Study programme

Major: Remote Sensing and Geo Informatics

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General characteristics of the major

Basic information

Faculty name:	Faculty of Geo-Data Science, Geodesy, and Environmental Engineering
Major name:	Remote Sensing and Geo Informatics
Level:	Second-cycle studies
Profile:	General academic
Form:	Full-time studies
ISCED classification:	0788
Number of ECTS credits necessary to complete studies at a given level:	120
Professional title awarded to graduates:	magister
Cycle start date:	2023/2024, winter semester
Duration of studies (number of semesters):	4

Field of science to which the major is assigned:

Field engineering and technical sciences

Discipline of science to which the major is assigned:

Discipline	Percentage	ECTS
Civil engineering, geodesy and transport	100%	120

Relationship between the major and the AGH UST development strategy and the AGH UST mission

The new faculty is in line with the strategic goals and mission of AGH, in particular in terms of education point: 3. broadening the educational offer, in particular:

- increasing the flexibility of the forms of studying, especially for the best students - a modular and block approach along the lines of short courses has been proposed,
- launching new majors and specializations with curricula adapted to the changing expectations of the labour market, also thanks to the cooperation with employers
- a new major in English has been proposed meeting the expectations of the market in the field of all-round remote sensing, which is in line with state initiatives e.g. the creation of the Polish Space Agency and various centres in this field,
- introduction of new subjects taught by eminent scientists from Poland and abroad, as well as specialists from industry, business and administration, improvement of the educational offer in foreign languages
- the specialisation is in English
- development of education through the use of new technologies, including teaching via the Internet (e-learning), a large part of classes is on-line, which made it possible to concentrate classes to 5 weeks in a semester.

Information on taking into account the socio-economic demand while creating the study programme and indication of the assumed learning outcomes matching the identified demand

Socio-economic demand for graduates in this specialisation is high. This is evidenced by the high activity of various centres around the world and in Poland in developing web-based solutions using ESA satellite imagery, mainly Sentinel (Sentinel-hub Playground, esa-sen4cap, Copernicus DIAS (CREODIAS, mundi, sobloo, Wekeo, ONDA), Landsat App, CENAGIS and others).

Learning paths - scope in Polish and in English

Not applicable.

Diploma paths - scope in Polish and in English

Not applicable.

The names of the specialties in Polish and in English

Name [pl]	Name [en]

General information about the study programme

Major: Remote Sensing and Geo Informatics

General information related to the study program (general learning objectives and employment opportunities, typical jobs and opportunities for graduate continuing education)

The course is available in English at Master's degree II and lasts 4 semesters. Recruitment is possible after the first engineering degree or after the bachelor's degree. Classes are scheduled in blocks, i.e. they are clustered thematically and time-wise. There are 5 blocks of classes scheduled each semester lasting 5 days each. There are two modules in the first semester. The first module, the initial 2.5 blocks, covers issues related to remote sensing Earth observation (Earth observation and Geoinformation Science). Within the module, students will gain an in-depth knowledge of remote sensing in the optical, thermal and radar domains. Topics covered in the module include: methods of acquiring and processing remote sensing data from satellite, airborne, unmanned aerial vehicles (BSPs) and via ground-based measurements. The second module, the next 2.5 blocks, covers programming issues (Python for remote sensing). Within the module, students will systematise, deepen their knowledge and skills in the use of the Python language in the broad field of GeoScience.

In semester two there are 4 modules also clustered into two blocks. First block, 2 modules: time series analysis (Time series analysis) and machine learning, applications of mathematics (Machine Learning, applications of mathematics). The second block, comprises 2 modules: data science for smart environment, fundamentals of negotiation (Data Science for Smart Environment,) and geo-information tools (Geo-information Tools).

Semester three consists of two modules delivered in two blocks. Students will acquire knowledge and skills in: natural hazards and disaster risk reduction (Natural hazards and disaster risk reduction) and urban planning and environmental management, basics of negotiations (Urban planning and environmental management, basics of negotiations).

The final semester is devoted to the preparation of the master's thesis.

Semesters 1, 2 and 3 have a separate unit: the project, in which the student carries out a larger individual task thematically related to the modules in the semester.

The project is given credit by examination.

In semesters 1 and 3 there is an optional course (from UBO or selected from the range of optional courses available at WGGiIŚ). The course is designed according to the idea of short courses that can be taken separately or assembled into a larger whole (e.g. master's degree, postgraduate studies). This allows for a modular nature, block classes and a large proportion of hours provided for remote consultations. The specialisation is open to both undergraduates and engineers and is taught in English, which broadens the group of interested students.

Information on the study programme including the conclusions from the students and graduates careers monitoring

During the development of the study programme, the conclusions from the analysis of the results of the monitoring of careers of the "Geodesy and cartography" faculty contained in the report entitled "Career fate of AGH graduates 2013 three years after graduation" were used.

"Professional fate of AGH 2013 graduates three years after graduation AGH University of Science and Technology St. Staszic in Kraków Full-time second-cycle studies - November 2016", made by the AGH Career Centre, as well as individual knowledge of the faculty staff on the basis of maintained contacts with graduates.

Information on the study programme taking into account the requirements and recommendations of the accreditation committees, in particular the Polish Accreditation Committee and industry accreditation committees

The faculty has not yet been accredited. Accreditation at the Faculty of GCC was conducted in 2014 (accreditation of the GCC faculty) and 2016 (institutional accreditation). In both cases, the faculty received a positive assessment. The positive assessment is valid until the academic year 2022/2023.

Information on including examples of good practice in the study program

The design of the curriculum for the course "Remote Sensing and Geo Informatics" took into account good practices of

universities educating in a similar field in the world (e.g. University of Twente or Wageningen Univeristy https://www.utwente.nl/.uc/fca6a749701030fc63500febec4049b4bd62e1def838b00/master-of-science-geo-information-science-and-earth-observation.pdf
; https://www.wur.nl/en/education-programmes/master/msc-programmes/msc-geo-information-science/programme-of-geo-information-science.htm).
The concept of short courses was used, which consists of clustering contact classes at AGH in the form of remote classes. http://www.explore.agh.edu.pl/availablecourses.html This should make the course significantly more attractive.

Information on cooperation in the preparation of the study programme with external stakeholders, in particular associations, professional and social organizations

A number of graduates and employees of the Faculty are members of Management Boards or Supervisory Boards, co-owners of firms or enterprises, start-ups, which allows them to follow the development trends of the industry and know its problems. Employees of companies are often invited to the Faculty to give lectures or specialised talks for students, in order to show them not only modern technologies, but also the problems of everyday operation of companies in this industry.

Duration, rules and form of the apprenticeship

Not applicable.

Admission criteria, rules and policies

Major: Remote Sensing and Geo Informatics

Description of competences expected from the candidate applying for admission to studies

The prospective student should have competence in mathematics, finance or computer science at a good level.

Recruitment conditions, including the winners and finalists of the central level high school scientific Olympics, as well as winners of international and national contests

The rules and conditions of recruitment are set out in Resolution No. 62/2022 of the AGH Senate of May 25, 2022 on the conditions, procedure and date of commencement and completion of recruitment for the first year of first- and second-cycle studies starting the academic year 2023/2024. The entrance exam is mandatory.

The expected limit of admissions to studies along with an indication of the minimum number of admitted candidates required to successfully launch a study cycle

Minimum number of students: 15
Maximum number of students: 30

Learning outcomes

Major : Remote Sensing and Geo Informatics

Knowledge

KEU symbol	Directional learning outcomes	CEU symbol
RSGI2A_W01	has a deep knowledge of mathematics in remote sensing data analysis	P7S_WG_A
RSGI2A_W02	has an enhanced knowledge of physics necessary to understand the interaction of electromagnetic radiation in the atmosphere and with the Earth's surface	P7S_WG_A
RSGI2A_W03	has a deep understanding of remote environmental data acquisition methods	P7S_WG_A
RSGI2A_W04	has a deep understanding of methods, algorithms and automation of spatial data processing	P7S_WG_A
RSGI2A_W05	has an enhanced knowledge of the use of computer science in geoscience	P7S_WG_A
RSGI2A_W06	knows selected social, economic and legal aspects of the geo-information society	P7S_WK_A
RSGI2A_W07	knows the basic concepts and principles of intellectual property protection, copyright and patent information resources	P7S_WK_A

Skills

KEU symbol	Directional learning outcomes	CEU symbol
RSGI2A_U01	can apply knowledge of mathematics and physics to analyze geospatial data	P7S_UW_A
RSGI2A_U02	can acquire remote environmental data	P7S_UW_A
RSGI2A_U03	is able to process geospatial data and automate data processing in an advanced manner	P7S_UW_A
RSGI2A_U04	is able to use IT tools for spatial data processing	P7S_UW_A
RSGI2A_U05	can work both individually and in teams; can prepare a proposal for a research project	P7S_UK_A, P7S_UO_A, P7S_UU_A
RSGI2A_U06	is able to communicate on specialist topics in the field of remote sensing and geoscience with a diverse audience; Student can use a foreign language at the B2 + level of the European System for the Description of Languages and specialist and proper Terminology	P7S_UK_A

Social competence

KEU symbol	Directional learning outcomes	CEU symbol
RSGI2A_K01	is ready to resolve conflicts, negotiate, work in a team	P7S_KR_A, P7S_KK_A, P7S_KO_A
RSGI2A_K02	is ready for creative time management, working under time pressure	P7S_KR_A, P7S_KK_A, P7S_KO_A
RSGI2A_K03	maintain an ethical attitude while performing and presenting the results of assigned tasks	P7S_KR_A, P7S_KK_A, P7S_KO_A

Directional outcomes coverage matrix

Major: Remote Sensing and Geo Informatics

2023/2024/S/II/GGiIS/RSGI/all

Subject	Code	Semestr	RSGI2A_W01	RSGI2A_W02	RSGI2A_W03	RSGI2A_W04	RSGI2A_W05	RSGI2A_W06	RSGI2A_W07	RSGI2A_U01	RSGI2A_U02	RSGI2A_U03	RSGI2A_U04	RSGI2A_U05	RSGI2A_U06	RSGI2A_K01	RSGI2A_K02	RSGI2A_K03
Earth Observation and Geoinformation Science	DRSGIS.II1P.638491401bfbd.23	1		x	x	x				x	x	x	x		x	x	x	x
Python for Remote Sensing	DRSGIS.II1K.638491410ada8.23	1			x	x					x	x					x	x
Transitional work on geo-informatics in remote sensing – individually selected issue solved under the supervision of a tutor	DRSGIS.II1K.63849141ede89.23	1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Time Series Analysis	DRSGIS.II2K.61d8360e0cfef.23	2		x	x	x	x			x	x	x	x				x	
Machine Learning, Application of Mathematics	DRSGIS.II2P.63849144b7161.23	2	x			x	x			x	x	x				x	x	
Data Science for Smart Environment	DRSGIS.II2K.6384914579b98.23	2			x	x	x	x	x		x	x					x	x
Geo-information Tools	DRSGIS.II2K.63849146398d9.23	2	x		x	x	x			x	x	x	x	x		x	x	x
Transitional work on machine learning in smart environment – individually selected issue solved under the supervision of a tutor	DRSGIS.II2K.63849146ecd47.23	2	x		x	x	x	x	x		x	x	x				x	
Natural Hazards and Disaster Risk Reduction	DRSGIS.II4K.63849149651f2.23	3	x			x	x			x	x	x				x	x	
Urban Planning and Environmental Management	DRSGIS.II4K.6384914a27632.23	3	x		x	x					x	x				x	x	
Transitional work on geoscience in environmental management – individually selected issue solved under the supervision of a tutor	DRSGIS.II4K.6384914ae3c24.23	3	x	x	x	x	x	x	x	x	x	x	x			x	x	x
Diploma Thesis	DRSGIS.II8K.e53bc1ffec52171870fc55d1cec2fa6a.23	4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Subject	Code	Semestr	RSGI2A_W01	RSGI2A_W02	RSGI2A_W03	RSGI2A_W04	RSGI2A_W05	RSGI2A_W06	RSGI2A_W07	RSGI2A_U01	RSGI2A_U02	RSGI2A_U03	RSGI2A_U04	RSGI2A_U05	RSGI2A_U06	RSGI2A_K01	RSGI2A_K02	RSGI2A_K03
Sum (obligatory):			8	5	9	12	10	5	5	5	9	12	12	5	3	10	10	7
Sum (elective):			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum:			8	5	9	12	10	5	5	5	9	12	12	5	3	10	10	7

Characteristics matrix of learning outcomes in relation to modules

Major: Remote Sensing and Geo Informatics

2023/2024/S/II/GGiIS/RSGI/all

Subject	Code	Semestr	P7S_WG_A	P7S_WK_A	P7S_UW_A	P7S_UK_A	P7S_UO_A	P7S_UU_A	P7S_KR_A	P7S_KK_A	P7S_KO_A
Earth Observation and Geoinformation Science	DRSGIS.II1P.638491401bfbd.23	1	x		x	x			x	x	x
Python for Remote Sensing	DRSGIS.II1K.638491410ada8.23	1	x		x				x	x	x
Transitional work on geo-informatics in remote sensing – individually selected issue solved under the supervision of a tutor	DRSGIS.II1K.63849141ede89.23	1	x	x	x	x	x	x	x	x	x
Time Series Analysis	DRSGIS.II2K.61d8360e0cfef.23	2	x		x	x	x	x	x	x	x
Machine Learning, Application of Mathematics	DRSGIS.II2P.63849144b7161.23	2	x		x				x	x	x
Data Science for Smart Environment	DRSGIS.II2K.6384914579b98.23	2	x	x	x				x	x	x
Geo-information Tools	DRSGIS.II2K.63849146398d9.23	2	x		x	x	x	x	x	x	x
Transitional work on machine learning in smart environment – individually selected issue solved under the supervision of a tutor	DRSGIS.II2K.63849146ecd47.23	2	x	x	x				x	x	x
Natural Hazards and Disaster Risk Reduction	DRSGIS.II4K.63849149651f2.23	3	x		x				x	x	x
Urban Planning and Environmental Management	DRSGIS.II4K.6384914a27632.23	3	x		x				x	x	x
Transitional work on geoscience in environmental management – individually selected issue solved under the supervision of a tutor	DRSGIS.II4K.6384914ae3c24.23	3	x	x	x	x	x	x	x	x	x
Diploma Thesis	DRSGIS.II8K.e53bc1ffec52171870fc55d1cec2fa6a.23	4	x	x	x	x	x	x	x	x	x
Sum (obligatory):			12	5	12	6	5	5	12	12	12
Sum (elective):			0	0	0	0	0	0	0	0	0

Subject	Code	Semestr	P7S_WG_A	P7S_WK_A	P7S_UW_A	P7S_UK_A	P7S_UO_A	P7S_UU_A	P7S_KR_A	P7S_KK_A	P7S_KO_A
Sum:			12	5	12	6	5	5	12	12	12

Matrix of directional learning outcomes with related forms of classes and the method of testing

Major: Remote Sensing and Geo Informatics

2023/2024/S/II/GGiIS/RSGI/all

Name of the module	Activity	Method of verification and assessment of learning outcomes achieved by the student in individual forms of classes and activities for the entire module	KEU references
Earth Observation and Geoinformation Science	Lecture, Workshop classes	Examination, Activity during classes, Participation in a discussion, Examination, Report, Case study, Presentation	RSGI2A_W02, RSGI2A_W03, RSGI2A_W04, RSGI2A_U01, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_U06, RSGI2A_K01, RSGI2A_K02, RSGI2A_K03
Python for Remote Sensing	Lecture, Workshop classes	Participation in a discussion, Examination, Participation in a discussion, Examination, Involvement in teamwork	RSGI2A_W04, RSGI2A_W05, RSGI2A_U03, RSGI2A_U04, RSGI2A_K01, RSGI2A_K03
Transitional work on geo-informatics in remote sensing – individually selected issue solved under the supervision of a tutor	Progress evaluation and interim assignments	Participation in a discussion, Examination, Report, Case study, Involvement in teamwork, Preparation and conduct of scientific research	RSGI2A_W01, RSGI2A_W02, RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_W06, RSGI2A_W07, RSGI2A_U01, RSGI2A_U02, RSGI2A_U05, RSGI2A_U06, RSGI2A_U03, RSGI2A_U04, RSGI2A_K01, RSGI2A_K02, RSGI2A_K03
Time Series Analysis	Lecture, Workshop classes	Participation in a discussion, Case study, Participation in a discussion, Report, Case study, Involvement in teamwork	RSGI2A_W02, RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_U05, RSGI2A_K02
Machine Learning, Application of Mathematics	Lecture, Workshop classes	Test, Activity during classes, Participation in a discussion, Project, Report	RSGI2A_W01, RSGI2A_W05, RSGI2A_W04, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_K01, RSGI2A_K02
Data Science for Smart Environment	Lecture, Workshop classes	Participation in a discussion, Case study, Participation in a discussion, Report, Case study, Involvement in teamwork	RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_W06, RSGI2A_W07, RSGI2A_U03, RSGI2A_U04, RSGI2A_K01, RSGI2A_K03
Geo-information Tools	Lecture, Workshop classes	Activity during classes, Participation in a discussion, Test, Case study	RSGI2A_W01, RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_U01, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_U05, RSGI2A_K01, RSGI2A_K02, RSGI2A_K03

Name of the module	Activity	Method of verification and assessment of learning outcomes achieved by the student in individual forms of classes and activities for the entire module	KEU references
Transitional work on machine learning in smart environment – individually selected issue solved under the supervision of a tutor	Progress evaluation and interim assignments	Participation in a discussion, Examination, Report, Case study, Preparation and conduct of scientific research	RSGI2A_W01, RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_W06, RSGI2A_W07, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_K02
Natural Hazards and Disaster Risk Reduction	Lecture, Workshop classes	Test, Participation in a discussion, Execution of a project, Report	RSGI2A_W01, RSGI2A_W04, RSGI2A_W05, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_K01, RSGI2A_K02
Urban Planning and Environmental Management	Lecture, Workshop classes	Test, Examination, Project, Preparation and conduct of scientific research	RSGI2A_W01, RSGI2A_W04, RSGI2A_W03, RSGI2A_U04, RSGI2A_U03, RSGI2A_K02, RSGI2A_K01
Transitional work on geoscience in environmental management – individually selected issue solved under the supervision of a tutor	Progress evaluation and interim assignments	Participation in a discussion, Examination, Report, Case study, Involvement in teamwork, Preparation and conduct of scientific research	RSGI2A_W01, RSGI2A_W02, RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_W06, RSGI2A_W07, RSGI2A_U01, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_U05, RSGI2A_K01, RSGI2A_K02, RSGI2A_K03
Diploma Thesis	Diploma Thesis	Report on completion of a practical placement, Preparation and conduct of scientific research	RSGI2A_W01, RSGI2A_W02, RSGI2A_W03, RSGI2A_W04, RSGI2A_W05, RSGI2A_W06, RSGI2A_W07, RSGI2A_U01, RSGI2A_U02, RSGI2A_U03, RSGI2A_U04, RSGI2A_U05, RSGI2A_U06, RSGI2A_K01, RSGI2A_K02, RSGI2A_K03

ECTS credits calculations

Major: Remote Sensing and Geo Informatics

The total number of ECTS credits the student needs to obtain in the form of:

classes conducted with the direct participation of academic teachers or other persons conducting classes	60
core science classes relevant to a given major	16
practical classes, developing practical skills, including laboratory, design, practical and workshop classes	60
classes subject to choice by the student (in the amount of not less than 30% of the number of ECTS points necessary to obtain qualifications corresponding to the level of education)	50
classes in the field of humanities or social sciences - in the case of fields of study assigned to disciplines within fields other than humanities or social sciences, respectively	5
foreign language classes	10
apprenticeships	0
classes related to the academic activity conducted at the University in the discipline or disciplines to which the field of study is assigned, in the amount greater than 50% of the number of ECTS points required to complete studies at a given level, taking into account the participation of students in classes preparing to conduct scientific activity or participate in this activity (applies only to studies with a general academic profile)	65
classes shaping practical skills in the amount greater than 50% of the number of ECTS points required to complete studies at a given level (applies only to studies with a practical profile)	

Detailed rules of the implementation of the study programme established by the Dean of the Faculty (the so-called Study Rules)

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Enrollment rules for the next semester

The rules for entry into the next semester are governed by the Academic Regulations in force for the academic year. In order to obtain registration it is necessary to:

1. obtaining credit for all courses (learning modules) compulsory for the chosen field of study, educational profile included in the plan of that semester (year) of study.
2. obtain at least 30 ECTS credits, depending on the number of ECTS credits provided for in the study schedule for a given semester (year) of study.

Enrollment rules for the next semester as a part of the so-called ECTS credits debt ceiling

The rules for entry into the next semester with a deficit are regulated in the Academic Regulations. If the standard conditions for entry into the next semester are not met, it is possible to apply for entry into the next semester of study with a so-called acceptable total credit deficit.
The acceptable cumulative deficit of credits is 10 ECTS.

ECTS credits debt ceiling

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Organization of classes within the so-called blocks of classes (i.e. such organization of subjects or individual forms of classes that creates exceptions to the cyclical nature of classes in particular weeks of a given semester of studies)

The degree programme lasts four semesters. Programme content per semester contained in large modules. Classes are planned in blocks, i.e. they are clustered thematically and time-wise. Modules are completed one after the other. Study requires attendance at AGH for 25 days per semester (5 blocks of 5 days each).

Monitoring semesters

2

Study rules in case of the individual organization of studies approved for a specific student

There is no provision for an individual mode of study due to the English language of study.

Implementation of apprenticeships including monitoring system and completion rules

Not applicable.

Rules of elective modules taking

Students choose elective courses from the UBPO or from the course offerings in English. Students may also choose elective courses in Polish.

Rules of study paths, diploma paths, specialty choice/eligibility

Not applicable.

Rules related to the preparation of diploma projects and theses as well as the implementation of the degree granting

The graduation process involves the preparation of a diploma thesis (individual or team) and taking the diploma examination. The diploma examination includes:

Detailed rules of the implementation of the study programme established by the Dean of the Faculty (the so-called Study Rules)

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1. presentation of the diploma thesis,
2. discussion of the thesis,
3. verification of the level of mastery of knowledge and skills in the field of study studied, the so-called master's exam.

Diploma thesis topics together with their supervisors and additional conditions for thesis realisation are approved by the Dean upon the proposal of the head of the department submitting a given topic. A list of thesis topics and their supervisors is made available to students one year before the diploma semester. Enrolment in a given topic takes place on an individual basis. The selection of a topic is a condition for the student's entry into the final year of study. Changing the topic of the thesis, changing the supervisor or submitting an additional topic is possible at the request of the supervisor with the written consent of the Dean. Resignation from the thesis supervisor shall be made in writing, stating the reasons for the resignation. The scope and form of the thesis shall be agreed with the thesis supervisor. The thesis supervisor shall also determine the mode and timetable for the thesis to enable its timely completion. In the case of a team thesis, a detailed definition of each performer's contribution to the thesis is required. After completing the diploma thesis, receiving a positive mark for it from the thesis supervisor and passing all the subjects provided for in the study programme (obtaining a pass mark), students submit and register their thesis at the Dean's Office, after which the thesis is made available to a reviewer for review and a date is set for the thesis defence.

The thesis reviewer is appointed by the Dean of the Faculty. The reviewer may be a professor, postdoctoral researcher or doctor. It is recommended that if the supervisor of a thesis is a doctor, the reviewer of that thesis should be a professor or a postdoctoral doctor. Once the thesis has been registered, the supervisor and the reviewer prepare written evaluations of the thesis.

After obtaining a positive review of the thesis, the student takes the diploma exam at a designated date before a Commission appointed by the Dean of the Faculty.

Normally, the diploma examination commission consists of:

1. the Dean of the Faculty as chairperson or a person authorised by him/her, who may be an academic teacher with the title of professor or the degree of doctor habilitated,
2. the thesis supervisor,
3. the thesis reviewer.

The master's examination consists of answering at least two cross-cutting questions in the field of study, one of which is asked by the thesis supervisor and the other by the thesis reviewer. The general scope of the master's exam is made available to students at the latest in the semester preceding the graduation semester. When preparing it, the directional learning outcomes for the second-cycle studies in a given field of study and the modular learning outcomes resulting from the programme of a given specialisation shall be taken into account. The scope of this examination may also include basic knowledge for a given field of study resulting from the directional learning outcomes for first-cycle studies conducted at the Faculty. The partial grades obtained for the thesis presentation and the answers to the set questions are included in the diploma examination report , as is the final grade for the thesis, resulting from the grades obtained from the thesis supervisor and the reviewer. In the case of a discrepancy between the thesis supervisor's and reviewer's grades, the final grade for the thesis is determined at the Examination Board meeting. The diploma examination grade is determined by the Examination Board as the arithmetic mean of the partial grades obtained for the thesis presentation and the answers to both questions posed (assessed by those asking the questions).

For preparation of the thesis and submission of the diploma thesis confirmed by obtaining a positive final grade for the thesis and a positive grade for the diploma examination, the student is awarded 20 ECTS points in the last semester of studies (allocated by the Dean in accordance with the Study Regulations).

Principles for determining the overall evaluation of graduation (the final grade)

The degree completion result is determined as a weighted average of the following grades:

1. the average grade of the degree programme - with a weighting of 0.6;
2. the final grade of the diploma thesis - with a weighting of 0.2, with the final grade of the thesis being determined by a committee appointed by the Dean in the event of a discrepancy between the grades of the supervisor and the reviewer;
3. the grade of the diploma examination - with a weighting of 0.2, with the grade being calculated as the arithmetic mean of the grade of the master's examination and the grade of the presentation and discussion of the thesis (defence grade). In the event that a student passes the diploma examination on a resit date, the average of the grades from the primary and resit dates, but not less than 3.0, shall be taken into account in the calculation. The

established by the Dean of the Faculty (the so-called Study Rules)

rules resulting from the Study Regulations shall be taken into account when determining individual grades, including the average grade. The Examination Board may award a distinction to a graduate who fulfils all of the following criteria (listed in the AGH Study Regulations):

a. has submitted his/her diploma thesis and taken the diploma examination on the scheduled date,

b. has obtained an average mark from his/her studies (first or second degree) above 4.71,

c. has obtained a very good grade from the diploma thesis,

d. has obtained a very good grade from the diploma examination.

The award of a distinction should be recorded in the examination report. Confirmation of the distinction will be an appropriate document attached to the diploma of graduation.

Other requirements related to the implementation of the study programme resulting from the AGH UST Study Regulations or other regulations in force at the University

Not applicable.

Detailed rules of the implementation of the study programme established by the Dean of the Faculty (the so-called Study Rules)

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