



# CURRICULUM

Study Type	Bachelor
Study Language	Czech
Faculty	Faculty of Chemical Engineering
Study programme	Nano and Microtechnology in Chemical Engineering
Study sub-programme	Nano and microtechnology in chemical engineering
Year	2019/2020



## Organization of the academic year 2017/2018

The academic year **2017/2018** starts on **11th September 2017** and ends on **7th September 2018**

### Structure of the academic year

<b>Winter semester (WS)</b>	
The dates of registration for the summer semester will be organized by the Dean´s office of the respective faculty no later than by <b>29th September 2017</b> .	
Lectures, seminars, laboratory work:	18. 9. – 22. 12. 2017
Assessment period:	2. 1. – 16. 2. 2018

<b>Summer semester (SS)</b>	
The dates of registration for the summer semester will be organized by the Dean´s office of the respective faculty no later than <b>2nd March 2018</b>	
Lectures, seminars, laboratory work:	19. 2. – 25. 5. 2018
Assessment period:	28. 5. – 29. 6. 2018 27. 8. – 7. 9. 2018

The lessons start no earlier than at 8:00 a.m. The lessons always start on the hour, the duration of one lesson is 50 minutes.

The Rector´s Days: **20. 11. and 24. 11. 2017**

The Students´ Scientific Conference: 20. 11. 2017  
Open Days: 24. 11. and 25. 11. 2017  
19. 1. and 20. 1. 2018

## **Enrolment in compulsory-optional and optional courses and registration for timetable**

Registration for the timetable for WS:	7. 9. – 15. 9. 2017
Preliminary enrolment in compulsory-optional and optional courses for SS:	23. 11. – 1. 12. 2017
Registration for the timetable for SS:	8. 2. -16. 2. 2018
Preliminary enrolment in compulsory-optional and optional courses for WS 2018/19:	10. 5. – 18. 5. 2018

## **Important dates for students of III. year of Bachelor studies**

<b>Check of study requirements fulfillment:</b>	
I. term of State Final Examination*:	by 8. 6. 2018
II. term of State Final Examination*:	by 10. 7. 2018

<b>Submission of Bachelor Diploma Thesis</b>	
I. term of State Final Examination*:	by 8. 6. 2018
II. term of State Final Examination*:	by 10. 7. 2018

<b>State Final Examination terms:</b>	
I. term of State Final Examination*:	18. 6. – 29. 6. 2018
II. term of State Final Examination*:	27. 8. – 7. 9. 2018

<b>State Final Examination terms for students of Bachelor degree programme Specialization in pedagogics :</b>	
I. term of State Final Examination*:	June 2018
II. term of State Final Examination*:	20. 8. – 30. 8. 2018

\* The exact dates are to be decided by the Dean of the respective faculty.

**The graduation ceremony** for Bachelor degree graduates will be held on **10th October and 11th October 2018.**

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**Abbreviations and their meaning:**

<b>Abbrev. ENG</b>	<b>Abbrev. CZE</b>	
C	Z	credit
MC	KZ	classified credit
Ex	Zk	examination

p	lecture
c	seminar
l	laboratory work

*the numbers preceding an abbreviation indicate number of lessons per week*



Study Programme: **Nano and Microtechnology in Chemical Engineering**  
 Study Sub-programme: **Nano and microtechnology in chemical engineering**  
 Code: **NANO**

### 1st year - WINTER SEMESTER

Code	Subject	Department	Study Hours	Exam	Cred
N101005	General and Inorganic Chemistry I	101	3p+2c	C+Ex	8
N111009	Toxicology and Ecology	111	2p	Ex	3
N402077	Introduction to nano and microtechnology	402	3p	Ex	4
N409010	Balance Calculations	409	2c	MC	3
N413022	Mathematics I	413	3p+4c	C+Ex	9
N445001	Applications of Computer Science	445	3c	MC	3
<b>List of optional subjects for this semester is located on the page 11</b>					

### 1st year - SUMMER SEMESTER

Code	Subject	Department	Study Hours	Exam	Cred
N110004	Organic Chemistry I	110	2p+2c	C+Ex	6
N403011A	Physical Chemistry I	403	3p+2c	C+Ex	6
N413003	Mathematics II	413	3p+3c	C+Ex	8
N444001	Physics I	444	3p+2c	C+Ex	7
N834008	Professional English Language I	834	2c	C	1
<b>Elective subject 1 (choose at least 1 subject(s) from this group)</b>					
N101003	Inorganic Chemistry: Laboratory I	101	4l	MC	3
N107001	Inorganic Non-Metallic Materials	107	2p	Ex	3
N413010	Computer Algebra System Maple	413	2c	MC	2
N444005	Fundamentals of Machinery	444	2p+1c	C+Ex	4
<b>List of optional subjects for this semester is located on the page 12</b>					

## 2nd year - WINTER SEMESTER

Code	Subject	Department	Study Hours	Exam	Cred
N402002A	Analytical Chemistry I	402	2p+2c	C+Ex	5
N403013A	Physical Chemistry: Laboratory I	403	4l	MC	3
N403041	Physical chemistry of microworld	403	3p+2c	C+Ex	6
N409002A	Unit Operations of Chemical Engineering I	409	2p+3c	C+Ex	6
N444003	Physics: Laboratory	444	3l	MC	3
N834009	Professional English Language II	834	2c	C+Ex	2
<b>Elective subject 2 (choose at least 1 subject(s) from this group)</b>					
N108004	Introduction to Study of Materials	108	2p	Ex	3
N320001	Biochemistry I	320	3p	Ex	5
N413004A	Applied Statistics	413	1p+2c	C+Ex	4
N413005	Numerical Methods	413	3p+2c	C+Ex	7
N437005	Enterprise Economics	837	2p+1c	C+Ex	4
N444006	Physics II	444	2p+2c	C+Ex	5
<b>List of optional subjects for this semester is located on the page 14</b>					

## 2nd year - SUMMER SEMESTER

Code	Subject	Department	Study Hours	Exam	Cred
N143013A	Chemical Informatics	143	1p+1c	MC	2
N402003A	Analytical Chemistry: Laboratory I	402	5l	MC	4
N402078	Modern Analytical Methods for Nanotechnology	402	2p	Ex	3
N403036	Physical Chemistry of Surfaces and Colloidal Systems	403	2p+1c	C+Ex	4
N409013A	Chemical Engineering: Laboratory	409	3l	MC	3
N409071	Dispersion systems I	409	3p+2c	C+Ex	7
<b>Elective subject 3 (choose at least 1 subject(s) from this group)</b>					
N403003	Introduction to Chemical-Engineering Thermodynamics	403	1p+2c	C+Ex	4
N409055	Multifunctional Chemical and Biochemical Micro-Systems	409	2p	Ex	3
N444007	Fundamentals of Electronics	444	2p+2c	C+Ex	5
N445004	Mathematical Methods in Engineering	445	2p+2c	C+Ex	5
<b>List of optional subjects for this semester is located on the page 17</b>					



**3rd year - WINTER SEMESTER**

Code	Subject	Department	Study Hours	Exam	Cred
N402079	Laboratory of characterization of nano and microsystems	402	4l	MC	3
N409004	Chemical Engineering: Project	409	1c	MC	2
N409073	Laboratory of manufacturing of nano and micromaterials	409	4l	MC	3
N444010	Biophysics	444	2p+1c	C+Ex	4
N444028	Technology of Thin Layers and Sensors	444	3p+1c	C+Ex	6
<b>Elective subjects 4, 5 (choose at least 2 subject(s) from this group)</b>					
N403017	Computational Chemistry	403	2p	Ex	3
N409003	Unit Operations of Chemical Engineering II	409	2p+3c	C+Ex	6
N409012	Biological Process Engineering	409	2p+1c	C+Ex	4
N409072	Dispersions systems II	409	2p+1c	C+Ex	4
N409075	Inovation of structure products	409	2p+1c	C+Ex	4
N437022	Basic Marketing of Chemical Products	837	2p	Ex	3
<b>List of optional subjects for this semester is located on the page 20</b>					

**3rd year - SUMMER SEMESTER**

Code	Subject	Department	Study Hours	Exam	Cred
N126027	Physical chemistry of nanomaterials	126	2p+1c	C+Ex	4
N409074	Seminar of nano and microtechnology	409	3c	C	3
N444004A	Measuring and Control Engineering	444	2p	Ex	3
N444020	Measuring and Control Engineering: Laboratory	444	3l	MC	3
N963014	Bachelor Thesis	963	12c	C	15
<b>Elective subject 6 (choose at least 1 subject(s) from this group)</b>					
N126026	Introduction to nanomaterials	126	2p	Ex	3
N403007	Theoretical Chemistry	403	3p+1c	C+Ex	5
N409011	The Chemical Industry and the Environment	409	2p+1c	C+Ex	4
N437001	Basic Logistics	837	2p+2c	C+Ex	5
<b>List of optional subjects for this semester is located on the page 24</b>					



## Optional subjects for 1st year, WINTER SEMESTER

Obory: NANO

Code	Subject	Department	Study Hours	Exam	Cred
N101030	Chemistry: Seminar	101	2c	C	1
N413037	Mathematics: Seminar	413	2c	C	1
N834005	Czech Language I	834	2c	C	1
N834066	English seminar	834	2c	C	0

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## Optional subjects for 1st year, SUMMER SEMESTER

Obory: NANO

Code	Subject	Department	Study Hours	Exam	Cred
N101006	General and Inorganic Chemistry II	101	2p+2c	C+Ex	5
N111041	Physiology	111	1p+1c	C+Ex	3
N112005	Polymeric Materials	112	2p	Ex	3
N216034	Climate Change	216	2p	Ex	3
N217002	Industrial Wasterwaters	217	3p	Ex	5
N217005	Distribution Networks and Sewerage	217	2p+1c	C+Ex	4
N217016	Water Quality Protection	217	2p+1c	C+Ex	4
N218026A	Alternative Energy Sources I	218	2p	Ex	3
N218027	Alternative Energy Sources II	218	2p	Ex	3
N240010	Ecology	240	2p	Ex	3
N323004	Sensory Analysis	323	2p+1c	C+Ex	4
N324002	Production of Food Raw Materials	324	2p	Ex	3
N342025	Plant Remedies and Traditional Medicine	342	2p	Ex	3
N413003	Mathematics II	413	3p+3c	C+Ex	8
N413010	Computer Algebra System Maple	413	2c	MC	2
N444005	Fundamentals of Machinery	444	2p+1c	C+Ex	4
N445002	Algorithms and Programming	445	2c	MC	2
N445004	Mathematical Methods in Engineering	445	2p+2c	C+Ex	5
N445006	Computer Graphics	445	1p+3c	C+Ex	5
N445036	Enterprise Processes Simulation	445	1p+2c	MC	3
N445044	Graphs in Engineering	445	2p+1c	MC	3
N445054	Computer Data Acquisition	445	2p+2c	C+Ex	5
N445079	Information Engineering Project I	445	3c	MC	3
N832004	Political Science	832	2p	C	2
N832009	Modern Czech History	832	2p	C	2
N832011	Human Resource Management	832	2p+1c	C+Ex	4
N832013	Fundamentals of Law	832	2p	Ex	3
N832014	History of Chemistry	832	2p	MC	3
N834006	Czech Language II	834	2c	C	1
N834019	English - pre-intermediate II	834	2c	C	1
N834021	English - intermediate II	834	2c	C	1
N834023	German - beginners II	834	2c	C	1
N834025	German - pre-intermediate II	834	2c	C	1
N834027	German - intermediate II	834	2c	C	1
N834029	French - beginners II	834	2c	C	1
N834031	French - pre-intermediate II	834	2c	C	1

Code	Subject	Department	Study Hours	Exam	Cred
N834033	French - intermediate II	834	2c	C	1
N834035	Russian - beginners II	834	2c	C	1
N834037	Russian - pre-intermediate II	834	2c	C	1
N834045	English - advanced II	834	2c	C	1
N834053	Russian - intermediate II	834	2c	C	1
N834056	Spanish - beginners II	834	2c	C	1
N834057	Spanish - pre-intermediate II	834	2c	C	1
N834059	Spanish - intermediate II	834	2c	C	1

## Optional subjects for 2nd year, WINTER SEMESTER

Obory: NANO

Code	Subject	Department	Study Hours	Exam	Cred
N101001	Safety and Legislation in Chemistry	101	2p	Ex	3
N101004	Inorganic Chemistry: Laboratory II	101	4l	MC	4
N105004	Introduction to Chemical Technologies	105	2p	Ex	3
N105006	Fundamentals of Inorganic Technologies	105	2p	Ex	3
N106001	Materials Degradation	106	2p	Ex	3
N106006	Properties and Testing of Metals	106	2p+1c	C+Ex	4
N106009	Historical Methods of Metal Production and Processing	106	2p	Ex	3
N107021	Waste Treatment: of Building Materials, Glass, Ceramics	107	2p	Ex	3
N107022	Historical Methods of Glass and Ceramic Manufacturing and Processing	107	2p	Ex	3
N108003	Introduction to Mineralogy	108	2p	Ex	3
N108004	Introduction to Study of Materials	108	2p	Ex	3
N108021	Analysis of Solid Pharmaceuticals	108	2p	Ex	3
N108022	Chemistry and Physics of Solid Pharmaceuticals	108	2p	Ex	3
N110005	Organic Chemistry II	110	3p+2c	C+Ex	7
N148003	Preventive Conservation	148	2p	Ex	3
N148027	History of Textiles Manufacturing and Processing	148	2p	Ex	3
N148028	Chemistry of Fibres	148	2p	Ex	3
N148031	Textile Conservation	148	2p	Ex	3
N215005	Fundamentals of Petroleum Processing and Utilization	215	2p	Ex	3
N215006	Organic Technology	215	2p	Ex	3
N215007	Fuels Analysis	215	3p	Ex	5
N216001	Safety and reliability in the power engineering and the other industry	216	2p+1c	C+Ex	4
N216007	Atmospheric Chemistry	216	2p	Ex	3
N216008	Gas Cleaning Technology	216	3p	Ex	5
N216023	Processing of Waste Gases	216	2p+1c	C+Ex	4
N216034	Climate Change	216	2p	Ex	3
N217001	Water Analysis	217	2p	Ex	3
N217006	Fundamentals of Wastewater Treatment	217	3p+2c	C+Ex	7
N217008	Water Treatment	217	2p	Ex	3

Code	Subject	Department	Study Hours	Exam	Cred
N217031	Technologies for Production of Biogas and Biohydrogen	217	2p	Ex	3
N218026	Alternative Energy Sources I	218	2p	Ex	3
N240009	Environmental Chemistry	240	3p	Ex	5
N251005	Laboratory of Fuels	215	6l	MC	4
N322024	Basics cosmetics	322	1p+1c	C+Ex	3
N342001	Bioorganic Chemistry of Natural Compounds	342	2p+2c	C+Ex	5
N342029	Basics Scientific Communication	342	2p+1c	C+Ex	4
N413003A	Mathematics II	413	3p+3c	C+Ex	8
N413005	Numerical Methods	413	3p+2c	C+Ex	7
N413010A	Computer Algebra System Maple	413	2c	MC	2
N413039	Fourier transform for Bc. students	413	2p+2c	C+Ex	5
N437005	Enterprise Economics	837	2p+1c	C+Ex	4
N437019	Basic Food Marketing	837	2p	Ex	3
N437022	Basic Marketing of Chemical Products	837	2p	Ex	3
N437037	Development of Social Competencies	837	2p+1c	C	3
N437061	Introduction to Entrepreneurship	837	2p	Ex	2
N444006	Physics II	444	2p+2c	C+Ex	5
N444008	Measurement in Environmental Protection	444	2p+1c	Ex	4
N444010	Biophysics	444	2p+1c	C+Ex	4
N445003	Database Systems	445	1p+3c	C+Ex	5
N445005	Webdesign I	445	1p+3c	MC	4
N445008	Spreadsheet Applications	445	1p+2c	MC	4
N445011	Presentation Skills	445	1p+3c	MC	3
N445012	Signal Processing	445	3p+2c	C+Ex	5
N445030	Artificial Intelligence	445	2p+2c	C+Ex	5
N445055	Programming Techniques	445	1p+3c	C+Ex	5
N445056	Project Management	445	2p+2c	C+Ex	5
N445078	Introduction to Programming	445	1p+3c	C+Ex	5
N445081	Information Engineering Project II	445	3c	MC	3
N445086	Fundamentals of Microprocessor Technology	445	1p+2c	MC	3
N832001	Microeconomics	832	2p	C	2
N832002	Sociology	832	2p	C	2
N832003	Fundamentals of Philosophy	832	2p	C	2
N832041	European history	832	2p	C	2
N832045	International economics	832	2p	Ex	3

Code	Subject	Department	Study Hours	Exam	Cred
N832048	Intellectual property	832	2p	C	2
N832049	Presentation skills	832	1p+1c	C+Ex	4
N832051	Science Journalism	832	2c	C	2
N834005	Czech Language I	834	2c	C	1
N834018	English - pre-intermediate I	834	2c	C	1
N834020	English - intermediate I	834	2c	C	1
N834022	German - beginners I	834	2c	C	1
N834024	German - pre-intermediate I	834	2c	C	1
N834026	German - intermediate I	834	2c	C	1
N834028	French - beginners I	834	2c	C	1
N834030	French - pre-intermediate I	834	2c	C	1
N834032	French - intermediate I	834	2c	C	1
N834034	Russian - beginners I	834	2c	C	1
N834036	Russian - pre-intermediate I	834	2c	C	1
N834044	English - advanced I	834	2c	C	1
N834052	Russian - intermediate I	834	2c	C	1
N834054	Spanish - beginners I	834	2c	C	1
N834055	Spanish - pre-intermediate I	834	2c	C	1
N834058	Spanish - intermediate I	834	2c	C	1
N834067	Italian language - beginners I	834	2c	C	1



## Optional subjects for 2nd year, SUMMER SEMESTER

Obory: NANO

Code	Subject	Department	Study Hours	Exam	Cred
N101006	General and Inorganic Chemistry II	101	2p+2c	C+Ex	5
N101008	Structure and Properties of Materials	101	2p+1c	C+Ex	4
N106004	Metallurgy	106	2p	Ex	3
N106018	Metallic Materials	106	2p	Ex	3
N106023	Materials Corrosion for Conservators	106	2p	Ex	3
N107001	Inorganic Non-Metallic Materials	107	2p	Ex	3
N107004	Spectroscopic and Microscopic Methods for Characterization of Materials	107	3p+1c	C+Ex	5
N107023	Surface Treatment and Conservation of Glass and Ceramics	107	2p	Ex	3
N108002	Single Crystals	108	2p	Ex	3
N108013	Chemistry of the Environment	108	3p	Ex	4
N110003	Organic Chemistry: Laboratory II	110	4l	MC	4
N111006	Environmental Protection Processes	111	2p+1c	C+Ex	4
N111008	User Software	111	3c	MC	3
N112003	Macromolecular Chemistry	112	2p+1c	C+Ex	4
N112005	Polymeric Materials	112	2p	Ex	3
N148001	Building materials of monuments and their deterioration	148	2p	Ex	3
N215002	Fundamentals of Combustion Processes	215	2p	Ex	3
N216003	Fundamentals of Coal and Gas Processing and Utilization	216	2p	Ex	3
N216034	Climate Change	216	2p	Ex	3
N217002	Industrial Wasterwaters	217	3p	Ex	5
N217004	Decentralised Treatment and Reuse of Wastewater	217	2p	Ex	3
N217005	Distribution Networks and Sewerage	217	2p+1c	C+Ex	4
N217016	Water Quality Protection	217	2p+1c	C+Ex	4
N218004	Fundamentals of Power Engineering	218	2p+1c	C+Ex	4
N218026A	Alternative Energy Sources I	218	2p	Ex	3
N218027	Alternative Energy Sources II	218	2p	Ex	3
N240010	Ecology	240	2p	Ex	3
N240031	Management of chemicals (REACH)	240	1p+1c	MC	3
N320002	Biochemistry II	320	2p	Ex	3
N321001	Food Technology and Biotechnology	321	3p	MC	3
N322002	Physical Properties of Foods I	322	2p+1c	C+Ex	4
N322026	Probiotics and Functional Food I	322	2p	Ex	3

Code	Subject	Department	Study Hours	Exam	Cred
N323001	Food Chemistry	323	2p+2c	C+Ex	5
N323004	Sensory Analysis	323	2p+1c	C+Ex	4
N324002	Production of Food Raw Materials	324	2p	Ex	3
N342002	Raw materials from Sustainable Sources	342	2p	Ex	3
N342022	Isolation and Identification of Natural Compounds	342	2p+1c	C+Ex	4
N342025	Plant Remedies and Traditional Medicine	342	2p	Ex	3
N402007	Analytical Chemistry: Laboratory II	402	4l	MC	4
N403002	Measurement of Basic Physico-Chemical Quantities	403	3c	MC	3
N403003	Introduction to Chemical-Engineering Thermodynamics	403	1p+2c	C+Ex	4
N403014	Physical Chemistry II	403	3p+2c	C+Ex	7
N409002	Unit Operations of Chemical Engineering I	409	2p+3c	C+Ex	6
N413003	Mathematics II	413	3p+3c	C+Ex	8
N413008A	Applied Mathematics	413	2p+2c	C+Ex	5
N413009	Introduction to Mathematical Optimization	413	2p+2c	C+Ex	5
N413010	Computer Algebra System Maple	413	2c	MC	2
N413017	Financial Mathematics	413	2p+1c	MC	3
N413031	Mathematics III	413	2p+2c	C+Ex	5
N413033	Mathematics for Quantum Chemistry	413	2p+2c	C+Ex	5
N437003	Management of Enterprise Processes	837	2p+1c	C+Ex	4
N437006	Financial Accounting	837	2p+2c	C+Ex	5
N437038	Career and Development SelfManagement	837	2p	C	2
N437059	Negotiation and conflict communication	837	1p+2c	MC	3
N444005	Fundamentals of Machinery	444	2p+1c	C+Ex	4
N444007	Fundamentals of Electronics	444	2p+2c	C+Ex	5
N445002	Algorithms and Programming	445	2c	MC	2
N445004	Mathematical Methods in Engineering	445	2p+2c	C+Ex	5
N445006	Computer Graphics	445	1p+3c	C+Ex	5
N445022A	Image Processing I	445	2p+2c	C+Ex	5
N445044	Graphs in Engineering	445	2p+1c	MC	3
N445052	Database Systems Design	445	1p+3c	C+Ex	5
N445054	Computer Data Acquisition	445	2p+2c	C+Ex	5
N445070	Geographical Information Systems	445	2p+1c	MC	3
N445079	Information Engineering Project I	445	3c	MC	3
N832004	Political Science	832	2p	C	2
N832005	Macroeconomics	832	2p	Ex	3

Code	Subject	Department	Study Hours	Exam	Cred
N832009	Modern Czech History	832	2p	C	2
N832010	Selected Topics in Philosophy and the Philosophy of Science	832	2p	C	2
N832011	Human Resource Management	832	2p+1c	C+Ex	4
N832013	Fundamentals of Law	832	2p	Ex	3
N832014	History of Chemistry	832	2p	MC	3
N832015	Fundamentals of Financial Management	832	2p	C	2
N834006	Czech Language II	834	2c	C	1
N834019	English - pre-intermediate II	834	2c	C	1
N834021	English - intermediate II	834	2c	C	1
N834023	German - beginners II	834	2c	C	1
N834025	German - pre-intermediate II	834	2c	C	1
N834027	German - intermediate II	834	2c	C	1
N834029	French - beginners II	834	2c	C	1
N834031	French - pre-intermediate II	834	2c	C	1
N834033	French - intermediate II	834	2c	C	1
N834035	Russian - beginners II	834	2c	C	1
N834037	Russian - pre-intermediate II	834	2c	C	1
N834045	English - advanced II	834	2c	C	1
N834053	Russian - intermediate II	834	2c	C	1
N834056	Spanish - beginners II	834	2c	C	1
N834057	Spanish - pre-intermediate II	834	2c	C	1
N834059	Spanish - intermediate II	834	2c	C	1
N834068	Italian language - beginners II	834	2c	C	1

## Optional subjects for 3rd year, WINTER SEMESTER

Obory: NANO

Code	Subject	Department	Study Hours	Exam	Cred
N101001	Safety and Legislation in Chemistry	101	2p	Ex	3
N101004	Inorganic Chemistry: Laboratory II	101	4l	MC	4
N105002	Electrochemical Processes	105	2p	Ex	3
N106001	Materials Degradation	106	2p	Ex	3
N106003	Materials Corrosion	106	3p	Ex	4
N106006	Properties and Testing of Metals	106	2p+1c	C+Ex	4
N106009	Historical Methods of Metal Production and Processing	106	2p	Ex	3
N106025	Treatment and Conservation of Metal Surfaces	106	2p	Ex	3
N106037	Waste Processing	106	2p	Ex	3
N107005	Technical Mineralogy	107	2p+1c	C+Ex	4
N107006	Fundamentals of Glass and Ceramic Technologies	107	2p+1c	C+Ex	4
N107021	Waste Treatment: of Building Materials, Glass, Ceramics	107	2p	Ex	3
N107022	Historical Methods of Glass and Ceramic Manufacturing and Processing	107	2p	Ex	3
N108001	Structure of Crystals	108	2p	Ex	3
N108003	Introduction to Mineralogy	108	2p	Ex	3
N108004	Introduction to Study of Materials	108	2p	Ex	3
N108018	Gemmology	108	2p	Ex	3
N108021	Analysis of Solid Pharmaceuticals	108	2p	Ex	3
N108022	Chemistry and Physics of Solid Pharmaceuticals	108	2p	Ex	3
N110005	Organic Chemistry II	110	3p+2c	C+Ex	7
N111014	Engineering in the Pharmaceutical Industry	111	3p	Ex	5
N112001	Physics of Polymers	112	2p+1c	C+Ex	4
N112003A	Macromolecular Chemistry	112	2p+1c	C+Ex	4
N112004	Characterization Methods for Polymeric Materials	112	2p+2c	C+Ex	4
N126003	Structure and Properties of Polymers	126	2p	Ex	3
N126012	Introduction to Electronics	126	2p	Ex	3
N148003	Preventive Conservation	148	2p	Ex	3
N148009	Methods of Conservation Survey	148	2p	Ex	3
N148016	History of Handicrafts: Glass, Ceramics and Porcelain	148	2p	Ex	3

Code	Subject	Department	Study Hours	Exam	Cred
N148017	History of Handicrafts: Metals	148	2p	Ex	3
N148027	History of Textiles Manufacturing and Processing	148	2p	Ex	3
N148028	Chemistry of Fibres	148	2p	Ex	3
N148031	Textile Conservation	148	2p	Ex	3
N148040	Technical documentation of clothing	148	2p	Ex	3
N148067	History of clothing	148	2p	Ex	3
N215001	Technical Calculations on PC	215	4c	C	4
N215005	Fundamentals of Petroleum Processing and Utilization	215	2p	Ex	3
N215006	Organic Technology	215	2p	Ex	3
N215007	Fuels Analysis	215	3p	Ex	5
N216001	Safety and reliability in the power engineering and the other industry	216	2p+1c	C+Ex	4
N216007	Atmospheric Chemistry	216	2p	Ex	3
N216008	Gas Cleaning Technology	216	3p	Ex	5
N216023	Processing of Waste Gases	216	2p+1c	C+Ex	4
N217001	Water Analysis	217	2p	Ex	3
N217006	Fundamentals of Wastewater Treatment	217	3p+2c	C+Ex	7
N217008	Water Treatment	217	2p	Ex	3
N217031	Technologies for Production of Biogas and Biohydrogen	217	2p	Ex	3
N218005	Treatment of Feed- and Industrial Water	218	2p+1c	C+Ex	4
N218026	Alternative Energy Sources I	218	2p	Ex	3
N240007	Life Cycle Assessment	240	3p	Ex	5
N251005	Laboratory of Fuels	215	6l	MC	4
N319033	Hygiene and Safety in Microbiology	319	2p	Ex	3
N320009	Microbiology	320	3p	Ex	5
N320081	Molecular genetics and DNA analysis	320	2p	Ex	3
N322024	Basics cosmetics	322	1p+1c	C+Ex	3
N323009	Food Safety	323	2p+1c	C+Ex	4
N323035	Analysis of Foods and Natural Products	323	2p+1c	C+Ex	4
N324001	Principles of Food Preservation and Packaging	324	2p+1c	C+Ex	4
N342026	Chemical Modelling: Seminar	342	3c	MC	3
N342029	Basics Scientific Communication	342	2p+1c	C+Ex	4
N402004	Analytical Chemistry II	402	2p+1c	C+Ex	4
N402007A	Analytical Chemistry: Laboratory II	402	4l	MC	4

Code	Subject	Department	Study Hours	Exam	Cred
N403001	Physico-Chemical Properties of Substances	403	2p+1c	C+Ex	4
N403008	Electrochemistry	403	2p+1c	C+Ex	4
N403012	Physical Chemistry: Laboratory II	403	3l	MC	3
N403049	Experiments of Physical Chemistry in Light of Computer Simulations	403	1c	C	1
N409002A	Unit Operations of Chemical Engineering I	409	2p+3c	C+Ex	6
N409003	Unit Operations of Chemical Engineering II	409	2p+3c	C+Ex	6
N409017	Product Engineering I	409	2p+1c	C+Ex	4
N413003A	Mathematics II	413	3p+3c	C+Ex	8
N413005	Numerical Methods	413	3p+2c	C+Ex	7
N413010A	Computer Algebra System Maple	413	2c	MC	2
N413039	Fourier transform for Bc. students	413	2p+2c	C+Ex	5
N437004	Basic Marketing	837	2p+2c	C+Ex	5
N437005	Enterprise Economics	837	2p+1c	C+Ex	4
N437016	Foundations of Enterprise Financing	837	2p+1c	C+Ex	4
N437019	Basic Food Marketing	837	2p	Ex	3
N437022	Basic Marketing of Chemical Products	837	2p	Ex	3
N437037	Development of Social Competencies	837	2p+1c	C	3
N437060	Systematic problems solving	837	1p+2c	MC	3
N437061	Introduction to Entrepreneurship	837	2p	Ex	2
N444004	Measuring and Control Engineering	444	2p	Ex	3
N444006	Physics II	444	2p+2c	C+Ex	5
N444008	Measurement in Environmental Protection	444	2p+1c	Ex	4
N444010	Biophysics	444	2p+1c	C+Ex	4
N445003	Database Systems	445	1p+3c	C+Ex	5
N445005	Webdesign I	445	1p+3c	MC	4
N445008	Spreadsheet Applications	445	1p+2c	MC	4
N445011	Presentation Skills	445	1p+3c	MC	3
N445012	Signal Processing	445	3p+2c	C+Ex	5
N445028	Computer Control Systems	445	2p+2c	C+Ex	5
N445030	Artificial Intelligence	445	2p+2c	C+Ex	5
N445055	Programming Techniques	445	1p+3c	C+Ex	5
N445056	Project Management	445	2p+2c	C+Ex	5
N445078	Introduction to Programming	445	1p+3c	C+Ex	5
N445081	Information Engineering Project II	445	3c	MC	3
N445086	Fundamentals of Microprocessor Technology	445	1p+2c	MC	3

Code	Subject	Department	Study Hours	Exam	Cred
N832001	Microeconomics	832	2p	C	2
N832002	Sociology	832	2p	C	2
N832003	Fundamentals of Philosophy	832	2p	C	2
N832041	European history	832	2p	C	2
N832043	Soft Skills I	832	2p	C	2
N832045	International economics	832	2p	Ex	3
N832048	Intellectual property	832	2p	C	2
N832049	Presentation skills	832	1p+1c	C+Ex	4
N832051	Science Journalism	832	2c	C	2
N834005	Czech Language I	834	2c	C	1
N834018	English - pre-intermediate I	834	2c	C	1
N834020	English - intermediate I	834	2c	C	1
N834022	German - beginners I	834	2c	C	1
N834024	German - pre-intermediate I	834	2c	C	1
N834026	German - intermediate I	834	2c	C	1
N834028	French - beginners I	834	2c	C	1
N834030	French - pre-intermediate I	834	2c	C	1
N834032	French - intermediate I	834	2c	C	1
N834034	Russian - beginners I	834	2c	C	1
N834036	Russian - pre-intermediate I	834	2c	C	1
N834038	Business English I	834	2c	C	1
N834044	English - advanced I	834	2c	C	1
N834052	Russian - intermediate I	834	2c	C	1
N834054	Spanish - beginners I	834	2c	C	1
N834055	Spanish - pre-intermediate I	834	2c	C	1
N834058	Spanish - intermediate I	834	2c	C	1
N834067	Italian language - beginners I	834	2c	C	1

## Optional subjects for 3rd year, SUMMER SEMESTER

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Code	Subject	Department	Study Hours	Exam	Cred
N101008	Structure and Properties of Materials	101	2p+1c	C+Ex	4
N105001	Applied Chemical Processes	105	2p+1c	C+Ex	4
N106004	Metallurgy	106	2p	Ex	3
N106018	Metallic Materials	106	2p	Ex	3
N106027	Metal Processing Technology	106	2p	Ex	3
N107001	Inorganic Non-Metallic Materials	107	2p	Ex	3
N107004	Spectroscopic and Microscopic Methods for Characterization of Materials	107	3p+1c	C+Ex	5
N107023	Surface Treatment and Conservation of Glass and Ceramics	107	2p	Ex	3
N107028	Enamels, Enrobes, Ceramic Colours and Decoration Techniques	107	2p	Ex	3
N108002	Single Crystals	108	2p	Ex	3
N110006	Structural Analysis	110	2p+1c	C+Ex	4
N110023	Structure and Reactivity of Organic Compounds	110	3p+1c	C+Ex	6
N110026	Fundamentals of Chemistry of Pharmaceuticals	110	3p	Ex	5
N111005	Catalysis	111	2p+1c	C+Ex	4
N111006	Environmental Protection Processes	111	2p+1c	C+Ex	4
N111042	Quality Assessment and Quality Assurance in Chemical Technology	111	2p	Ex	3
N111045	Trends in Drug Research and Development	111	2p	C+Ex	3
N112006	Technology of Polymeric Materials Processing	112	2p	Ex	3
N112036	Crude for Polymeric Products	112	2p	Ex	3
N126002	Materials for Electronics	126	2p+1c	C+Ex	4
N126026	Introduction to nanomaterials	126	2p	Ex	3
N148001	Building materials of monuments and their deterioration	148	2p	Ex	3
N148018	History of Handicrafts: Textiles	148	2p	Ex	3
N148030	Pattern Construction	148	4c	C	3
N215002	Fundamentals of Combustion Processes	215	2p	Ex	3
N216003	Fundamentals of Coal and Gas Processing and Utilization	216	2p	Ex	3
N217002	Industrial Wasterwaters	217	3p	Ex	5
N217003	Hydrochemistry	217	3p+2c	C+Ex	7



Code	Subject	Department	Study Hours	Exam	Cred
N217004	Decentralised Treatment and Reuse of Wastewater	217	2p	Ex	3
N217005	Distribution Networks and Sewerage	217	2p+1c	C+Ex	4
N217016	Water Quality Protection	217	2p+1c	C+Ex	4
N218001	Utilization of Nuclear Fuels	218	2p	Ex	3
N218004	Fundamentals of Power Engineering	218	2p+1c	C+Ex	4
N218026A	Alternative Energy Sources I	218	2p	Ex	3
N218027	Alternative Energy Sources II	218	2p	Ex	3
N240010	Ecology	240	2p	Ex	3
N240031	Management of chemicals (REACH)	240	1p+1c	MC	3
N319001	Biology of the Cell	319	2p	Ex	3
N319004	Biotechnology I	319	2p+1c	C+Ex	4
N319005	Biotechnology II	319	2p+1c	C+Ex	4
N319006	Physiology of Industrial Microorganisms	319	2p	Ex	3
N320006	Bioanalytical Methods	320	2p	Ex	3
N321001	Food Technology and Biotechnology	321	3p	MC	3
N322001	Food Technology II	322	3p+1c	C+Ex	6
N322002	Physical Properties of Foods I	322	2p+1c	C+Ex	4
N322026	Probiotics and Functional Food I	322	2p	Ex	3
N323001	Food Chemistry	323	2p+2c	C+Ex	5
N323004	Sensory Analysis	323	2p+1c	C+Ex	4
N323010	Food Analysis and Control	323	2p	Ex	3
N324002	Production of Food Raw Materials	324	2p	Ex	3
N342002	Raw materials from Sustainable Sources	342	2p	Ex	3
N342005	Structural Analysis of Natural Compounds	342	2p	Ex	3
N402007	Analytical Chemistry: Laboratory II	402	4l	MC	4
N403002	Measurement of Basic Physico-Chemical Quantities	403	3c	MC	3
N403007	Theoretical Chemistry	403	3p+1c	C+Ex	5
N403014	Physical Chemistry II	403	3p+2c	C+Ex	7
N403036	Physical Chemistry of Surfaces and Colloidal Systems	403	2p+1c	C+Ex	4
N409001	Food Engineering and Bioengineering	409	3p+2c	C+Ex	6
N409002	Unit Operations of Chemical Engineering I	409	2p+3c	C+Ex	6
N413003	Mathematics II	413	3p+3c	C+Ex	8
N413008A	Applied Mathematics	413	2p+2c	C+Ex	5
N413009	Introduction to Mathematical Optimization	413	2p+2c	C+Ex	5
N413017	Financial Mathematics	413	2p+1c	MC	3

Code	Subject	Department	Study Hours	Exam	Cred
N413031	Mathematics III	413	2p+2c	C+Ex	5
N413033	Mathematics for Quantum Chemistry	413	2p+2c	C+Ex	5
N437001	Basic Logistics	837	2p+2c	C+Ex	5
N437003	Management of Enterprise Processes	837	2p+1c	C+Ex	4
N437006	Financial Accounting	837	2p+2c	C+Ex	5
N437038	Career and Development SelfManagement	837	2p	C	2
N437059	Negotiation and conflict communication	837	1p+2c	MC	3
N444005	Fundamentals of Machinery	444	2p+1c	C+Ex	4
N444007	Fundamentals of Electronics	444	2p+2c	C+Ex	5
N444020	Measuring and Control Engineering: Laboratory	444	3l	MC	3
N445002	Algorithms and Programming	445	2c	MC	2
N445004	Mathematical Methods in Engineering	445	2p+2c	C+Ex	5
N445006	Computer Graphics	445	1p+3c	C+Ex	5
N445007	Object Oriented Programming	445	2p+3c	C+Ex	5
N445022A	Image Processing I	445	2p+2c	C+Ex	5
N445044	Graphs in Engineering	445	2p+1c	MC	3
N445052	Database Systems Design	445	1p+3c	C+Ex	5
N445054	Computer Data Acquisition	445	2p+2c	C+Ex	5
N445070	Geographical Information Systems	445	2p+1c	MC	3
N832005	Macroeconomics	832	2p	Ex	3
N832009	Modern Czech History	832	2p	C	2
N832010	Selected Topics in Philosophy and the Philosophy of Science	832	2p	C	2
N832011	Human Resource Management	832	2p+1c	C+Ex	4
N832013	Fundamentals of Law	832	2p	Ex	3
N832014	History of Chemistry	832	2p	MC	3
N832015	Fundamentals of Financial Management	832	2p	C	2
N832043A	Soft Skills I	832	2p	C	2
N832049	Presentation skills	832	1p+1c	C+Ex	4
N834006	Czech Language II	834	2c	C	1
N834019	English - pre-intermediate II	834	2c	C	1
N834021	English - intermediate II	834	2c	C	1
N834023	German - beginners II	834	2c	C	1
N834025	German - pre-intermediate II	834	2c	C	1
N834027	German - intermediate II	834	2c	C	1
N834029	French - beginners II	834	2c	C	1
N834031	French - pre-intermediate II	834	2c	C	1

Code	Subject	Department	Study Hours	Exam	Cred
N834033	French - intermediate II	834	2c	C	1
N834035	Russian - beginners II	834	2c	C	1
N834037	Russian - pre-intermediate II	834	2c	C	1
N834039	Business English II	834	2c	C	1
N834045	English - advanced II	834	2c	C	1
N834053	Russian - intermediate II	834	2c	C	1
N834056	Spanish - beginners II	834	2c	C	1
N834057	Spanish - pre-intermediate II	834	2c	C	1
N834059	Spanish - intermediate II	834	2c	C	1
N834068	Italian language - beginners II	834	2c	C	1