

# Opasraportti

## FTech - Courses in English for exchange students, Field of Chemistry (2018 - 2019)

### Courses in English for exchange students in the Study Field of Chemistry at the Faculty of Technology

This Course Catalogue lists the chemistry courses taught in English that are available for exchange students during the Academic Year 2017-18 at the Faculty of Technology, University of Oulu. **NB! Course availability:** The listed courses are available for **exchange students hosted by the Faculty of Technology Study Field of Chemistry and if they have the previous knowledge requirements** of the course. **Exchange students hosted by other study fields or other University of Oulu faculties** usually cannot take these courses, especially if they do not have the required previous knowledge. They must contact the Exchange Coordinator of the Faculty of Technology (contact information below) to ask if it is possible to participate.

**When preparing your study plan** for your SoleMOVE application, use the information provided under the **Courses** tab in this catalogue. **Read carefully** the information under the **Courses** tab of each course you wish to take (language of instruction, target groups, contents, timing, preceding studies, additional information etc.).

**Individual course codes** include information on the **level of course**. There are 3 different levels of courses. The levels are marked with a **letter at the end of the course codes**, see explanations below. In WebOodi course descriptions the level is indicated in 'Type' section.

In academic year 2018-2019 there are **advanced (S) level chemistry courses available in English**. All **basic (P) and intermediate (A)** level courses are **only available in Finnish**, and therefore are not available for exchange students.

For information on the **exchange application process** please see [www.oulu.fi/university/studentexchange](http://www.oulu.fi/university/studentexchange). All exchange applicants must **submit their exchange application through the SoleMOVE application system** by the deadline given, and a proposed study plan (= Learning Agreement signed by you and your home university) is attached to the online application.

**Accepted exchange students are required to register to all courses and their exams.** Course/exam registration takes place once you have received your University of Oulu login information close to the start of your exchange period. When registering you will be able to find detailed information on teaching and schedule here under **Instruction and Examinations** tabs.

Teaching schedules are **periodical**: Courses organized during **periods 1-2** are given on the **autumn** term (September-December), and respectively **periods 3-4** refer to courses given during the **spring** term (January-May).

#### Teaching periods for 2018-2019

##### Autumn term 2018

Period 1: Sept 3 - Oct 26, 2018

Period 2: Oct 29 – Dec 21, 2018

**Spring term 2019**

Period 3: Jan 7 – March 8, 2019

Period 4: March 11 – May 10, 2019

For arrival and orientation dates see <http://www oulu.fi/university/studentexchange/academic-calendar>**Any questions about these courses should be addressed to:**

Dr Johanna Kärkkäinen  
 Exchange Coordinator for Chemistry  
 Research Unit of Sustainable Chemistry  
 Research Group of Organic Chemistry  
 Faculty of Technology, University of Oulu,  
 Finland  
 Email: Johanna.Karkkainen(at)oulu.fi

M.Sc. Marita Puikkonen  
 Faculty International Coordinator  
 for Student Exchange  
 Incoming & Outgoing Mobility  
 Faculty of Technology, University of Oulu,  
 Finland Email: study.technology(at)oulu.fi

Further information on application process and services for incoming exchange students  
[www oulu.fi/university/studentexchange](http://www oulu.fi/university/studentexchange) or at International.Office(at)oulu.fi

**Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot**

781650S: Atomic Spectrometric Techniques, 5 op  
 900013Y: Beginners' Finnish Course 1, 3 op  
 900053Y: Beginners' Finnish Course 2, 5 op  
 782640S: Chemistry of Hydrometallurgical Processes, 5 op  
 900054Y: Conversational Skills in Finnish, 3 op  
 782639S: Electrochemistry, 5 op  
 781648S: Inorganic Structural Chemistry, 5 op  
 900015Y: Intermediate Finnish Course 1, 5 op  
 900016Y: Intermediate Finnish Course 2, 5 op  
 783639S: Organic Chemistry III, 5 op  
 780601S: Project work, 12 op  
 781649S: Sampling and Sample Pretreatment, 5 op  
 781652S: Solid State Chemistry, 5 op  
 900027Y: Special Course in Finnish: Writing Skills, 3 op  
 900017Y: Survival Finnish, 2 op

**Opintojaksojen kuvaukset****Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset****781650S: Atomic Spectrometric Techniques, 5 op**

Voimassaolo: 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits / 134 hours of work

**Language of instruction:**

Finnish. English on demand.

**Timing:**

4th or 5th spring. The course is lectured every other year, next time during the spring 2019.

**Learning outcomes:**

Upon completion of the course, student should have acquired knowledge and understanding of AAS (especially ETAAS) and plasma based techniques (ICP-OES, ICP-MS), their theoretical background and modern instrumentation. Student is also able to describe the advantages and "weak points" of the techniques in the point of view of elements and samples to be analyzed. In addition, knowledge is acquired on the optimization of measurement procedures and interference effects and their elimination.

**Contents:**

Origin of atomic absorption, atomic emission and atomic mass spectra. Instrument components and their properties, optimization of the determination procedures (incl. interference effects and their correction), and instrument diagnostics. Special sample introduction techniques and hyphenated techniques.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

30 hours of lectures and seminars + 104 hours of self-study incl. practical project work.

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Instrumental Analysis (780328A or 781308A)

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Lajunen, L.H.J. and Perämäki, P.: Spectrochemical Analysis by Atomic Absorption and Emission, 2nd ed., The Royal Society of Chemistry, 2004.

**Assessment methods and criteria:**

Final examination or home assignment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Paavo Perämäki

**Working life cooperation:**

No

**Other information:**

No

## 900013Y: Beginners' Finnish Course 1, 3 op

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

ay900013Y Beginners' Finnish Course 1 (OPEN UNI) 2.0 op

**Proficiency level:**

A1.2

**Status:**

The course is intended for the international students in every faculty of Oulu University.

**Required proficiency level:**

A1.1, Completion of the Survival Finnish course (900017Y) or the equivalent language skills.

**ECTS Credits:**

3 ECTS credits

**Language of instruction:**

As much Finnish as possible; English will be used as a help language.

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can understand and use some familiar and common everyday expressions relating to her/himself and everyday situations. S/he can interact in a simple way provided the other person talks slowly and clearly and is willing to help. The student is able to read short simple texts and messages dealing with familiar topics. S/he also deepens her/his understanding of the Finnish language and communication styles.

**Contents:**

This is lower elementary course which aims to help students to learn communication skills in ordinary everyday situations. During the course, students broaden their vocabulary and knowledge of grammar and principles of pronunciation. They also practise to understand easy Finnish talk about everyday subjects, and reading and writing short and simple texts/messages.

The topics and communicative situations covered in the course are: talking about oneself, one's family, studies and daily routines, as well as asking about these things from other person, expressing opinions, describing people and things, talking about weather and seasons, the names of the months and colours.

The structures studied are: verb types, basics of the change of the consonants k, p and t in verbs and nouns, the genitive and partitive cases, possessive structure, some declension types for nouns (word types) and the basics of the local cases.

**Mode of delivery:**

Contact teaching and guided self study

**Learning activities and teaching methods:**

Lessons 2 times a week (26 h, including the final exam) and guided self study (55 h)

**Target group:**

International degree and post-graduate degree students and exchange students of the University

**Prerequisites and co-requisites:**

Completion of the Survival Finnish Course

**Recommended optional programme components:**

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**Recommended or required reading:**

Gehring, S. & Heinzmann, S. Suomen mestari 1 (chapters 3 - 5)

**Assessment methods and criteria:**

Regular and active participation in the weekly lessons (twice a week), homework assignments and written exam at the end of the course will be observed in assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading scale is 1-5.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

-

**Other information:**

Sign-up in WebOodi. The course will start right after the Survival Finnish course.

## 900053Y: Beginners' Finnish Course 2, 5 op

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

ay900053Y Beginners' Finnish Course 2 (OPEN UNI) 4.0 op

**Proficiency level:**

A1.3

**Status:**

The course is intended for the international students in every faculty of Oulu University.

**Required proficiency level:**

A1.2, completion of the Beginners' Finnish course 1 (900013Y) or the equivalent language skills.

**ECTS Credits:**

5 ECTS credits

**Language of instruction:**

As much Finnish as possible; English will be used as a help language.

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can understand and use some very common everyday expressions and sentences. S/he can communicate in easy and routine tasks requiring a simple and direct exchange of information on familiar everyday matters. The student understands different kinds of short texts. S/he can for example locate important information in them. In addition, s/he has acquired more detailed knowledge of the language and culture.

**Contents:**

This is a post-elementary course. During the course students learn more about communication in ordinary everyday situations in Finnish. They also extend their vocabulary and knowledge of grammar. Students practise understanding simple Finnish talk and short texts.

The topics and communicative situations covered in the course are: asking for and giving directions, asking for help/favours, carrying out transactions in shops and restaurants, talking about the past, asking for and expressing opinions and feelings, accommodation, travelling, vehicles, work, professions, food, drink and parties.

The structures studied are: the local cases, nominative plural (basic form plural), imperfect (past tense of verbs), part of the imperative, more declension types for nouns (word types), more about the change of the consonants k, p and t in verbs and nouns, declension of the demonstrative pronouns and personal pronouns, more about the partitive case, basics of the object cases, postpositions and some sentence types in Finnish.

**Mode of delivery:**

Contact teaching and guided self study

**Learning activities and teaching methods:**

Lessons 2 times a week (52 h, including the tests) and guided self study (83 h)

**Target group:**

International degree and post-graduate degree students and exchange students of the University

**Prerequisites and co-requisites:**

Completion of the Beginners' Finnish Course 1

**Recommended optional programme components:**

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**Recommended or required reading:**

Gehring, S. & Heinzmann, S.: **Suomen mestari 1** (kappaleet 6-9)

**Assessment methods and criteria:**

Regular and active participation in the weekly lessons (twice a week), homework assignments and tests will be taken into consideration in the assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading scale is 1-5.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

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**Other information:**

Sign-up in WebOodi. The lessons will be held **twice a week** during a 13-week period.

**782640S: Chemistry of Hydrometallurgical Processes, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits / 134 hours of work

**Language of instruction:**

Finnish, English on demand

**Timing:**

4th or 5th spring. The course is lectured every other year, next time during the spring 2017.

**Learning outcomes:**

Upon completion of the course, the student will be able to explain chemical principles of hydrometallurgical processes and phenomena. The student knows the most important chemical reactions and variables affecting hydrometallurgical processes. Process chemistry is significant in several industrial applications, and those applications are considered during the course.

**Contents:**

Introduction to hydrometallurgical processes, pre-treatment of concentrates (oxidation, heat treatment), principles of dissolution (including leaching and bioleaching) and purification, chemical precipitation and other metals recovery processes (extraction, ion-exchange), electrical processes and process chemistry (electrolysis, corrosion).

**Mode of delivery:**

Face-to-face teaching and seminars

**Learning activities and teaching methods:**

40 hours of lectures, 10 hours of seminars, 84 hours of self study

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Physical Chemistry I and Physical Chemistry II

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Lecture notes (in English).

**Assessment methods and criteria:**

Final examination

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Ulla Lassi

**Working life cooperation:**

No

**Other information:**

No

## 900054Y: Conversational Skills in Finnish, 3 op

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Proficiency level:**

B1/B2 , according to the Common European Framework.

**Status:**

The course is intended for the international students in every faculty of University of Oulu.

**Required proficiency level:**

Completion of the Finnish course for advanced students (900020) or of Intermediate Finnish 2 (900016Y) at a high level or the equivalent language skills.

**ECTS Credits:**

3 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can interact with a degree of fluency (and spontaneity) that makes regular interaction with native speakers quite possible. S/he can describe and explain (clearly and in detail) on a wide range of objects, experiences and events, dreams, hopes and ambitions. The student can bring out opinions, give reasons and explanations for them and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options. S/he is also able to give a (clear) prepared presentation and answer the questions posed by the audience.

**Contents:**

During the course students strengthen their communication skills in formal and informal situations. The goal is to activate the student's Finnish skills and encourage him/her to use them in different situations. There will be various types of situational dialogue, conversation and listening exercises in the course. In addition, students will conduct a short survey which will also be reported to other students in the class.

**Mode of delivery:**

Contact teaching and guided self study

**Learning activities and teaching methods:**

Lessons once a week (28-30 h), group work (15 h) and guided self study (36 h)

**Target group:**

International degree and post-graduate degree students, exchange students and the staff members of the University

**Prerequisites and co-requisites:**

Completion of the Finnish course for advanced students (900020) or of Intermediate Finnish 2 (900016Y) at a high level

**Recommended optional programme components:**

-

**Recommended or required reading:**

Will be provided during the course.

**Assessment methods and criteria:**

To pass the course, students must attend class on a regular basis and complete group work tasks and homework assignments.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading is on a pass/fail basis.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

-

**Other information:**

Sign-up in WebOodi.

## 782639S: Electrochemistry, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits / 134 hours of work

**Language of instruction:**

Finnish/English on demand

**Timing:**

4th or 5th autumn. The course is lectured every other year, next time during the autumn 2018.

**Learning outcomes:**

Upon completion of the course, the student will be able to explain the essential phenomena of electrochemistry, such as electrochemical reactions, electrolytes and related thermodynamics. The student knows the principle of electrochemical cells (batteries and fuel cells) and kinetics of electrochemical reactions. These phenomena are significant in chemical and metal industry, such as in metal recovery by electrolysis.

**Contents:**

Introduction to electrochemistry, electrochemical reactions and reaction kinetics, electrolytes and thermodynamics of electrolytic solutions, electrochemical cells (batteries and fuel cells), measurement methods of electrochemical properties, applications of electrochemistry.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

50 hours of lectures, 84 hours of self study

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Physical Chemistry I and Physical Chemistry II

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Murtomäki, L., Kallio, T., Lahtinen, R. & Kontturi, K.: Sähkökemia, 2. painos, Korpiljyvä Oy, Jyväskylä, 2010; Bockris, J.O'M., Reddy, A.K.N.: Modern Electrochemistry, vol 1, 2. painos, Plenum Press, New York, 1988, partly, lecture notes. Examination based on the lectures.

**Assessment methods and criteria:**

Final examination

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Ulla Lassi

**Working life cooperation:**

No

**Other information:**

No

## 781648S: Inorganic Structural Chemistry, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits /134 hours of work

**Language of instruction:**

Finnish/English on demand

**Timing:**

4th spring. The course is lectured every other year, next time during the spring 2017.

**Learning outcomes:**

After this course the student is familiar with molecular symmetry and application of molecular symmetry in vibration spectroscopy, electronic absorption spectroscopy and in multinuclear NMR spectroscopy.

**Contents:**

Molecular symmetry and group theory, vibrational spectroscopy, electronic absorption spectroscopy and NMR spectroscopy.

**Mode of delivery:**

Face-to-face teaching



**Learning activities and teaching methods:**

34 hours of lectures, 8 hours of exercises, 92 hours of self-study.

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Inorganic Chemistry I (780353A or 781301A) and Inorganic Chemistry II (780391,781302A, or 781642S)

**Recommended optional programme components:**

Previous course 781639S Molecular Symmetry and Spectroscopy 5 cr. Contains also parts of the previous course 781614S Structural Methods in Inorganic Chemistry 3 cr.

**Recommended or required reading:**

Rankin, D. W. H., Mitzel, N. W., ja Morrison, C. A., Structural Methods in Molecular Inorganic Chemistry, John Wiley & Sons, Ltd., Chichester, 2013.

**Assessment methods and criteria:**

The assessment of the course is based on the final examination. Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Risto Laitinen

**Working life cooperation:**

No

**Other information:**

No

**900015Y: Intermediate Finnish Course 1, 5 op**

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

ay900015Y Intermediate Finnish Course 1 (OPEN UNI) 4.0 op

**Proficiency level:**

A2.1

**Status:**

The course is intended for the international students in every faculty of University of Oulu.

**Required proficiency level:**

A1.3, Completion of the Beginners' Finnish course 2 (900053Y) or the equivalent language skills.

**ECTS Credits:**

5 ECTS credits

**Language of instruction:**

Mainly Finnish

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can communicate in ordinary everyday situations when the topics are familiar or connected with everyday matters. S/he can search for and locate key informational content in different kinds of texts. The student can also identify the topic and some details of the discussion around her/him. S/he can describe activities and personal experiences both orally and in writing and s/he also knows the difference between spoken/colloquial and written/standard language. The student knows how things can be expressed with different degrees of politeness and can apply that information in her/his own communication.

**Contents:**

The course is a lower intermediate course. During the course students strengthen their communication skills in ordinary everyday situations and acquire a wider vocabulary and more thorough knowledge of grammar. In addition, students practise understanding and producing Finnish talk and reading newspaper articles.

The topics and communicative situations covered in the course are: requesting different kinds of requests,

expressing politeness, making appointments with friends, giving directions, doing the shopping, talking about the past and talking about his/her future plans, hobbies, transactions e.g. in the doctor's and post office.

The structures studied are: more about the imperative, the verb rections, the deverbal noun (-minen), passive present tense, part of the plural declension of nouns, the third infinitive (ma-infinitive), more about sentence types, perfect tense, more about object cases.

**Mode of delivery:**

Contact teaching and guided self study

**Learning activities and teaching methods:**

Lessons 2 times a week (52 h, including the tests) and guided self study (83 h)

**Target group:**

International degree and post-graduate degree students, exchange students and the staff members of the University

**Prerequisites and co-requisites:**

Completion of the Beginners' Finnish Course 2

**Recommended optional programme components:**

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**Recommended or required reading:**

Gehring, S. & Heinzmann, S.: **Suomen mestari 2**, (chapters 1 - 5)

**Assessment methods and criteria:**

Regular and active participation in the weekly lessons (twice a week), homework assignments and the tests will be taken into consideration in the assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading scale is 1-5.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

-

**Other information:**

Sign-up in WebOodi. The lessons will be held twice a week during a 13-week period.

## 900016Y: Intermediate Finnish Course 2, 5 op

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Proficiency level:**

A2.2

**Status:**

The course is intended for the international students in every faculty of University of Oulu.

**Required proficiency level:**

A2.1, Completion of the Intermediate Finnish course 1 (900015Y) or the equivalent language skills.

**ECTS Credits:**

5 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can communicate in various informal situations in Finnish. The student understands the main points of messages and talk around her/him. S/he can produce simple connected text on topics which are familiar or of personal interest and describe experiences and also report heard content to others.

**Contents:**

The course is an upper intermediate course. During the course students learn the necessary written and oral skills to be able to cope in informal situations arising during everyday life, work and study. In the course, students practise understanding more Finnish talk and newspaper articles, and finding information and talking about it to

other people. In the classes the main stress is on oral exercises and group work.

The topics and communicative situations covered in the course are: transactions e.g. in clothes shops, at the doctor's and on the phone, Finnish small talk, reacting in different situations, planning a trip and booking e.g. a flight, information and facts about Finland and its history, telling about one's home country and home town, features of colloquial/spoken language.

The structures studied are: the perfect and pluperfect, revision of all the verb tenses, comparison of adjectives, conditional, more about the plural declension of nouns (particularly the plural partitive case), more about object and predicative cases, the passive imperfect.

**Mode of delivery:**

Contact teaching and guided self study

**Learning activities and teaching methods:**

Lessons once a week (52 h, including the tests) and guided self study (83 h)

**Target group:**

International degree and post-graduate degree students, exchange students and the staff members of the University

**Prerequisites and co-requisites:**

Completion of the Intermediate Finnish Course 1

**Recommended optional programme components:**

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**Recommended or required reading:**

Gehring, S. & Heinzmann, S.: **Suomen mestari 2 (chapters 6 - 9)**

**Assessment methods and criteria:**

Regular and active participation in the weekly lessons (twice a week), homework assignments and the tests will be taken into consideration in the assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading scale is 1-5.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

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**Other information:**

Sign-up in WebOodi. The lessons will be held **once a week** during a 13-week period.

## 783639S: Organic Chemistry III, 5 op

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Juha Heiskanen, Johanna Kärkkäinen

**Opintokohteen oppimateriaali:**

Corey, E. J. , , 1989

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits / 134 hours of work

**Language of instruction:**

Finnish/English on demand

**Timing:**

4th autumn – .

**Learning outcomes:**

After this course, the student is familiar with various organic chemistry reactions, can profoundly explain and analyze mechanisms, and predict reaction outcome.

**Contents:**

Fixed chapters from the textbook.

**Mode of delivery:**

Self-study

**Learning activities and teaching methods:**

134 hours of self study

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Organic Chemistry I (780389A) and Organic Chemistry II (780393A/783643S).

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Clayden, J., Greeves, N., Warren, S., Wothers, P.: Organic Chemistry, Oxford University Press, 2001 or Clayden, J., Greeves, N., Warren, S.: Organic Chemistry, Oxford University Press, 2nd edition, 2012.

**Assessment methods and criteria:**

Contact the responsible teacher to arrange the final examination.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Juha Heiskanen and Johanna Kärkkäinen

**Working life cooperation:**

No

**Other information:**

No

## 780601S: Project work, 12 op

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

12 ECTS credits / 200 hours of work

**Language of instruction:**

Finnish, English on demand

**Timing:**

4th autumn-spring

**Learning outcomes:**

After the laboratory project the student knows a research work and methods of his/her field and has readiness to perform the Pro Gradu Thesis.

**Contents:**

Laboratory work and written report

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

200 hours of work including laboratory research and a report.

**Target group:**

Chemistry, compulsory

**Prerequisites and co-requisites:**

B.Sc. studies in chemistry including the course Research Training (780301A) completed.

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Material given by teachers

**Assessment methods and criteria:**

Laboratory research and a report.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

The course utilizes verbal grading scale pass/fail.

**Person responsible:**

Matti Niemelä

**Working life cooperation:**

No

**Other information:**

Responsible teachers for the course: Chemistry Degree program Professors, Docents, Lectures and Doctor level researchers.

**781649S: Sampling and Sample Pretreatment, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits / 134 hours of work

**Language of instruction:**

Finnish. English on demand.

**Timing:**

4th or 5th spring. The course is lectured every other year, next time during the spring 2019.

**Learning outcomes:**

After this course student becomes aware of the importance of correct sampling (especially heterogeneous solid materials). The student also gets knowledge how to i) sample and ii) prepare samples for various types of analysis: determination of total element concentrations (incl. ultra trace levels), fractionation of elements and element speciation analysis. At the end of the course the students should have also acquired an understanding of the techniques that are used in sample preconcentration and matrix separation, as well as purification of reagents and laboratory tools when very low element concentrations are measured.

**Contents:**

Representative sampling and sampling errors, various sample preparation techniques utilizing open and closed systems and their use in the determination of total element concentrations in inorganic and organic sample types. Fusion techniques and fire assay methods. Sample preparation in trace element fractionation and speciation analysis. Systematic errors in analysis (losses and contamination), clean rooms, separation and preconcentration techniques.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

30 hours of lectures + seminar presentation + 104 hours of self-study

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Introduction to Analytical Chemistry (780111P or 780119P)

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Sirén, H., Perämäki, P., Laiho, J.: Esikäsittelyn käsikirja, Kemian Kustannus Oy, 2009 and material handed out by the lecturer.

**Assessment methods and criteria:**

Final examination or home assignment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Paavo Perämäki

**Working life cooperation:**

No

**Other information:**

No

**781652S: Solid State Chemistry, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Chemistry

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 credits / 134 hours of work

**Language of instruction:**

Finnish / English on demand

**Timing:**

4th or 5th year. The course is lectured every other year, next time during the autumn 2018.

**Learning outcomes:**

Knowledge of synthesis, structures, spectroscopic properties, reactions, and applications of solid materials.

**Contents:**

Preparation of solid materials, structures of solids, crystal defects, thermodynamics and reaction kinetics, the effect of outer conditions on some reactions, phase diagrams and their applications, optical, magnetic and electric properties of solid materials, and industrial applications.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

32 hours of lectures, 102 hours of self-study

**Target group:**

Chemistry, optional

**Prerequisites and co-requisites:**

Physical Chemistry I (780347A or 781303A), Inorganic Chemistry I (780353A or 781301A), and Inorganic Chemistry II (780391A or 781302A)

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

West, A.R.: Solid State Chemistry and its Applications, 2<sup>nd</sup> Ed., John Wiley & Sons, Chichester, 2014

**Assessment methods and criteria:**

Problem based learning. This course unit utilizes continuous assessment. The students will be compiling a learning diary all through the course unit, and write a essay. Learning diary and essay will be assessed. The assessment of the course unit is based on the learning outcomes of the course unit.

**Grading:**

The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Minna Tiainen

**Working life cooperation:**

No

## 900027Y: Special Course in Finnish: Writing Skills, 3 op

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Proficiency level:**

B1/B2, according to the Common European Framework.

**Status:**

The course is intended for the international students in every faculty of University of Oulu.

**Required proficiency level:**

A2.2 Completion of the Finnish for Advanced Students (900020Y) or the equivalent language skills.

**ECTS Credits:**

3 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can write coherent and detailed descriptions and summaries about various matters. S/he is able to summarize text and justify his/her own statements of opinions. In addition, the student knows the steps of the writing process and understands the significance of a text's function and target audience. S/he can also differentiate between formal and informal writing styles.

**Contents:**

During the course students develop their writing skills in Finnish and are guided in the drafting of different text types and documents needed in studies and work. In the course students learn how to write informal and formal letters, an argument-essay, a summary, a job application and a report.

**Mode of delivery:**

One contact lesson at the beginning of the course and guided independent studying using online

**Learning activities and teaching methods:**

The course will be held online using an Optima environment.

**Target group:**

International degree and post-graduate degree students, exchange students and the staff members of the University

**Prerequisites and co-requisites:**

Completion of the Intermediate Finnish Course 2

**Recommended optional programme components:**

-

**Recommended or required reading:**

Web based material.

**Assessment methods and criteria:**

To pass the course, the student must complete all the required writing assignments.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading is on a pass/fail basis.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

-

**Other information:**

Sign-up in WebOodi or by emailing the contact teacher.

**900017Y: Survival Finnish, 2 op**

**Voimassaolo:** 01.08.1995 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

ay900017Y Survival Finnish Course (OPEN UNI) 2.0 op

**Proficiency level:**

A1.1

**Status:**

The course is intended for the international students in every faculty of Oulu University.

**Required proficiency level:**

No previous Finnish studies.

**ECTS Credits:**

2 ECTS credits

**Language of instruction:**

Finnish and English

**Timing:**

-

**Learning outcomes:**

By the end of the course the student can understand and use some very common everyday expressions and phrases, and s/he can locate informational content in simple texts and messages. The student also knows the basic characteristics of Finnish language and Finnish communication styles.

**Contents:**

This is an introductory course which aims to help students to cope with the most common everyday situations in Finnish. During the course, students learn some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation.

The topics and communicative situations covered in the course are: general information about the Finnish language, some politeness phrases (how to greet people, thank and apologize), introducing oneself, giving and asking for basic personal information, numbers, some time expressions (how to tell and ask the time, days of the week, time of day), food, drink and asking about prices.

The structures studied are: personal pronouns and their possessive forms, forming affirmative, negative and interrogative sentences, the conjugation of some verbs, the basics of the partitive singular and some local cases for answering the 'where'-question.

**Mode of delivery:**

Multi-modal teaching (Contact teaching, on-line teaching and independent work)

**Learning activities and teaching methods:**

Lessons 1–2 times a week (14 h, including the final exam) and guided self study (40 h)

**Target group:**

International degree and post-graduate degree students and exchange students of the University

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

-

**Recommended or required reading:**

Will be provided during the course.

**Assessment methods and criteria:**

Regular and active participation in the weekly lessons (twice a week), homework assignments and written exam at the end of the course will be observed in assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

**Grading:**

Grading scale is 0-5.

**Person responsible:**

Anne Koskela

**Working life cooperation:**

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**Other information:**

Sign-up in WebOodi.