Curriculum

Field of study: Metalcasting Engineering

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General characteristics of the field of study

Basic information

Faculty name:	Faculty of Foundry Engineering
Field of study:	Metalcasting Engineering
Level:	Second-cycle (engineer) programme
Profile:	General academic
Form:	Part-time studies
ISCED classification:	0715
Number of ECTS credits necessary to complete studies at a given level:	90
Professional title awarded to graduates:	magister inżynier
Cycle start date:	2025/2026, winter semester
Duration of studies (number of semesters):	3

Field of science to which the field of study is assigned:

Field engineering and technical sciences

Discipline of science to which the field of study is assigned:

Discipline	Percentage	ECTS
Material Engineering	100%	90

Relationship between the field of study and the development strategy and mission of the university

The direction is an expression of the implementation of the AGH mission to serve the economy. The Faculty of Foundry Engineering, which is the only such field of study in the country and in Europe, from the beginning of its existence at the AGH University of Science and Technology (1951) educates engineers, masters of engineers and doctors in the field of foundry in the field of Metallurgy. Foundry industry has traditionally had a strong position in Poland, both in science and technological practice, and plays an important role in the economy. The student chooses a scientific path in accordance with his interests by choosing elective blocks: Precision casting or General casting, and by choosing modules from specialty groups.

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

The education program in the field of Metalcasting Engineering (CAST) takes into account the needs of domestic and foreign industry on engineers from the foundry industry in the context of the current changes. The Social Council existing at the Faculty

The Program Committee, composed of representatives of leading foundries, plays an advisory role in the modification of study programs, as well as supports the Faculty, among others, by organizing internships and study trips for students. Such activities allow, already during their studies, to familiarize future graduates of the Faculty with modern solutions and technologies existing in the industry. Constant cooperation with the industry brings beneficial effects of improving students' qualifications in the field of production planning, technology and implementation of innovative solutions, as well as acquiring teamwork skills.

Education paths – scope in Polish and in English

Not applicable.

Graduation paths – scope in Polish and in English

Not applicable.

The names of the majors in Polish and in English

Name [pl]	Name [en]

General information about the curriculum

Field of study: Metalcasting Engineering

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

The purpose of education in the field of Metalcasting Engineering (CAST), conducted at the Faculty of Foundry Engineering, is to prepare engineers with the ability to use knowledge from basic disciplines, metallurgy, alloys with special properties, metal and alloy processing, science of casting materials and materials, mold technology and casting defects, thermal technology, computer networks and computer aid systems in technology, utilization of technological waste and ecology in individual and team engineering activities in industrial production conditions in large and small metallurgical and foundry plants, metal processing plants, in laboratories of research facilities of plants, design and consulting units and other economic and administrative units where technical knowledge is required.

Taking into account the connections between foundry and other branches of the economy, the main focus of education is on foundry technologies.

The experience gained so far shows that the graduates of the Faculty of Foundry Engineering AGH are well prepared for the requirements of modern foundry and are great at designing and implementing modern technologies as well as managing foundry production.

Graduates may continue their education at third-cycle studies.

On the domestic market, where there are about 400 foundries, and on the EU market, where there are about 5,000 foundries, there is a huge demand for engineers with a foundry profile. The analysis of professional careers so far shows that the majority (~ 80%) of graduates of the Faculty of Foundry Engineering in the field of study find a job in the profession already in the first year after graduation.

Information on including the conclusions from the students and graduates careers monitoring in the curriculum

Every year, the authorities of the Faculty of Foundry Engineering, based on information provided by the AGH Career Center, analyze the results obtained by the Faculty of Foundry Engineering, which, among others, are the subject of discussion at the annual meeting with the Social Program Board operating at the Faculty. Together with representatives of the industry, actions are taken to follow the changes taking place in the economy, especially in the sector of manufacturing cast components for the automotive, energy, aviation, agricultural and many other industries. In this regard, numerous voices of industry representatives initiated work at the Faculty related to the preparation of a new direction, which is a response to the ongoing changes, needs and expectations of the sector producing cast components.

Information on including the requirements and recommendations of the accreditation committees, in particular the Polish Accreditation Committee and industry accreditation committees in the curriculum

The Engineering of Foundry Processes at the Faculty of Foundry Engineering was accredited in June 2022. The opinion presented contained a very positive assessment of the educational program being implemented. After getting acquainted with the opinion of the Polish Accreditation Committee, the Faculty authorities took appropriate actions aimed at further improving the process of educating students at the Faculty.

Information on including examples of good practice in the curriculum

The Vice Deans of the Faculty of Foundry for Student Affairs and for Education organize meetings with students once a semester, which are also attended by representatives of the Faculty Student Government Council. The purpose of the meetings is to discuss current problems related to the education process at the Faculty. The exceptionally active activity of the Student Self-Government in cooperation with the teams should be emphasized. Students submitted their comments regarding the study program, which were the subject of discussion. An example of such cooperation is the decision to educate specialists who will produce plastic and metallic components for the automotive sector.

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

In 2017, the Social Program Board was established at the Faculty of Foundry Engineering, bringing together representatives of the leading domestic foundries. During annual meetings with members of the Council, current problems faced by both the foundry industry and the Faculty are discussed. The main purpose of meetings with the Social Program Council is to raise the rank and image of the Faculty by increasing the qualifications of students who have the opportunity to complete internships in modern production plants. Acquisition of new apprenticeship places for students allows them to familiarize themselves with modern industrial technologies. The initiative of representatives of some foundries for additional meetings of students with companies (the best foundries can thus present the profile of the graduate they are waiting for) met with great appreciation of the Faculty Authorities.

Duration, rules and form of the practical placement

Not applicable.

Admission criteria, rules and policies

Field of study: Metalcasting Engineering

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

A person applying for admission to second-cycle studies should have the knowledge, skills and competences described in the field-specific learning outcomes for the first-cycle studies. This applies to the scope described in the education modules, in particular in the area of mathematics, physics, chemistry and to know the basics of metallurgy, foundry, metallurgy (basic).

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

Recruitment is carried out in accordance with Resolution No. 62/2022 on the conditions, procedure and start and end date of recruitment for the first year of first- and second-cycle studies starting the cycle of education in the academic year 2023/2024.

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: 12

Maximum number of students: 60

Learning outcomes

Field of study: Metalcasting Engineering

Knowledge

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
CAST2A_W01	Has knowledge of mathematics, physics, chemistry and other areas relevant to the studied field of study, useful for formulating and solving typical problems	P7S_WG_A, P7S_WG_A_Inz
CAST2A_W02	Has knowledge of plastics and materials used in industrial technologies, as well as knowledge of the structure, microstructure and internal structure of these plastics, methods of their production and quality control	P7S_WG_A, P7S_WG_A_Inz
CAST2A_W03	Has knowledge in the field of component manufacturing technology and the impact of these technologies on the natural environment	P7S_WG_A, P7S_WG_A_Inz
CAST2A_W04	Has knowledge of materials testing, knowledge of their strength properties, metal science and material engineering. He knows the rules of conducting research, conducting their analysis and creating technical documentation	P7S_WG_A, P7S_WG_A_Inz
CAST2A_W05	Has knowledge of designing tools for the production process as well as machines and devices used in this process	P7S_WG_A, P7S_WG_A_Inz
CAST2A_W06	Has knowledge of the possibility of using simulation and IT tools to predict the effects of technological processes	P7S_WG_A, P7S_WG_A_Inz
CAST2A_W07	Has knowledge related to the economic conditions of engineering activities and the principles of management and work organization. He understands the concepts of intellectual and industrial property protection and copyright. Has knowledge of occupational health and safety and knows the principles of ergonomics	P7S_WK_A, P7S_WK_A_Inz

Skills

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
CAST2A_U01	Can use, to an advanced extent, a technical language in the field of the studied discipline and a foreign technical language at the B2+ level of the European System of Description of Languages	P7S_UK_A, P7S_UW_A_Inz_01
CAST2A_U02	Can prepare assumptions for a selected engineering problem or experiment, plan and organize the work of a team of specialists, analyze the results and prepare a substantive report	P7S_UO_A, P7S_UW_A_Inz_02
CAST2A_U03	Can interpret phenomena occurring in the production process and in a planned way deepen and acquire knowledge and skills, and make a critical assessment of the functioning of existing solutions	P7S_UW_A_Inz_01 , P7S_UW_A
CAST2A_U04	Can prepare documentation of the technological process of the production of components made with the use of various technologies	P7S_UW_A_Inz_01 , P7S_UW_A
CAST2A_U05	Can select the material for the appropriate construction elements of vehicles and select the starting materials and the technology of preparing this material	P7S_UW_A, P7S_UW_A_Inz_02
CAST2A_U06	Can design a robotic production cell for the production of components on a mass scale	P7S_UW_A, P7S_UW_A_Inz_02
CAST2A_U07	Can read technical drawings, diagrams and technological designs and prepare graphic documentation. Can use selected computer programs	P7S_UW_A_Inz_01 , P7S_UW_A
CAST2A_U08	Can organize a business in the area of foundry and metallurgical production and apply the principles of management, work organization and ergonomics in various forms of engineering activity. He knows the rules of international standardization. He can identify threats to the health and life of an employee in the foundry industry. Can use appropriate means of individual and collective protection during work	P7S_UU_A, P7S_UW_A_Inz_02

Social competence

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
CAST2A_K01	Is aware of his theoretical knowledge and practical skills as well as improving his own competences, is ready to independently search for solutions to theoretical and practical tasks and to analyze them critically	P7S_KK_A
CAST2A_K02	Is ready to recognize the importance of knowledge in solving cognitive and practical problems	P7S_KK_A
CAST2A_K03	Is aware of the importance of behaving in a professional manner, observing the rules of professional ethics and is able to identify and resolve dilemmas related to the performance of the profession	P7S_KR_A
CAST2A_K04	In his professional thinking, he takes into account economic and social aspects	P7S_KO_A
CAST2A_K05	Is aware of the role of a technical university graduate, is ready to popularize scientific achievements with the use of media techniques, with particular emphasis on engineering activities	P7S_KO_A

Compliance table of engineering competence (Inz) with directional learning outcomes (KEU)

Major: Metalcasting Engineering

Knowledge

CEU symbol	Learning outcomes for qualifications including engineering competence	KEU references
P7S_WG_A_Inz	knowledge of basic processes taking place in the life cycle of technical devices, facilities and systems	CAST2A_W01, CAST2A_W02, CAST2A_W03, CAST2A_W04, CAST2A_W05, CAST2A_W06
P7S_WK_A_Inz	knowledge of basic principles of creating and developing various forms of individual entrepreneurship	CAST2A_W07

Skills

CEU symbol	Learning outcomes for qualifications including engineering competence	KEU references
P7S_UW_A_Inz_01	ability to plan and carry out experiments, including measurements and computer simulations as well as to interpret the obtained results and draw conclusions out of them. When identifying and formulating the specification of engineering problems and solving them, being able to: - use analytical, simulation and experimental methods; - recognize their systemic and non-technical aspects, including ethical connotations; - conduct a preliminary economic assessment of the proposed solutions and planned engineering activities; - perform a critical analysis of the functioning of existing technical solutions to further evaluate them;	CAST2A_U01, CAST2A_U03, CAST2A_U04, CAST2A_U07
P7S_UW_A_Inz_02	ability to design solutions in compliance with the given specification as well as being able to: create simple devices, facilities and systems typical for the study major or implement processes using skillfully chosen methods, techniques, tools and materials	CAST2A_U02, CAST2A_U05, CAST2A_U06, CAST2A_U08

Field of study-prescribed outcomes coverage matrix

Field of study: Metalcasting Engineering

2025/2026/N/IIi/O/CAST/all

Course	Code	Semestr	CAST2A_W01	CAST2A_W02	CAST2A_W03	CAST2A_W04	CAST2A_W05	CAST2A_W06	CAST2A_W07	CAST2A_U01	CAST2A_U02	CAST2A_U03	CAST2A_U04	CAST2A_U05	CAST2A_U06	CAST2A_U07	CAST2A_U08	CAST2A_K01	CAST2A_K02	CAST2A_K03	CAST2A_K04	CAST2A_K05
Computer aided technology of art castings	OCASTN.IIi1K.15423.25	1s			x			x						x		x		x				x
Molding and core sands in ecological aspect	OCASTN.IIi1K.15592.25	1s			x	x		x		x	x	x	x					x	x	x	x	x
Basics of designing industrial forms	OCASTN.IIi1K.15508.25	1s			x	x	x	x			x			x				x	x		x	
Foundry mold and cores materials	OCASTN.IIi1K.15402.25	1s		x	x							x				x		x	x			
Special properties alloys	OCASTN.IIi1K.15403.25	1s			x	x					x	x						x	x			
Special casting methods	OCASTN.IIi1K.15425.25	1s		x	x		x		x			x	x	x	x	x				x		x
Properties of materials and test methods	OCASTN.IIi1K.15419.25	1s				x								x								x
Computer networks and computer aided systems in technology	OCASTN.IIi1K.15397.25	1s			x			x		x						x	x	x	x			
Theory of metallurgical and foundry processes	OCASTN.IIi1K.15420.25	1s	x					x		x				x								x
Technological processes shaping the structure and properties of castings	OCASTN.IIi1K.15421.25	1s			x	x						x	x						x		x	
Computer casting design optimization	OCASTN.IIi1K.15398.25	1s	x											x		x			x			
Molds technology	OCASTN.IIi1K.15422.25	1s		x	x								x	x		x						x
Mold design for artistic and precision casting	OCASTN.IIi2K.15408.25	2s		x	x	x	x	x	x		x		x	x		x		x	x	x	x	
Thin wall castings: technology and applications	OCASTN.IIi2K.15509.25	2s		x	x	x					x	x							x	x		
Technology of non-ferrous metals melting and casting	OCASTN.IIi2K.15411.25	2s			x	x						x							x			

Course	Code	Semestr	CAST2A_W01	CAST2A_W02	CAST2A_W03	CAST2A_W04	CAST2A_W05	CAST2A_W06	CAST2A_W07	CAST2A_U01	CAST2A_U02	CAST2A_U03	CAST2A_U04	CAST2A_U05	CAST2A_U06	CAST2A_U07	CAST2A_U08	CAST2A_K01	CAST2A_K02	CAST2A_K03	CAST2A_K04	CAST2A_K05
Surface treatment of metal products	OCASTN.IIi2K.15426.25	2s	x		x						x							x				
The technology of art and precision castings	OCASTN.IIi2K.15409.25	2s			x									x								x
Corrosion Science	OCASTN.IIi2K.01644.25	2s	x			x								x						x	x	x
Technology of cast steel melting and casting	OCASTN.IIi2K.15427.25	2s		x									x									x
Technology of cast iron melting and casting	OCASTN.IIi2K.15412.25	2s	x	x							x	x						x	x			
Modern methods to determination of ecological aspect in molding and core sands	OCASTN.IIi2K.15593.25	2s			x				x		x		x				x		x		x	
Heat treatment of castings	OCASTN.IIi2K.15404.25	2s			x						x								x			x
Plastics and their processing	OCASTN.IIi2K.15405.25	2s	x	x		x					x	x		x				x	x		x	
Reverse engineering	OCASTN.IIi2K.12196.25	2s	x	x	x	x	x	x	x		x		x	x		x	x	x	x	x	x	x
Casting defects and non-destructive testing	OCASTN.IIi2K.15406.25	2s			x	x					x	x	x	x				x	x			
Diploma Seminar	OCASTN.IIi4K.01432.25	3s							x		x	x	x			x		x				
Minimalism and other modern philosophies of life	OCASTN.IIi4HS.14258.25	3s	x						x	x									x			
Problems of contemporary engineering	OCASTN.IIi4HS.15428.25	3s			x				x		x								x		x	
Molecular spectroscopy for metallurgy. Basis and application	OCASTN.IIi4K.06694.25	3s	x			x				x	x	x	x	x			x	x	x	x		x
Principles of production management	OCASTN.IIi4HS.15486.25	3s			x				x			x					x				x	
Experimental methods and numerical simulation for mechanical characterization of solids: application	OCASTN.IIi4K.05914.25	3s	x			x		x		x	x					x		x	x	x	x	x
Reverse logistics in all aspects of lifestyle and ecology	OCASTN.IIi4HS.15418.25	3s			x				x		x								x		x	
Diploma Thesis	OCASTN.IIi4K.01412.25	3s	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x		x
Sum (obligatory):			7	9	17	11	5	8	5	4	12	11	10	13	2	10	3	13	15	5	6	11

Course	Code	Semestr	CAST2A_W01	CAST2A_W02	CAST2A_W03	CAST2A_W04	CAST2A_W05	CAST2A_W06	CAST2A_W07	CAST2A_U01	CAST2A_U02	CAST2A_U03	CAST2A_U04	CAST2A_U05	CAST2A_U06	CAST2A_U07	CAST2A_U08	CAST2A_K01	CAST2A_K02	CAST2A_K03	CAST2A_K04	CAST2A_K05
Sum (elective):			4	1	5	4	0	1	5	3	6	3	2	2	0	1	3	2	7	4	6	3
Sum:			11	10	22	15	5	9	10	7	18	14	12	15	2	11	6	15	22	9	12	14

Characteristics matrix of learning outcomes in relation to modules

Major: Metalcasting Engineering

2025/2026/N/IIi/O/CAST/all

Course	Code	Semestr	P7S_WG_A	P7S_WG_A_Inz	P7S_WK_A	P7S_WK_A_Inz	P7S_UK_A	P7S_UW_A_Inz_01	P7S_UO_A	P7S_UW_A_Inz_02	P7S_UW_A	P7S_UU_A	P7S_KK_A	P7S_KR_A	P7S_KO_A
Computer aided technology of art castings	OCASTN.IIi1K.15423.25	1s	x	x				x		x	x		x		x
Molding and core sands in ecological aspect	OCASTN.IIi1K.15592.25	1s	x	x			x	x	x	x	x		x	x	x
Basics of designing industrial forms	OCASTN.IIi1K.15508.25	1s	x	x					x	x	x		x		x
Foundry mold and cores materials	OCASTN.IIi1K.15402.25	1s	x	x				x			x		x		
Special properties alloys	OCASTN.IIi1K.15403.25	1s	x	x				x	x	x	x		x		
Special casting methods	OCASTN.IIi1K.15425.25	1s	x	x	x	x		x		x	x			x	x
Properties of materials and test methods	OCASTN.IIi1K.15419.25	1s	x	x						x	x				x
Computer networks and computer aided systems in technology	OCASTN.IIi1K.15397.25	1s	x	x			x	x		x	x	x	x		
Theory of metallurgical and foundry processes	OCASTN.IIi1K.15420.25	1s	x	x			x	x		x	x				x
Technological processes shaping the structure and properties of castings	OCASTN.IIi1K.15421.25	1s	x	x				x			x		x		x
Computer casting design optimization	OCASTN.IIi1K.15398.25	1s	x	x				x		x	x		x		
Molds technology	OCASTN.IIi1K.15422.25	1s	x	x				x		x	x				x
Mold design for artistic and precision casting	OCASTN.IIi2K.15408.25	2s	x	x	x	x		x	x	x	x		x	x	x
Thin wall castings: technology and applications	OCASTN.IIi2K.15509.25	2s	x	x				x	x	x	x		x	x	
Technology of non-ferrous metals melting and casting	OCASTN.IIi2K.15411.25	2s	x	x				x			x		x		

Course	Code	Semestr	P7S_WG_A	P7S_WG_A_Inz	P7S_WK_A	P7S_WK_A_Inz	P7S_UK_A	P7S_UW_A_Inz_01	P7S_UO_A	P7S_UW_A_Inz_02	P7S_UW_A	P7S_UU_A	P7S_KK_A	P7S_KR_A	P7S_KO_A
Surface treatment of metal products	OCASTN.IIi2K.15426.25	2s	x	x					x	x			x		
The technology of art and precision castings	OCASTN.IIi2K.15409.25	2s	x	x						x	x				x
Corrosion Science	OCASTN.IIi2K.01644.25	2s	x	x						x	x			x	x
Technology of cast steel melting and casting	OCASTN.IIi2K.15427.25	2s	x	x				x			x				x
Technology of cast iron melting and casting	OCASTN.IIi2K.15412.25	2s	x	x				x	x	x	x		x		
Modern methods to determination of ecological aspect in molding and core sands	OCASTN.IIi2K.15593.25	2s	x	x	x	x		x	x	x	x	x	x		x
Heat treatment of castings	OCASTN.IIi2K.15404.25	2s	x	x					x	x			x		x
Plastics and their processing	OCASTN.IIi2K.15405.25	2s	x	x				x	x	x	x		x		x
Reverse engineering	OCASTN.IIi2K.12196.25	2s	x	x	x	x		x	x	x	x	x	x	x	x
Casting defects and non-destructive testing	OCASTN.IIi2K.15406.25	2s	x	x				x	x	x	x		x		
Diploma Seminar	OCASTN.IIi4K.01432.25	3s			x	x		x	x	x	x		x		
Minimalism and other modern philosophies of life	OCASTN.IIi4HS.14258.25	3s	x	x	x	x	x	x					x		
Problems of contemporary engineering	OCASTN.IIi4HS.15428.25	3s	x	x	x	x			x	x			x		x
Molecular spectroscopy for metallurgy. Basis and application	OCASTN.IIi4K.06694.25	3s	x	x			x	x	x	x	x	x	x	x	x
Principles of production management	OCASTN.IIi4HS.15486.25	3s	x	x	x	x		x		x	x	x			x
Experimental methods and numerical simulation for mechanical characterization of solids: application	OCASTN.IIi4K.05914.25	3s	x	x			x	x	x	x	x		x	x	x
Reverse logistics in all aspects of lifestyle and ecology	OCASTN.IIi4HS.15418.25	3s	x	x	x	x			x	x			x		x
Diploma Thesis	OCASTN.IIi4K.01412.25	3s	x	x	x	x	x	x	x	x	x	x	x	x	x
Sum (obligatory):			23	23	5	5	4	19	12	20	22	3	18	5	15

Course	Code	Semestr	P7S_WG_A	P7S_WG_A_Inz	P7S_WK_A	P7S_WK_A_Inz	P7S_UK_A	P7S_UW_A_Inz_01	P7S_UO_A	P7S_UW_A_Inz_02	P7S_UW_A	P7S_UU_A	P7S_KK_A	P7S_KR_A	P7S_KO_A
Sum (elective):			9	9	5	5	3	6	6	8	6	3	7	4	7
Sum:			32	32	10	10	7	25	18	28	28	6	25	9	22

Matrix of learning outcomes prescribed to a field of study with related forms of classes and the method of testing

Major: Metalcasting Engineering

2025/2026/N/IIi/O/CAST/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
Computer aided technology of art castings	Lectures, Laboratory classes	Activity during classes, Activity during classes, Execution of a project, Completion of laboratory classes	CAST2A_W06, CAST2A_W03, CAST2A_U07, CAST2A_U05, CAST2A_K01, CAST2A_K05
Molding and core sands in ecological aspect	Lectures, Laboratory classes	Activity during classes, Test results, Activity during classes, Execution of laboratory classes, Test, Report on completion of a practical placement, Involvement in teamwork	CAST2A_W03, CAST2A_W04, CAST2A_W06, CAST2A_U01, CAST2A_U02, CAST2A_U03, CAST2A_U04, CAST2A_K01, CAST2A_K02, CAST2A_K03, CAST2A_K04, CAST2A_K05
Basics of designing industrial forms	Lectures, Laboratory classes	Activity during classes, Activity during classes, Execution of a project, Project, Case study	CAST2A_W05, CAST2A_W06, CAST2A_W03, CAST2A_W04, CAST2A_U02, CAST2A_U05, CAST2A_K01, CAST2A_K02, CAST2A_K04
Foundry mold and cores materials	Lectures, Laboratory classes	Activity during classes, Test results, Execution of laboratory classes, Report on completion of a practical placement	CAST2A_W02, CAST2A_W03, CAST2A_U03, CAST2A_U07, CAST2A_K01, CAST2A_K02
Special properties alloys	Lectures, Laboratory classes	Activity during classes, Activity during classes, Execution of laboratory classes, Report	CAST2A_W03, CAST2A_W04, CAST2A_U02, CAST2A_U03, CAST2A_K01, CAST2A_K02
Special casting methods	Lectures, Laboratory classes	Test, Confirmation of completion of practical placement programme, Report, Report on completion of a practical placement	CAST2A_W03, CAST2A_W05, CAST2A_W07, CAST2A_W02, CAST2A_U03, CAST2A_U04, CAST2A_U06, CAST2A_U07, CAST2A_U05, CAST2A_K03, CAST2A_K05
Properties of materials and test methods	Lectures, Laboratory classes	Test, Completion of laboratory classes, Test, Report, Completion of laboratory classes	CAST2A_W04, CAST2A_U05, CAST2A_K05
Computer networks and computer aided systems in technology	Lectures, Laboratory classes	Activity during classes, Test results, Completion of laboratory classes	CAST2A_W06, CAST2A_W03, CAST2A_U01, CAST2A_U07, CAST2A_U08, CAST2A_K01, CAST2A_K02
Theory of metallurgical and foundry processes	Lectures, Laboratory classes	Examination, Completion of laboratory classes, Activity during classes, Execution of a project, Examination, Completion of laboratory classes	CAST2A_W01, CAST2A_W06, CAST2A_U01, CAST2A_U05, CAST2A_K05
Technological processes shaping the structure and properties of castings	Lectures, Laboratory classes	Activity during classes, Participation in a discussion, Examination, Activity during classes, Test, Report	CAST2A_W03, CAST2A_W04, CAST2A_U03, CAST2A_U04, CAST2A_K02, CAST2A_K04

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
Computer casting design optimization	Lectures, Laboratory classes	Activity during classes, Execution of laboratory classes, Test results, Execution of laboratory classes, Oral answer	CAST2A_W01, CAST2A_U05, CAST2A_U07, CAST2A_K02
Molds technology	Lectures, Laboratory classes, Project classes	Examination, Confirmation of completion of practical placement programme, Execution of laboratory classes, Report, Completion of laboratory classes, Project	CAST2A_W02, CAST2A_W03, CAST2A_U04, CAST2A_U07, CAST2A_U05, CAST2A_K05
Mold design for artistic and precision casting	Project classes	Activity during classes, Participation in a discussion, Execution of a project, Examination, Test results, Presentation	CAST2A_W02, CAST2A_W03, CAST2A_W05, CAST2A_W06, CAST2A_W04, CAST2A_W07, CAST2A_U02, CAST2A_U04, CAST2A_U05, CAST2A_U07, CAST2A_K01, CAST2A_K02, CAST2A_K03, CAST2A_K04
Thin wall castings: technology and applications	Lectures, Seminars	Activity during classes, Test results, Activity during classes, Presentation	CAST2A_W03, CAST2A_W04, CAST2A_W02, CAST2A_U02, CAST2A_U03, CAST2A_K02, CAST2A_K03
Technology of non-ferrous metals melting and casting	Lectures, Laboratory classes	Activity during classes, Test, Examination, Test, Report	CAST2A_W04, CAST2A_W03, CAST2A_U03, CAST2A_K02
Surface treatment of metal products	Lectures, Laboratory classes	Activity during classes, Examination, Test, Report, Completion of laboratory classes	CAST2A_W01, CAST2A_W03, CAST2A_U02, CAST2A_K01
The technology of art and precision castings	Lectures, Laboratory classes	Activity during classes, Test, Examination, Test, Report	CAST2A_W03, CAST2A_U05, CAST2A_K05
Corrosion Science	Lectures, Seminars	Presentation, Involvement in teamwork, Presentation	CAST2A_W01, CAST2A_W04, CAST2A_U05, CAST2A_K03, CAST2A_K04, CAST2A_K05
Technology of cast steel melting and casting	Lectures, Laboratory classes	Activity during classes, Examination, Test, Report	CAST2A_W02, CAST2A_U04, CAST2A_K05
Technology of cast iron melting and casting	Lectures, Laboratory classes	Activity during classes, Examination, Test, Report, Completion of laboratory classes	CAST2A_W01, CAST2A_W02, CAST2A_U02, CAST2A_U03, CAST2A_K01, CAST2A_K02
Modern methods to determination of ecological aspect in molding and core sands	Lectures, Seminars	Participation in a discussion, Execution of a project, Project, Case study	CAST2A_W03, CAST2A_W07, CAST2A_U02, CAST2A_U04, CAST2A_U08, CAST2A_K02, CAST2A_K04
Heat treatment of castings	Lectures, Laboratory classes	Activity during classes, Participation in a discussion, Test, Participation in a discussion, Test, Report, Involvement in teamwork	CAST2A_W03, CAST2A_U02, CAST2A_K02, CAST2A_K05

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
Plastics and their processing	Lectures, Laboratory classes	Test, Test, Report	CAST2A_W01, CAST2A_W02, CAST2A_W04, CAST2A_U02, CAST2A_U03, CAST2A_U05, CAST2A_K01, CAST2A_K02, CAST2A_K04
Reverse engineering	Lectures, Laboratory classes	Test, Activity during classes, Report, Test results	CAST2A_W01, CAST2A_W02, CAST2A_W03, CAST2A_W04, CAST2A_W05, CAST2A_W06, CAST2A_W07, CAST2A_U02, CAST2A_U04, CAST2A_U05, CAST2A_U07, CAST2A_U08, CAST2A_K01, CAST2A_K02, CAST2A_K03, CAST2A_K04, CAST2A_K05
Casting defects and non-destructive testing	Lectures, Laboratory classes	Test, Presentation, Oral answer, Work done within the framework of a practical placement, Case study	CAST2A_W03, CAST2A_W04, CAST2A_U03, CAST2A_U04, CAST2A_U05, CAST2A_U02, CAST2A_K01, CAST2A_K02
Diploma Seminar	Seminars	Activity during classes, Diploma thesis preparation, Presentation	CAST2A_W07, CAST2A_U02, CAST2A_U04, CAST2A_U07, CAST2A_U03, CAST2A_K01
Minimalism and other modern philosophies of life	Lectures, Seminars	Activity during classes, Activity during classes, Participation in a discussion, Presentation	CAST2A_W07, CAST2A_W01, CAST2A_U01, CAST2A_K02
Problems of contemporary engineering	Lectures, Seminars	Test, Test, Case study, Presentation	CAST2A_W03, CAST2A_W07, CAST2A_U02, CAST2A_K02, CAST2A_K04
Molecular spectroscopy for metallurgy. Basis and application	Lectures, Seminars	Presentation, Participation in a discussion	CAST2A_W01, CAST2A_W04, CAST2A_U01, CAST2A_U02, CAST2A_U03, CAST2A_U04, CAST2A_U05, CAST2A_U08, CAST2A_K01, CAST2A_K02, CAST2A_K03, CAST2A_K05
Principles of production management	Lectures, Seminars	Activity during classes, Test, Activity during classes, Participation in a discussion, Presentation	CAST2A_W03, CAST2A_W07, CAST2A_U03, CAST2A_U08, CAST2A_K04
Experimental methods and numerical simulation for mechanical characterization of solids: application	Lectures, Seminars	Activity during classes, Test, Test, Presentation	CAST2A_W01, CAST2A_W06, CAST2A_W04, CAST2A_U01, CAST2A_U02, CAST2A_U07, CAST2A_K01, CAST2A_K02, CAST2A_K03, CAST2A_K04, CAST2A_K05
Reverse logistics in all aspects of lifestyle and ecology	Lectures, Seminars	Participation in a discussion, Execution of a project, Project, Case study	CAST2A_W03, CAST2A_W07, CAST2A_U02, CAST2A_K02, CAST2A_K04
Diploma Thesis	Diploma Thesis	Diploma thesis, Preparation and conduct of scientific research	CAST2A_W01, CAST2A_W02, CAST2A_W03, CAST2A_W04, CAST2A_W05, CAST2A_W06, CAST2A_W07, CAST2A_U01, CAST2A_U02, CAST2A_U03, CAST2A_U04, CAST2A_U05, CAST2A_U06, CAST2A_U07, CAST2A_U08, CAST2A_K02, CAST2A_K03, CAST2A_K05

ECTS credits calculations

Field of study: Metalcasting Engineering

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	23
core science classes relevant to a given major	9
practical classes, developing practical skills, including laboratory, design, practical and workshop classes	50
classes subject to choice by the student (in the amount of not less than 30% of the number of ECTS credits necessary to obtain qualifications corresponding to the level of education)	55
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	4
practical placements	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 credits 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)	80
classes shaping practical skills in the amount greater than 50% of the number of ECTS credits required to complete studies at a given level (applies only to studies with a practical profile)	

Detailed rules of the implementation of the curriculum estabilished by the Dean of the Faculty (the so-called Study Rules)

Field of study: Metalcasting Engineering

Enrollment rules for the next semester

Students who have obtained the number of ECTS points required by the program or have not exceeded the admissible deficit of points (15 ECTS) may be registered for the next semester. The enrollment card includes subjects provided for in the study program for a given semester and overdue subjects that the student intends to complete.

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

Students whose deficit does not exceed 15 ECTS may be registered for the next semester.

ECTS credits debt ceiling

15 ECTS

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 study regulations provide for classes held every other week to be blocked in a shorter period of time. Classes taught by visiting professors are also subject to the blocking rules.

Monitoring semesters

Second.

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

For students who meet the relevant study regulations, the Faculty enables them to study according to an individual plan and program of study or an individual course of study. The decision to qualify for these types of studies is made by the Dean of the Faculty on the basis of the student's individual application.

Implementation of practical placements including monitoring system and completion rules

Apprenticeships are carried out at the first degree of studies.

Rules of elective modules taking

The student chooses modules from those proposed by the Faculty. Detailed selection rules are described for specific item blocks.

Rules of education paths, graduation paths, major choice/eligibility

Not applicable.

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

Graduates of second-cycle studies obtain the professional title of Master. The condition for obtaining a master's degree is:

- completion of a 3-semester cycle of education in part-time second-cycle studies
- completion of all subjects included in the study plan
- writing a master's thesis and positive evaluation of this thesis
- a positive grade from the diploma exam.

Rules for the completion of the diploma thesis:

1. The diploma thesis is intended to confirm that the student has acquired the appropriate knowledge and professional skills characterizing the graduate's profile, with particular emphasis on the diploma profile.
2. A diploma thesis is a written elaboration of a topic, the purpose of which is to obtain specific cognitive or practical elements.
3. Diploma theses may be carried out individually or in teams. In the team implementation of the topic, it is required to define tasks for individual people. The maximum team size is 3 people.
4. The topics of diploma theses, together with the indication of supervisors, are submitted by the Departments. Topics and supervisors are approved by the Dean of the Faculty after obtaining the opinion of the College of the Faculty. The list of topics and their tutors for a given academic year is made available to students on the website of the Faculty of Foundry Engineering (http://www.odlewnictwo.agh.edu.pl) by June 30 of the preceding academic year. Students choose a topic no later than one semester before the planned date of graduation, by September 30 of the preceding year.
5. If the work supervisor is from outside AGH - Akademia Górniczo-Hutnicza im. st. Staszica in Krakow, then the College of the Faculty approves the subject of the diploma thesis and the supervisor.
6. The selected topic should be consulted with the tutor. The purpose of the consultation is to determine the scope and mode of implementation of the topic, and its date formally determines the date of commencement of the implementation of the topic.
7. The diploma thesis is carried out in semester III. Implementation of the topic requires systematic consultations with the tutor. Lack of progress in the completion of the diploma thesis is reported by the supervisor to the Dean of the Faculty.
8. The completed works are presented at the diploma seminar.
9. Heads of departments where diploma theses are carried out are obliged to ensure technical and organizational conditions for their implementation.
10. The completed work is subject to approval and evaluation by the supervisor.
11. Upon agreement with the Dean of the Faculty, the diploma thesis may be written in one of the congress languages.
12. The completed diploma thesis signed by the supervisor should be in the USOS system with all attachments by the end of September at the latest (semester III). The list of attachments is available on the website of the Faculty.

The diploma examination is conducted by the Diploma Examination Committee, which consists of:

- chairman: Dean/Vice-Dean of the Faculty (or a person authorized by the Dean);
- job supervisor;
- work reviewer;

The Committee may also include:

- Head of the Department in which the work/project was carried out;
- a specialist in the field of work, indicated by the Dean.

In the case of an open diploma examination, which may be held at the request of the student or supervisor, persons indicated by the student or supervisor may take part in the examination.

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

The agreed grade for the thesis, the grade for the diploma examination and the grade for studies (based on the extract from the student record book) are entered in the diploma examination protocol and on their basis the final grade for graduation is calculated. The above partial grades affect the final grade of studies with the following weighting:

- the average obtained by the student in all subjects covered by the study plan (with a weight of 60%);
- evaluation of the diploma thesis / project (with a weight of 20%);
- grade from the diploma exam (oral exam) (with a weight of 20%).

Grades are determined with an accuracy of two decimal places, and the final grade - the result of graduation in accordance with the AGH UST Study Regulations.

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

In order to ensure the quality of education in its fields of study and to adapt the curricula to the changing labor market, the Faculty conducts:

1. Monitoring the professional careers of graduates based on data provided by the AGH Career Center.
2. In order to better "adjust" the learning outcomes to the needs of the changing labor market, the Faculty cooperates in the implementation of industrial internships and internships, preparation of engineering and master's theses, study trips with many national research institutes and industrial plants from sectors related to the fields of study implemented at the Faculty. This cooperation strengthens the didactic process and makes graduates better prepared for the profession.
3. The Faculty of Foundry Engineering has a very good didactic, laboratory and experimental infrastructure. It has its own experimental foundry, many specialized laboratory facilities, unique in the country. The structure of the Faculty consists of four departments conducting activities related to didactics, implementation of research and research and development projects, both national and international, contributing to the strengthening of cooperation between science and industry.
4. The Faculty has its own library with a constantly updated collection of specialist publications. The library is equipped with computer stations that allow students to use various databases that are part of the BG AGH collection. It also allows students to use their free time for individual development and deepening their knowledge.