Part *B) of the study programme*

D e s c r i p t i o n o f t h e p r o c e s s r e s u l t i n g i n t h e a c h i e v e m e n t o f l e a r n i n g o u t c o m e s

Faculty offering the field of study:	Faculty of Chemistry
Field of study:	chemistry
Level of study:	second cycle
Level of the Polish Qualifications Framework:	Level 7
Degree profile:	general academic
Allocation of the field of study within academic or artistic discipline(s), to which learning outcomes for a given field of study refer:	**Discipline: CHEMISTRY SCIENCE (100%)** **Major discipline: CHEMISTRY SCIENCE**
Mode of study:	full-time programme
Number of semesters:	4
Number of ECTS required for the award of qualifications corresponding to the level:	120
Total number of teaching hours:	1020
Professional degree awarded to the graduate:	Master of science (MSc)
The relationship between the study programme and NCU mission and strategy:	Prosperity and development of modern society requires the use and continuous development of advanced technology. The need to train highly specialized chemists is therefore one of the conditions for maintaining the current status of our society. That condition requires high skills gained in their studies of chemical secondary education. In this context, the program of Chemistry is perfectly in keeping with the mission of the Nicolaus Copernicus University in Torun, assuming the implementation of the basic objective is to develop and disseminate knowledge by teaching at an

	academic level corresponding to the content of the current and future needs and aspiration of society. The study program fits well with the strategy of UMK assuming that "the university will focus its efforts on achieving the highest level of teaching full-time second and third degree."

Courses/course modules along with expected learning outcomes *

Course module	Course	Expected learning outcomes	Forms and methods of teaching ensuring the achievement of learning outcomes ….	Methods of verifying and assessing expected learning outcomes achieved by the student
Course module Basic	Theoretical chemistry Transition Metal Chemistry and Magnetochemistry Solid and Surface Chemistry Advanced Instrumental Analysis Chemical Technology Hyphenated Separation Techniques	Student upon the graduation with a M.Sc. degree: has theoretical and practical knowledge of modern methods of bioactive substances synthesis and identification; Knows theoretical fundamentals of quantum chemistry computational methods; Knows correlations between the results obtained by theoretical computations and various experimental techniques. Has general knowledge of transition metals chemistry, its development trends and recent findings. Knows and understands theoretical fundamentals of various analytical methods and their application to the interpretation of measurement results. Knows advanced techniques applied in chemical processes; Is able to plan, find in literature, predict possible trends, perform and verify the method of synthesis, determination of composition and properties of a new chemical compound; Is able to specify scientific problems in chemistry, to search for solutions, to present the results of work in the form of written reports as well as an individually prepared project.	Lecture: introductory method - problematic lecture, informative (conventional) Laboratory: independent student work; experiment method; methods programmed with the use of a computer	Continuous assessment (involvement of theoretical preparation for classes, manual proficiency, knowledge and respecting safety regulations); Written tests; short tests; evaluation of individual exercise reports; final test; written exam
Course module Directional	Molecular Spectroscopy Physical Chemistry of Materials Natural and Synthetic Organic Materials Crystallochemistry	Student upon the graduation with a M.Sc. degree: has knowledge of synthesis and characteristics of inorganic as well as organic compounds, catalysts, absorbents, carbon materials, natural and organometallic compounds, polymers, nanomaterials, and their practical use; Knows terms which allow to determine the symmetry of a molecule and crystallographic system and uses the results to obtain information about a substance tested; Knows and understands	Lecture: introductory method - problematic lecture, informative (conventional) Laboratory: independent student work; experiment method; methods programmed with the use of a computer	Continuous assessment (involvement of theoretical preparation for classes, manual proficiency, knowledge and respecting safety regulations); Written tests; short tests; evaluation of individual exercise reports; final test; written exam

	Physicochemistry of Polymers Nanochemistry and Nanomaterials	theoretical fundamentals of analytical methods and their application to the interpretation of measurement results. Is able to plan, find in literature, predict possible trends, perform and verify the method of synthesis, determination of composition and properties of a new chemical compound; Is able to specify scientific problems in chemistry, to search for solutions, to present the results of work in the form of written reports as well as an individually prepared project.		
Course module optional	Pharmaceutical and Cosmetic Materials Membrane Processes in Chemical Technology Materials in Coordination Chemistry Adsorbents and Catalysts	Has in-depth knowledge of a selected branch of chemistry; Knows advanced techniques applied in chemical processes; Is able to prepare and present papers as well as conduct content-related discussions with specialists.	Lecture: introductory method - problematic lecture, informative (conventional) Laboratory: independent student work; experiment method; methods programmed with the use of a computer	Continuous assessment (involvement of theoretical preparation for classes, manual proficiency, knowledge and respecting safety regulations); Written tests; short tests; evaluation of individual exercise reports; final test; written exam
Practical	Conductive and Photosensible Polymer Materials Organometalic and Bioinorganic Materials Carbon Materials Preparation and Properties	Has in-depth knowledge of a selected branch of chemistry; Knows advanced techniques applied in chemical processes; Is able to prepare and present papers as well as conduct content-related discussions with specialists.	Lecture: introductory method - problematic lecture, informative (conventional) Laboratory: independent student work; experiment method; methods programmed with the use of a computer	Continuous assessment (involvement of theoretical preparation for classes, manual proficiency, knowledge and respecting safety regulations); Written tests; short tests; evaluation of individual exercise reports; final test; written exam
Foreign language classes	English in Chemistry II	Has knowledge about the connections between chemistry and other areas of knowledge, necessary for the implementation of the diploma thesis Can use English at intermediate level, I use this knowledge during my studies while studying and preparing my diploma	Exercises: Cognitive and communication method using various techniques, media, authentic materials and varied forms of student work with an	written exam (oral) or oral exam The continuous assessment determined by the lecturers (commitment, diligence, preparation for classes)

		thesis. He works alone and in a team, he is responsible for the tasks related to team work	emphasis on academic discourse including: discussion, text analysis, data interpretation and presentation of work results	
Elective course module	University-wide courses	He acquires general knowledge from other fields and scientific disciplines, eg humanistic. Acquires the ability to independently manage their own intellectual development and interdisciplinary interests. He is focused on constantly acquiring new knowledge, he sees limitations of his own knowledge and understands the need for continuous education.	Lecture: introductory method - problematic lecture, informative (conventional)	Determined by lecturers, graded credit or exam
Diploma project and/ or diploma examination ***	Seminar Diploma laboratory* - individual	Is able to find information in scientific journals and popular science magazines as well as chemical databases; Is able to design and perform an experiment as well as analyse its results critically; Is aware of his/her level of knowledge and understands the need for lifelong learning. Is able to undertake actions to extend and deepen the knowledge of chemistry; Is aware of the importance of being professional, recognising and appreciating intellectual honesty, observing the code of professional ethics both in his/her activities and activities undertaken by other persons. Has sufficient knowledge of occupational health and safety regulations that allows to work independently and perform unsupervised research or measurement-related work; Can formulate and present opinions on fundamental chemical issues and developments in this area	Laboratory: independent student work; experiment method Seminar: student presentations, discussion diploma exam	The continuous assessment determined by the lecturers (commitment, diligence, theoretical preparation for classes, manual proficiency, knowledge and compliance with health and safety regulations); oral diploma exam

Detailed allocation of ECTS credits

Academic or artistic disciplines, to which learning outcomes refer:

	Artistic or academic discipline	**ECTS credits**	
		number	**%**
1.	**Chemical science**	**120**	**100**

Course modules	Course	No of ECTS credits	No of ECTS credits in the discipline: *(enter names of disciplines)***			No of ECTS credits for elective courses	No of ECTS credits obtained by the student in classes conducted with direct contact with the teacher or tutor	No of ECTS credits obtained by the student as a result of: courses related to academic activity within a discipline or disciplines, to which the field of study is assigned ******/ courses focused on training practical skills *******
			chemical science	linguistics	other			
Course module Basic	Theoretical chemistry	6	6				2,8	6
	Transition Metal Chemistry and Magnetochemistry	6	6				2,8	6
	Solid and Surface Chemistry	6	6				2,8	6
	Advanced Instrumental Analysis	6	6				2,8	6
	Chemical Technology	6	6				2,8	6
	Hyphenated Separation Techniques	6	6				2,8	6
Course module Directional	Molecular Spectroscopy	6	6				2,8	6
	Physical Chemistry of Materials	6	6				2,8	6
	Natural and Synthetic Organic Materials	6	6				2,8	6
	Crystallochemistry	6	6				2,8	6
	Physicochemistry of Polymers	6	6				2,8	6

	Nanochemistry and Nanomaterials	6	6				2,8	6
Course module optional	Pharmaceutical and Cosmetic Materials	6	6			6	2,8	6
	Membrane Processes in Chemical Technology							
	Materials in Coordination Chemistry	6	6			6	2,8	6
	Adsorbents and Catalysts							
Course module practice	Conductive and Photosensible Polymer Materials	4	4			4	2,8	4
	Organometalic and Bioinorganic Materials							
	Carbon Materials Preparation and Properties							
Foreign language classes	English in chemistry II	3		3			1,8	
Elective course module	University-wide courses	2			2			
Diploma project and/or diploma examination ***	Seminar	2	2			2	1,2	2
	Diploma laboratory* - individual	25	25			25	16	25
IN TOTAL:		**120**	**115**	**3**	**2**	**43**	**61**	**115**
		100%	**95,8%**	**2,5%**	**1,7%**	**35,8%**	**50,8%**	**95,8%**
			120 100%					

*** the description of a course sylabus is attached to the study programme**

** The programme of practical studies provides for vocational internships that last at least:

- 6 months – on first cycle and long cycle studies,
- 3 months – on second cycle studies.

*** The diploma project is:
- obligatory on second cycle and long cycle studies,
- optional on first cycle studies.

**** names of academic and artistic disciplines must be compliant with the regulation of the Minister of Science and Higher Education of 20 September 2018 on fields of science and academic disciplines and artistic disciplines (Journal of Laws [Dz. U.] of 2018, item 1818)

********* refers to general academic profile

********** refers to practical profile

The study programme – Part B) – Description of the process resulting in the achievement of learning outcomes (with information under the table referring to the date of its adoption by the Faculty Board and the academic year it is to be effective from) must be signed by the Dean of the Faculty

This study programme is effective as of winter semester of the academic year 2019/2020.

This study programme was adopted by the Board of the Faculty of Chemistry on 13th march 2019.

/-/ Prof. dr hab. Edward Szłyk

(Dean's signature)