexts of sustainable development	30	2	graded credit
Magister Seminar	30	-	-
Magister Laboratory Class	200	-	-

4 SEMESTER

Subject	Number of hours	ECTS points	Form of verification
Magister Seminar	30	4	graded credit
Magister Laboratory Class	300	46	graded credit

Alumni Profile

A graduate of second-cycle studies in the field of Chemistry of Sustainable Development will have advanced knowledge in the field of chemistry and related sciences, as well as the ability to apply this knowledge in practice, also in not fully predictable conditions requiring the search for new solutions.

The graduate will also be aware of the threats caused by the inappropriate use of new technologies, as well as the damage associated with continuing to use outdated technologies. You will also be able to identify the social, economic and economic implications of sustainable development policies. The graduate will be able to communicate with specialists and non-specialists, presenting rational and scientifically justified arguments in an accessible way.

The graduate, regardless of the functions performed, will be able to play an important role in promoting the concept of sustainable development and shape positive attitudes towards chemistry and its role in the modern world.

Due to such multi-faceted preparation, the graduate should find employment not only in professions directly related to chemistry but also in public and local government institutions at various levels. Moreover, he will be able to work for NGOs operating in the field of sustainable development. The graduate will also be able to take up work in new professions related to sustainable development issues, and to some extent influence the shaping of this labour market.

5.2.3 Jagiellonian University Centre for Advanced Sustainability Studies

CASS acts as a sustainability accelerator at the Jagiellonian University, creating synergies between activities undertaken at various levels – especially within the European university Una Europa and other academic networks.

We work towards sustainability in three principal areas:

- didactic – by designing the innovative Una Europa Joint Bachelor in Sustainability;
- scientific – by building an international research ecosystem around subjects such as Earth System Governance and Rights of Nature;
- institutional – by working on the sustainable development of the Una Europa universities.

The planned Una Europa Joint Bachelor in Sustainability (BASUS) is a unique undergraduate programme – the first joint degree with such a high level of interdisciplinarity, anticipating the expectations of the labour market and providing a unique opportunity for ambitious students. BASUS is designed by eleven universities that form Una Europa: Uniwersytet Jagielloński (coordinator), KU Leuven, Helsingin yliopisto, Universidad Complutense de Madrid, Université Paris 1 Panthéon-Sorbonne, Universiteit Leiden, Universität Zürich, Freie Universität Berlin, University College Dublin, University of Edinburgh, and Alma Mater Studiorum Università di Bologna. The project is linked to the development of the Una Europa Focus Area Sustainability.

5.2.4 RCE South Poland

RCEs are Regional Centers of Expertise on Education for Sustainable Development acknowledged by the Institute for the Advanced Study of Sustainability at the United Nations University (IAS-UNU) in Tokyo. Currently, the network includes around 190 RCEs from over 60 countries. RCEs are network structures. The RCE includes various types of educational institutions, local administration institutions, national parks, research centers, non-governmental organizations and other entities that

work for sustainable development in a given region. RCEs disseminate national and international examples of good practice, identify possible sources of funding, and organize teams to apply for national and international grants.

In September 2022, a consortium of over 60 institutions and organizations from Southern Poland (Małopolskie, Śląskie and Opolskie voivodships) coordinated by the Jagiellonian University applied to IAS-UNU for admission to the global RCE network. The application was approved and RCE Southern Poland was officially accepted on January 20, 2023.

The activity of RCE South Poland, as a typical network activity, will be complementary to the activities carried out by the partners under various national and international programmes.

Specific benefits for RCE partners include

- disseminating information about the activities carried out by the partner in the field of sustainable development, strengthening the sustainability of the results of projects implemented by the partner (impact on the region)
- providing information on the activities of partners in the field of sustainable development and on the activities of other RCEs - disseminating examples of good practice in the partner institution
- carrying out activities for the local community together with partners, strengthening contacts with non-governmental organizations, etc.
- applying for funds from the regional and national pool as well as for international grants in partnership with institutions and organizations that are part of the RCE

The RCE Secretariat will also collect and provide partners with materials related to sustainable development and will organize and process information on various activities in the field of sustainable development carried out in Southern Poland as well as at the national and international level.

RCE Vision:

RCE South PL is a regional integrator of educational and training activities supporting the education for sustainable development in Southern Poland – translating global Sustainable development goals and issues into local actions, taking into account national priorities and strategies.

It is a practical realization of a “quintuple helix” ecologically sensitive innovation model (university, industry, government, civil society, natural environment). It is a “3M” platform (Multi-stakeholder, multi-sectoral, multi-task), looking for FAR reaching solutions for Southern Poland (FAR – Feasible, Anticipatory, Resilient).

Objectives:

Seven objectives were identified, and activities related to each objective were proposed (cf. part 11 – Action Plan).

1. Developing and promoting RCE; networking around SDGs.
2. Advancing acquisition of green skills by different target groups (kindergarten children, students of primary, secondary and higher education; school and University teachers; public authorities; citizens, including seniors).
3. Advancing sustainability learning opportunities.
4. Developing sustainable R&D practices.
5. Developing virtual learning and collaboration capacities.
6. Promoting sustainability and links with nature for the regional community and different target groups.
7. Developing guidelines for implementation of SDGs.

The above objectives were formulated in response to the regional challenges following consultation with those involved in the design of regional development strategies. Expertise of RCE partners, ongoing and planned projects and possible future developments were also considered.

To achieve the listed objectives a range of activities will be undertaken as set out in the Action Plan. They will be interrelated and arranged in precise stages. The cradle-to-cradle design method (typical for sustainable development) will be used. The end of one stage will set the beginning of a new stage bringing a new quality. A systemic approach will be applied to account for “external” changes that may occur during the realization of individual tasks (new trends, legislative changes, etc.) allowing the RCE activities to be adapted for new situations. A variety of actions will guarantee flexibility, which will ensure project goals are reached and planned results achieved. Each result should be an “element of the future”, i.e., innovative courses, methodologies, field activities and new cooperation mechanisms. Particular attention will be paid to the development of “self-organization” mechanisms. In this respect, the RCE will serve as a hub to coordinate and integrate activities stressing the autonomy and creativity of the teams involved. The idea of “active walks in adaptive landscapes” (L. Lam) will be used allowing autonomous teams to modify action plans in a changing environment.

Main areas of activities (in brackets – reference to Sustainable Development Goals)

- ❖ Biodiversity (SDG 15)
- ❖ Climate Actions (SDG 13)

- ❖ Economic growth, Waste management and circular economy (SDG 6, 8,9)
- ❖ Education for sustainability (SDG 4)
- ❖ Energy (SDG 7)
- ❖ Health and wellbeing (SDG 3)
- ❖ Sustainable cities and communities (SDG 11)

Also, some important cross-cutting issues have been chosen, such as:

- ❖ Social aspects of sustainability
- ❖ Lifelong learning and environmental awareness among the wider public.

RCE SouthPL will strive for “unity in diversity” – as there are multiple links among partners, the consortium has a large self-organization capacity and will be fully manageable (its members have an extensive experience in management of large-scale multi-partner initiatives). In particular, appropriate monitoring, quality assurance, risk management and conflict resolution mechanisms will guarantee efficient management of such a complex structure as our RCE.

The RCE Vision saw the RCE as a practical realization of a “quintuple helix” ecologically sensitive innovation model (university, industry, government, civil society, natural environment). Strong networking potential is provided by the partner representatives of the different stakeholder groups, namely:

- ❖ **Links with schools:** Kindergartens, elementary and secondary schools, Polish Association of Science Teachers, teacher training centers at universities
- ❖ **Links with enterprises:** Sector Skills Councils (Chemistry Sector, Waste Management Sector etc.), enterprises belonging to RCE SP, Polish Future Industry Platform, Foundation Forum for Intelligent Development
- ❖ **Links with public administration at different levels:** communes, city halls, representatives of county and voivodship institutions.
- ❖ **Links with society at large:** EUROKREATOR - providing training expertise and capacities via its involvement in lifelong learning activities such as the LLLP -Lifelong Learning Platform. NGOs such as SeniorPlus Foundation.
- ❖ **Links with nature protection organizations:** Babia Gora National Park – a national park on the border of Malopolska and Silesian Voivodships (providing thus an additional synergy for RCE activities), State Forests and Silesian Landscape Park
- ❖ **Links with rural communities and the local agriculture sector:** Malopolska Agricultural Advisory Centre.

- ❖ **Overarching links with different stakeholder groups:** Małopolska Partnership for Continuing Education. It has been operating since 2008 and brings together 91 institutions of the labour market, education and training. They include public and private institutions, including schools, practical education centres, lifelong learning centres, universities, training companies, employers' unions, foundations, associations, libraries, museums, cultural centres, psychological and pedagogical counseling centres, county labour offices, as well as the Voivodship Labor Office in Krakow.

List of Annexes

- A1. The Polish Qualifications Framework
- A2. Polish Qualifications Framework User Guide
- A3. Integrated Qualifications Register Overview
- A4. Polish Classification of Occupations and Specializations
- A5. The Law on Higher Education and Science
- A6. PL Education Description NAWA
- A7. Subject Areas
- A8. Statutes of the Polish Accreditation Committee
- A9a. UJ Regulations for studies
- A9b. UJ Regulations for studies amendment
- A9c. UJ ASC Student Agreement
- A10. Polish Environmental Policy 2030 Information Brochure
- A11. Polish Environmental Policy 2030
- A12. Implementation of SDGs in Poland 2023 National Report
- A13. Jagiellonian University Climate and Ecology Strategy