CONTENS

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ AHM/22	**Name:** Active Learning and Evaluation Methods in Teaching Chemistry

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 1

Recommended semester/trimester of study: 3.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
During the semester, the student submits their solved tasks. Within the assessment of the assignments, in addition to solving tasks (max. 8 points), their submission on time (max. 2 points) is taken into account.
At the end of the subject, the student passes a comprehensive written examination, from which he must obtain at least 50% of the points.
The result of the students' summary assessment will be calculated according to the following formula:
Final grade=(1x average % of success on the assignments + 2 x % of success on the written examination) / 3.
Total student workload: 1 credit = 25-30 hours
- 26 hours of participation on lessons in present form; 4 hours solving calculation tasks and other assigned learning tasks; and self-learning.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.

Results of education:
The student who successfully completes the subject:
Knowledge
• is able to name and characterize several teaching methods and forms supporting active student learning;
• is able to explain the impact of verbal and non-verbal communication on the classroom climate;
• is able to describe psychological aspects of motivation and motive;
• is able to list and characterize the forms, methods and strategies of motivation and activation within the profile subject;
• is able to apply the principles of effective communication supporting active student learning;
• is able to characterize the philosophical and methodological starting points, forms and types of student assessment and their psychodidactic aspects;
• possesses the theoretical foundations of assessment and feedback;
• is able to provide an overview of new trends in assessment in education;

• has knowledge of methodological instructions and rules regarding the assessment and classification of pupils;
• is able to adequately apply and integrate diverse assessments in chemistry education;
Skills
• has the skills of effective planning, projecting, managing and organizing the educational process in profile educational areas or specialization;
• is ready to plan and manage educational activities and learning of a group of pupils and the whole class;
• is able to select appropriate tasks for the given topics, which motivate students to take action in their learning process and support their active learning;
• is able to independently and adequately implement pedagogical evaluation;
• is capable of self-evaluation and thus ensuring monitoring of his/her professional development;
• is able to evaluate pupils with regard to their developmental and individual characteristics;
• is able to apply various forms and methods of assessment;
• is able due to reflection to evaluate the teaching process in comparison with the projected teaching process and to make the necessary corrections;
• is able to evaluate pupils without prejudices and stereotypes;
• is able to apply the above in practice when creating models for chemistry lessons;
Competencies
• is able to think creatively, and independently plan his own study;
• possesses autonomy and responsibility in decision-making in connection with the classroom teaching of chemistry;
• is capable of implementing educational diagnostic and evaluation processes;
• possesses abilities to perform the profession of a teacher, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of his own teaching activity;
• is able to work creatively, efficiently and independently;
• can identify with his own profession.

Brief syllabus:

1. Constructivism. The role of teacher and learner in the constructivist learning process. Teacher communication as a tool of motivation, activation and guidance, mentoring, and facilitation.
2. Characteristics and types of active learning methods in teaching chemistry. Simple active learning methods applicable in the class-hour organizational form of teaching chemistry. Application of simple active learning methods in teaching chemistry.
3. Characteristics of cooperative learning. Application of cooperative learning in the context of chemistry teaching.
4. Problem teaching in the context of chemistry teaching.
5. Inquiry-based learning in the context of chemistry teaching.
6. Characteristics of project management in education. Project method. Project-based learning in the context of chemistry teaching.
7. Self-regulating learning and reflection-based learning.
8. Basic concepts of evaluation - forms and methods of evaluation. Classification.
9. Functions and general principles of evaluation.
10. Current trends of classroom assessment.
11. The type of learning outcomes in the subject of chemistry and the way of collecting the learning evidence.
12. The concept of portfolio/e-portfolio and its role and possibilities in chemistry education.

13. Description and characterization of the pedagogical terms: assessment for/of/as learning and their types. Assessment strategies and tools in chemistry education and the possibilities of their implementation in the practice of the chemistry teachers.
14. The learning tasks´ assessment. Creation of a written test in chemistry. Written test key. Evaluation aspects of tests´ in the approach of formative or summative assessment and their application in practice.
15. Characteristics of self-reflection, peer assessment, group assessment, metacognitive assessment and implementation of their strategies and tools.

Literature:

Garai, I., Vincze,B., Szabó,Z.A. Hiteles pedagógia. Budapest: ELTE Eötvös Kiadó, 2016. 126s. ISBN 978-963-284-828-0. Dostupné na internete: http://www.eltereader.hu/media/2016/11/Hiteles_pedagogia_Golnhofer_READER1.pdf
Gavora, P. Akí sú moji žiaci? - 3. vyd. - Nitra : Enigma, 2011. - 222 s. - ISBN 978-80-89132-91-1.
Károly, K & Homonnay, Z. Diszciplínák tanítása – a tanítás diszciplínái 4. - A tanulás és tanítás értékelése. Budapest: ELTE Eötvös Kiadó, 2017. 356s. ISBN 978-963-284-909-6. Dostupné na internete: http://www.eltereader.hu/media/2017/07/Diszciplinak_4_READER.pdf
Slavík, J. Hodnocení v současné škole : Východiska a nové metodypro praxi. - 1. vyd. - Praha : Portál, 1999. - 190 s. - ISBN 80-7178-262-9
Turek, I. Zvyšovanie efektívnosti vyučovania. Bratislava : Metodické centrum, 1997. 316s. ISBN 8088796490
Vidákovich, T. Diagnosztikus pedagógiai értékelés. Budapest : AkadémiaiKiadó, 1990. 232. ISBN 9630559676
Zelina, M. Stratégie a metódy rozvoja osobnosti : Metódy výchovy. 2. vyd. - Bratislava : Iris, 1996. - 234 s. - ISBN 80-967013-4-7
Starý, K. & Laufková, V. a kol. Formativní hodnotení ve výuce - 1. vyd. - Praha : Portál, 2016. - 175 s. - ISBN 978-80-262-1001-6.
Szarka, K. Súčasné trendy školského hodnotenia: Koncepcia rozvíjajúceho hodnotenia. 1. vyd. Komárom: Kompress, 2017. 147 s. ISBN 978-963-12-9692-1.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Mgr. Katarína Szarka, PhD., Mgr. Andrea Vargová, PhD.

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ CDS/22	**Name:** Chemical Didactical Software
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 1.	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: During the semester the assignments submitted by the student will be evaluated. When evaluating the submitted assignments, in addition to the right solutions (for which you can get a maximum of 8 points), the submission of the assignments by the deadline is also taken into account (max. 2 points). During the semester, the student works continuously on a seminar paper written on a chosen topic of the subject. The paper must be submitted at the end of the seminar. At the end of the course, the student takes part in a written examination. In order to successfully finish the course 50 % of the maximally available points must be obtained. At the final evaluation of the course the results of the submitted assignments, the seminar paper and the written examination are taken into account. Final grade=(1 x the % expression of the performance achieved on the submitted assignments + 1 x the % expression of the performance achieved in the seminar + 1 x the % expression of the performance achieved in the written examination)/3. Total student load: 3 credits = 75-90 hours, of which - participation in 26 hours of face-to-face education; 13 hours of calculation tasks or solving other chemical tasks; 23-38 hours of independent study and preparation for the written examination.. The condition for successful completion of the course is to obtain at least 50% of the maximum score. The course is graded on the following grading scale: A – 100–90%, B – 89–80%, C – 79–70%, D – 69–60%, E – 59–50%	
Results of education: After successfully completing the subject, the student: Knowledge: • has knowledge about the digital society related to the teaching profession and its performance; • has knowledge of the Microsoft 365 software products; • with the help of spreadsheet software is able to evaluate the measurement results of laboratory chemistry experiments; • uses interactive communication within the Internet, is able to search information sources and scientific databases; • knows the challenges of the digital world, which are reflected in the teaching of chemistry;	

• can characterize the basic concepts of information and communication technology and digital technology;
• knows modern methods and software for visualizing chemical processes;
• knows the molecular modeling software used to calculate the basic properties of molecules;
• knows the forms and methods of distance education;
• knows the possibilities of online learning that supports the active learning of the student;
• knows the strategies, methods and forms for developing students' digital literacy within the subject area;
• knows the principles of effective communication in the digital world;
Skills:
• has extensive methodological abilities and skills in the field of information and communication technologies;
• independently applies appropriate work methods in the digital world;
• is able to navigate the digital information world and is able to use e-resources during his professional activities;
• is able to navigate the range of possibilities for the use of digital technology by supporting the development processes of individuals, their lifelong positive stimulation and the developmental differences of individuals resulting from health or social disadvantages;
• proficient in the basic operation and application of the selected software in the chemistry teaching process;
• integrates ICT/DT into the chemistry teaching process in accordance with the educational content of the ŠVP ISCED 2 and ISCED 3A program;
Competencies:
• is socially committed, has socially accepted civic attitudes, has developed a positive attitude towards his profession, the target group of his professional activity and his own lifelong learning, with regard to the requirements of the digital society;
• is competent to practice the profession of a pedagogical employee, meets the requirements of the professional standards of a beginning pedagogical employee;
• is able to react, improve and perfect the effectiveness of their own educational activities in the digital society

Brief syllabus:

1. Applications and services of the Microsoft 365 program package for chemistry teachers
2. Software for evaluating the results of chemical experiments (Microsoft 365 Excel and other spreadsheet software)
3. Interactive communication on the Internet - discussion forums, chat, Messenger, search for information sources - scientific databases
4. Visualization of the results of theoretical chemical calculations (ChemCraft). Analysis and visualization of molecular trajectories (Molden, Molview).
5. Software applications of computer molecular modeling (Avogadro, Hyperchem).
6. Methods of solving tasks using computer molecular modeling software applications
7. Chemical graphics software (ACD/ChemSketch)
8. Mobile applications for the visualization of molecules (WebMO, Molecular Constructor a iné).
9. Simulations and virtual laboratories (Virtual Lab, Yenka, NASA's virtual microscope).
10. E-learning and online learning and teaching interfaces in the teaching of chemistry.
11. Editing a website as creating digital teaching material in the digital educational environment.

Literature:

Abonyi-Tóth, A., Turcsányi_Szabó, M. A mobiltechnológiával támogatott tanulás és tanítás módszerei. Educatio Társadalmi Szolgáltató Nonprofit Kft., 2015, (dostupné na internete: https://www.educatio.hu/pub_bin/download/tamop311_II/eredmenyek/m_learning/mlearning_kotet.pdf)
Juhász, György. A számítógépes molekulamodellezés és a kémiai kötés elméletének oktatása. 1. vyd. Győr: Palatia Nyomda és Kiadó, 2016. 116 s. [5,62 AH]. ISBN 978-963-7692-78-9.
Juhász, György. Web-based molekulové modelovanie. In: Inovácie v pregraduálnej príprave učiteľov s využitím webových aplikácií. Szarka Katarína. Komárom: KOMPRESS Nyomdaipari Kft., 2018, s. 81-96 [1,15 AH]. ISBN 978-615-00-2597-1.
Juhász, György. Nové technológie a výučba chemickej väzby. In: Education for information and knowledge based society. Komárno: Univerzita J. Selyeho, 2012, P. 204-209. ISBN 978-80-8122-064-7.
Kalaš, Ivan et al. Premeny školy v digitálnom veku. Bratislava: SPN – Mladé letá,s.r.o.,2013. ISBN 978-80-10-02409-4. Košice: pre UIPŠ vydal elfa, s.r.o., 2010. ISBN 978-80-8086-143-8.
Kalaš, Ivan et al. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika - Digitálne technológie menia poznávací proces. Bratislava: ŠPU, 2010, ISBN 978-80-8118-047-7, dostupné na internete: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/digitalne_technologie_menia_poznavaci_proces.pdf)
LÉVAI, D., PAPP- Lévai, D., Papp-Danka, A. Interaktív oktatásinformatika. Eger: Eszterházy Károly Főiskola, ISBN 978-615-5297-74-8, (dostupné na internete: http://www.eltereader.hu/media/2016/02/Interaktiv_Oktatasinformatika_READER.pdf)
Ollé, J. Virtualis kornyezet, virtualis oktatas. Budapest: ELTE Eötvös Kiadó, 2012, ISBN 978 963 284 283 7, (dostupné na internete: http://www.eltereader.hu/media/2013/11/Oll%C3%A9_1_kotet_READER.pdf)
Ollé, J. et al. Oktatásinformatikai módszerek: Tanítás és tanulás az információs társadalomban. Budapest: ELTE Eötvös Kiadó, 2013, ISBN 978 963 312 157 3, (dostupné na internete: http://www.eltereader.hu/media/2013/11/Olle2_okt-inform_READER.pdf Szarka, Katarína et al. Inovácie v pregraduálnej príprave učiteľov s využitím webových aplikácií. 1. vyd. Komárom: KOMPRESS Nyomdaipari Kft., 2018. 154 s. [11,21AH]. ISBN 978-615-00-2597-1.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. György Juhász, PhD.

Date of last update: 06.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ CH7/22	**Name:** Selected chapters of atomis structure and chemical bond theories

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 1.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
The seminar ends with a written examination, which can be divided into two during the semester if needed. In the case of a division in two, the final evaluation of the seminar is given by the average result of the two written examinations. Only students who have passed the written examination with at least 50% are allowed to participate the oral examination. During the termtime of the semester, the student can earn additional points by presenting specific topics regarding to the subject of the course.
The exam of the course consists of a written examination. The written examination must be completed with a score of over 50%, otherwise the exam will be evaluated as insufficient (Fx) at the given time.
The final assessment of the course is as follows:
0.3 x the % of points awarded for the submitted assignments + 0.3 x the % of points awarded for the evaluation of the seminar's written examinations + 0.4 x the % of points awarded for the exam part.
Total student load: 4 credits = 100-120 hours
- 26 hours of participation in contact classes; 26 hours of preparing and solving seminar tasks; 13 hours of seminar work and presentation preparation; 35-55 hours of self-study, preparation for exams.
The condition for successful completion of the course is to obtain at least 50% of the maximum score.
The course is graded on the following grading scale: A – 100–90%, B – 89–80%, C – 79–70%, D – 69–60%, E – 59–50%.

Results of education:
After successfully completing the course, the student:
Knowledges:
• knows the basic models of the atomic structure, Bohr's postulate and the meaning of quantum numbers, as well as their relationship with the atomic emission spectrum;
• successfully defines the conceptual, grouping and instrumental structure of the quantum mechanical model of the electronic structure;

• knows the basic concepts of modern chemistry from the perspective of quantum theory, such as the wave-particle duality, the quantization of energy and states, the basic principles of filling electron orbits;
• relates the atomic structure and chemical properties of the elements;
• knows the methodological apparatus of modern bond theory;
• determine the types of individual molecular orbitals based on the MO theory, and be able to apply this knowledge to homo- and heteropolar diatomic molecules;
• can apply the MO theory in organic chemistry, knows the Hückel theory and its application in organic chemistry;
• acquires basic knowledge of quantum chemical methods and available programs used in molecular modeling.
Skills:
• applies the Bohr model to the atomic emission spectrum and is able to apply the basic principles of quantum theory in constructing the electron configuration of atoms;
• able to analyze the relationship between the electron configuration of atoms and the elements;
• recognizes the types of molecular orbitals in simple inorganic compounds;
• determines the geometry configuration of molecules based on hybridization and the VSEPR theory;
• calculate the MO energy states and other properties in conjugated organic compounds based on the HMO theory;
• determine the course of electrocyclization and cycloaddition reactions based on the Woodward-Hoffmann and Fukui rules;
• acquires the basic knowledge to use available quantum chemistry programs.
Competencies:
• has creative thinking and acts independently within his own educational process;
• able to make autonomous and responsible decisions within the framework of the chemistry course;
• capable of independent and efficient activity.

Brief syllabus:
1. Bohr model and the quantum mechanical model of the atomic structure.
2. Quantum numbers. The Pauli exclusion principle, the electron configuration of atoms.
3. Schrödinger equation, the Born–Oppenheimer approach. The variation principle.
4. The VB theory.
5. Quantum theory of chemical bonding. The MO description.
6. Localized and delocalized orbitals. Bonding, non-bonding and relaxing orbitals. Classification of MO — π- and δ-MO.
7. MO in homopolar and heteropolar diatomic molecules.
8. Hybridization of atomic orbitals, molecular geometry, VSEPR.
9. Chemical bonding in organic compounds, conjugated #-systems, Hückel's MO theory (HMO).
10. Application of the HMO method.
11. Symmetry of orbitals, preservation of orbital symmetry during a reaction, the Woodward-Hoffmann and Fukui rules.
12. Quantum chemical methods – SCF, semiempirical methods – available software applications.
13. Quantum chemical methods – the DFT method – available software applications.

Literature:
Juhász, György. A számítógépes molekulamodellezés és a kémiai kötés elméletének oktatása. (Počítačové modelovanie molekúl a výučba teórie chemickej väzby) 1. vyd. Győr: Palatia Nyomda és Kiadó, 2016. 116 s. [5,62 AH]. ISBN 978-963-7692-78-9.

Juhász, György. Web-based molekulové modelovanie. In: Inovácie v pregraduálnej príprave učiteľov s využitím webových aplikácií. Szarka Katarína. Komárom: KOMPRESS Nyomdaipari Kft., 2018, s. 81-96 [1,15 AH]. ISBN 978-615-00-2597-1.
Juhász, György. Nové technológie a výučba chemickej väzby. In: Education for information and knowledge based society. Komárno: Univerzita J. Selyeho, 2012, P. 204-209. ISBN 978-80-8122-064-7.
Nyilasi János: Molekulák. - 1. vyd. - Budapest : Tankönyvkiadó, 1978. - 111 s. - ISBN 963 17 3355 6.
Varsányi György: Az atom és molekulaspektroszkópia elméleti alapjai - 1. vyd. - Budapest : Tankönyvkiadó, 1982. - 122 s.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. György Juhász, PhD.

Date of last update: 11.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ CH8/22	**Name:** Selected chapters of coordination chemistry and organometallic chemistry

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 2.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
The seminar ends with a written examination, which can be divided into two during the semester if needed. In the case of a division in two, the final evaluation of the seminar is given by the average result of the two written examinations. Only students who have passed the written examination with at least 50% are allowed to participate the oral examination.
The exam of the course consists of a written and an oral part. Only those students who have passed the written part with a score of over 50% are allowed to take the oral part, otherwise the exam will be evaluated as insufficient (Fx) at the given time.
The final assessment of the course is as follows:
0,40 x the % of points awarded for the evaluation of the seminar's written examinations + 0.6 x the % of points awarded for the exam part.
Total student load: 4 credits = 100-120 hours
- 26 hours of participation in contact classes; 26 hours of preparing and solving seminar tasks; 48-68 hours of self-study, preparation for written and oral exams.
The condition for successful completion of the course is to obtain at least 50% of the maximum score.
The course is graded on the following grading scale: A – 100–90%, B – 89–80%, C – 79–70%, D – 69–60%, E – 59–50%.

Results of education:
After successfully completing the course, the student:
Knowledges:
• successfully classifies coordination and organometallic compounds and correctly determines the internal structure of such compounds;
• successfully defines the conceptual, grouping and instrumental structure of modern inorganic chemistry;
• is able to relate the structure of more complex compounds and their expected properties during chemical reactions;
• has knowledge of the basic concepts of modern chemistry from the perspective of quantum theory, so e.g. wave-particle duality, quantization of energy and states, periodic properties of elements;
• has theoretical knowledge of the chemistry of elements in an excited state.

Skills:
• is able to determine the central atom and ligands in coordinative compounds;
• derives the possible isomeric forms in coordinative compounds;
• determines the possible geometric changes occurring as a result of Jahn–Teller distortion;
• is able to determine the components contributing to the total energy in the case of simple molecules;
• has the necessary nomenclature skills to name simpler compounds;
• successfully defines simpler symmetry operations for simpler molecules;
• is able to determine the point group of simpler molecules.
Competencies:
• has creative thinking and acts independently within his own educational process;
• is able to make autonomous and responsible decisions within the framework of the chemistry course;
• is capable of independent and efficient activity.

Brief syllabus:

1. Types of chemical bonding (ionic, covalent, coordinative), the theory of the crystal space and ligand space.
2. Concept of central atom and ligand. Coordination number. The Jahn–Teller phenomenon.
3. Hard and soft acids, alkalis (Pearson).
4. Denticity and hapticity of ligands. Chelates.
5. Nomenclature of complex compounds.
6. Classification of ligands. Isolobality.
7. The most important organometallic compounds.
8. Axioms of quantum theory.
9. The Schrödinger equation, MO LCAO. SCF.
10. Practical solution of the Schrödinger equation in chemistry.
11. The hypersurface and significance of potencial energy in chemistry. The concept of the activated complex.
12. Symmetry in chemistry. Symmetry elements and operations.
13. Point groups. The Schönflies designation.

Literature:

Greenwood, N. N., Earnshaw, A.: Az elemek kémiája II. a III. Budapest : Nemzeti Tankönyvkiadó, 2004 ISBN 963 19 5255 x
Plesch, G., Tatiersky, J.: Systematická anorganická chémia. 1 vyd. Bratislava : Omega Info, 2004 (https://fns.uniba.sk/fileadmin/prif/chem/kag/Zam-Plesch/Systemanorgchem.pdf)
Influence of the Ti-O-C angle on the oxygen-to-titanium μ-donation in [Cp2Ti(III)OR] complexes / Gyepes Róbert , Varga Vojtech , Horáček Michal , Kubišta Jiří , Mach Karel , Pinkas Jiří. 2010. DOI 10.1021/om1003495, In: Organometallics. - ISSN 0276-7333, Vol. 29, no. 17 (2010), pp. 3780-3789. WoS, SCOPUS., IF (2019): 3,804, Q WoS=Q1
Hydrogenation of titanocene and zirconocene bis(trimethylsilyl)acetylene complexes / Pinkas Jiří, Gyepes Róbert, Císařová Ivana, Kubišta Jiří, Horáček Michal, Žilková Neděžda, Mach Karel, 2018. DOI 10.1039/c8dt01909f. In: Dalton Transactions. - ISSN 1477-9226, Roč. 47, č. 27 (2018), s. 8921-8932 [print]. WoS, SCOPUS., IF (2019): 4,174, Q WoS=Q1
Synthesis, structure and ethylene polymerisation activity of {eta(5):eta(1)(N)-1-[(tert-butylamido)diphenylsilyl)]-2,3,4,5-tetramethylcyclopentadienyl}dichlorotitanium(IV) / Pinkas Jiří, Horáček Michal, Varga Vojtech, Mach Karel, Szarka Katarína, Vargová Andrea, Gyepes Róbert, 2020. DOI 10.1016/j.poly.2020.114704. In: Polyhedron : The International Journal for Research in Inorganic Chemistry : The International Journal for Research in Inorganic Chemistry.

- ISSN 0277-5387, Vol. 188 (2020), p. 1-20. CCC, WoS, SCOPUS. IF (2019): 2,343. SNIP (2019): 0,663. Q WoS=Q2

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: doc. RNDr. Róbert Gyepes, PhD.

Date of last update: 06.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ CH9/22	**Name:** The basics of nuclear chemistry

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 3.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
During the semester, the student submits assignments and gives a short presentation on the chosen topic of nuclear chemistry. In addition to processing the topics (max. 8 points) for the tasks to be submitted, their submission by the deadline (max. 2 points) is also taken into account. Verbal and non-verbal expression, logical and systematic explanation, comprehensibility, eye contact, use of visual and audio-visual tools, work with literature, etc. are evaluated during the presentation.
The student gives an account of his theoretical knowledge in the form of an oral exam. The condition for participating in the exam is to hand in the assignments and deliver the short lecture during the semester.
The final evaluation of the course is calculated based on the assignments submitted by the student and the results of the exam:
0.6 x % of the points obtained from the exam part + 0.3 x % of the points obtained from the evaluation of the tasks to be submitted + 0.1 x % of the points obtained for the short presentation
Total student workload: 4 credits = 100-120 hours
- 26 hours of participation in contact classes; 13 hours of solving tasks and preparing other submissions; 13 hours of seminar work and making a presentation, 46-48 hours of independent study and preparation for the exam.
The condition for successful completion of the course is to obtain at least 50% of the maximum possible score.
The course is graded on the following grading scale: A – 100–90%, B – 89–80%, C – 79–70%, D – 69–60%, E – 59–50%.

Results of education:
After successfully completing the course, the student:
Knowledges:
• has basic knowledge at the level of understanding of the chosen chemical discipline;
• acquires knowledge about the basics of nuclear chemistry, types of radioactive radiation and their effects on living organisms;
• knows the modern theories developed to describe the structure of matter,
• understands the cause of radioactivity, knows the different types of decay,
• understand the types of interaction between radiation and matter,

• understands how different types of radiation affect living organisms and what danger they pose
• knows the different types of radiation sources,
• understands the kinetics of radioactive decays, or the characteristics of the decay series,
• knows the medical and other peaceful uses of radioactivity,
• understands the operation of nuclear power plants, their advantages and disadvantages,
• knows the operating principles of nuclear weapons and their dangers.
Skills:
• can apply the elements of logical thinking when analyzing a chemical problem, can assess the relevant procedures and methods for solving theoretical problems;
• able to independently solve complex theoretical problems;
• can argue with basic professional and methodological knowledge in the given field;
• is able to judge the real dangers caused by different types of radiation,
• is able to assess what measures provide sufficient protection against different types of radiation and what risks they carry
• is able to interpret and explain the cause, characteristics, dangers and unique opportunities of radioactivity to others.
Competencies:
• is able to work independently with the literature, compare them and critically analyzes and presents,
• strives to understand and learn up-to-date the course material,
• open to accepting new perspectives and recognizing the limitations of existing theories,
• is characterized by creative thinking and independence in deepening one's own knowledge, while being able to work independently and efficiently.
• forms an opinion with an active and responsible attitude regarding everyday problems related to the topic.

Brief syllabus:

1. The development of our knowledge of the structure of matter: from the Greeks to Chadwick.
2. The origin of the elements: the Big Bang, stars, supernovae.
3. Characteristics of the atomic nucleus, Alpha, Beta and Gamma radiation.
4. Natural and artificial radiation sources.
5. Radioactive decay, complex decay, decay series.
6. Interaction of radiation with matter.
7. Detection and measurement of radioactive radiation, dosimetry.
8. Radioisotope dating.
9. Nuclear medicine, therapeutic and diagnostic methods.
10. Nuclear power plants, nuclear accidents and their lessons.
11. Nuclear weapons.

Literature:

Greenwood, N. N., Earnshaw, A.:, A.: Az elemek kémiája I - Budapest : Nemzeti Tankönyvkiadó, 1999, 549 s., . ISBN 963 18 9144 5
Greenwood, N. N., Earnshaw, A.:, A.: Az elemek kémiája II.- Budapest : Nemzeti Tankönyvkiadó, 2004, 1238 s. ISBN 963 19 5255 x
Greenwood, N. N., Earnshaw, A.:, A.: Az elemek kémiája III.- Budapest : Nemzeti Tankönyvkiadó, 2004, 1834 s., ISBN 963 19 5255 X
Greenwood, J.: Activity box - A resource book for teachers of young students : Cambridge University Press, 1997. - 120. - ISBN 0521 49870 8 (dostupné na internete: https://b-ok.xyz/book/1081366/28d884)

Lieser, K. H.: Nuclear and Radiochemistry: Fundamentals and applications, VCH, 1997, ISBN 3-527-29453-8 (dostupné na internete: https://qa.ff.up.pt/rq2020/Bibliografia/Books/Nuclear_and_radiochemistry.pdf)
MOROVSKÁ TUROŇOVÁ, A.: Jadrová chémia- Učebné texty, Univerzita Pavla Jozefa Šafárika v Košiciach, 2011, ISBN 978-80-7097-868-9 (dostupné na internete: https://www.upjs.sk/public/media/3467/Jadrova-chemia.pdf)

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: prof. Róbert Mészáros, DSc., Dr. habil. Imre Varga, PhD.

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ DC1/22	**Name:** Introduction to didactics of chemistry

Types, range and methods of educational activities:
Form of study: Lecture / Practical
Recommended extent of course (in hours):
Per week: 2 / 2 **For the study period:** 26 / 26
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 1.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
Lectures – oral exam from lecture topics; the exam is conditional on successful completion of exercises. During the semester, the student submits assignments.
Exercises - written test, from which the student must obtain at least 50% of points; the student submits interim assignments in which, in addition to solving tasks (max. 8 points) their submission on time (max. 2 points) is taken into account.
The result of the students' summary assessment will be calculated according to the following formula:
Final grade=(0.4 x the % of success on the oral exam) + (0.2 x % of success on the written test) + (0.4 x the % of success on the assignments).
Total student workload: 5 credits = 125-150 hours
- 52 hours of participation on lessons in present form; 26 hours solving the assigned learning tasks; 47-72 hours of self-learning and preparation for the written examination.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.

Results of education:
The student who successfully completes the subject:
Knowledge
•has theoretical and practical knowledge of general didactics in the profile educational areas and specialization;
is able to characterize the current State Educational Programs and the "Human and nature" thematic field of education.
is able to describe the framework lesson plans for chemistry education;
• possesses extensive didactic knowledge allowing to understand the relationship between the pedagogical processes of learning and teaching of an individual
•is able to list teaching methods and forms supporting active student learning in chemistry education;
• is able to characterize strategies, methods and forms of developing the pupils' literacy within the discipline of his/her subject specialization;

• can describe the principles of teaching and effective communication in the performance of his future profession;
• is able to characterize the three-level interpretation of the description of chemistry;
• can give examples of basic difficulties in learning chemistry and explain them;
• is able to characterize the structure and content of currently valid chemistry textbooks for primary and secondary schools;
• can characterize the practical teaching of chemistry from various aspects.
Skills:
• is able to know one´s way around generally binding legal regulations relating to the work of a teacher, pedagogical documentation, other documentation, other conceptual and strategic documents and school materials;
• has the skills of effective planning, projecting, managing and organizing the educational process in profile educational areas or specialization;
• has extensive methodological skills in profile educational areas or specialization;
• is able to transform the scientific system of the discipline into the didactic system of the subject;
• can process practical tasks and problems of chemistry in aspects of didactics;
• has practical skills in the field of laboratory activities, which he acquired as part of mandatory laboratory exercises.
• has practical knowledge of school laboratory technology, manipulation of chemical substances in the school environment, provision of chemical school experiments that serve as a basis for pedagogical practice
Competencies:
• is competent to perform the profession of a pedagogical employee, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of one's own teaching activity;
• can identify with his/her ownself profession;
• is able to understand the ethical, social, legal, safety and economic contexts of chemical education, and identify with them in his/her pedagogical profession;
• has an active and responsible approach to completing tasks within the subject

Brief syllabus:

Syllabus of the Lectures:

1. Introduction to the subject. Didactics as a science discipline. The subject of didactics. Characterization of general didactics and special didactics.
2. Characteristics of science education (emphasis on chemistry education), their trends in the world and in the Slovak education system.
3. State and school educational program - characteristics of the thematic field of education: Human and nature. Framework lesson plans for chemistry education. The curriculum of chemistry education - educational standards. Cross-curricular and interdisciplinary topics. Curriculum and its structure. Thematic educational plan. Target requirements for graduation exams in chemistry.
4. Characteristics of pupils' chemical thinking. Levels of interpretation of chemistry and related learning problems. The language of chemistry and related learning problems. Misconceptions and pupils´ naive concepts of science.
5. Textbooks, teaching materials - their structure, functions.
6. Organizational forms of chemistry education and their characteristics.
7. Teaching process. Goals of the teaching process. Conditions of the teaching process. Phases of the teaching process.
8. Characteristics of current concepts and models of chemistry education. Classification of teaching methods and their characteristics. Traditional vs. constructivist methods of teaching chemistry.
9. Learning aids and didactic techniques in chemistry education and their didactic aspects.

10. Characteristics of the chemistry lesson. Teacher preparation for teaching.
Syllabus of the Exercises:
1. Generally binding legal regulations for the operation of chemical laboratories.
2. Operating regulations of the laboratory.
3. Risk evaluation of the chemical factor in cases of school laboratories.
4. Characterization of dangerous properties of chemical substances.
5. Case study of some school laboratories.
6. General rules safety of the laboratory.
7. Characteristics of practical teaching of chemistry.
8. Teacher preparation for practical teaching in a chemistry laboratory.

Literature:

Albert,S. Didaktika. Dunajská Streda: LiliumAurum, 2005. 250s. ISBN 8080622523
Balázs, K. et al. A kémiatanítás módszertana. Budapest: ELTE, 2015 (Dostupné na internete: http://pedagoguskepzes.elte.hu/images/anyagok/i3/27_Kemiatanitas_modszertana_jegyzet)
Bari, R. et al. A kémia korszerű tanítása az általános iskolában. Eger, 1978. (Dostupné na internete: https://en.mandadb.hu/common/file-servlet/document/476003/default/doc_url/a_kmia_korszer_tantsa0001.pdf)
Čapek, R. Moderní didaktika : Lexikon výukových a hodnoticích metod - 1. vyd. - Praha : Grada, 2015. - 604 s. - ISBN 978-80-247-3450-7.
Falus,I. Didaktika. - Budapest : Nemzeti Tankönyvkiadó, 2003. - 552. - ISBN 9631952967
Held, Ľ. Induktívno-Deduktívna dimenzia prírodovedného vzdelávania. - 1. vyd. - Trnava : Pedagogická fakulta Trnavskej univerzity, 2014. - 67 s. - ISBN 978-80-8082-787-8.
Petlák,E. Všeobecná didaktika.- 1. vyd. Bratislava: IRIS, 2004. 316 s. ISBN 80-89018-64-5
Radnóti, K. et al. A természettudomány tanítása: Szakmódszertani kézikönyv és tankönyv. - 1. vyd. - Szeged : Mozaik Kiadó, 2014. - 575 s. - ISBN 978 963 697 764 1.
Tóth,Z. Módszerek és eljárások 10. : Oktatási segédanyag. Debrecen : KLTE, 1998. – 170s. - ISBN 963 472 283 0.
Turek,I. Moderné trendy vo výučbe na vysokých školách.- 1. vyd. Komárno : Univerzita J. Selyeho, 2006. 496s. ISBN 80-89234-13-5
Turek,I. Základy didaktiky vysokej školy. Komárno : Selye János Egyetem, 2005. 317s. ISBN 8080733015
Turek,I. Zvyšovanie efektívnosti vyučovania. Bratislava : Metodické centrum, 1997. 316s. ISBN 8088796490
VeszprémI,L. Didaktika. - Gyula : APC-Stúdió BT., 2000. 281s. ISBN 963913530X
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-2.stupen-zs/
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-gymnazia-so-stvorrocnym-patrocnym-vzdelavacim-programom/
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-gymnazia-osemrocnym-vzdelavacim-programom/
https://www.statpedu.sk/sk/maturitne-skusky/platne-od-sk-r-2018/2019/

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
Teacher: Mgr. Katarína Szarka, PhD., Mgr. Andrea Vargová, PhD.					
Date of last update: 06.07.2022					
Approved by: doc. RNDr. Róbert Gyepes, PhD.					

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ DC2/22	**Name:** Didactics of Chemistry I.
Types, range and methods of educational activities: **Form of study:** Seminar / Practical **Recommended extent of course (in hours):** **Per week:** 2 / 2 **For the study period:** 26 / 26 **Methods of study:** present	
Number of credits: 5	
Recommended semester/trimester of study: 2.	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: Seminar During the semester, the student submits the lessons´ preparations on selected topics and creates a portfolio from them. Within assessing portfolios, in addition to the didactic processing of the topics (max. 8 points), their submission on time (max. 2 points) is taken into account. At the end of the semester, there is an exam on the themes of the seminar. Registration for the exam is conditional upon successful completion of the exercises. Exercises During the semester, the student solves practical tasks within the subject, and processes and submits the protocol for the given laboratory tasks within one week after the laboratory exercise. Within assessing the protocols, their content and formal aspects and their submission on time are taken into account. At the end of the semester, the student has to successfully pass a written test on the topics of laboratory exercises, from which he must obtain at least 50% of the points. Participation in all exercises is mandatory, and only in case of justified absence is the missed exercise replaced individually at the end of the semester. The result of the students' summary assessment will be calculated according to the following formula: Final grade=(0.3 x the % of success on the oral exam) + (0.2 x % of success on portfolio) + (0.3 x the % of success on written test). Total student workload: 5 credits = 125-150 hours - 52 hours of participation on lessons in present form; 20 hours processing the lessons´ preparations; 13 hours processing the protocols for each laboratory task; 40-65 hours of self-learning and preparation for the written examination. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. 90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.	
Results of education: The student who successfully completes the subject: Knowledge	

•has theoretical and practical knowledge of general didactics in the profile educational areas and specialization;
is able to characterize the current State Educational Programs and the "Human and nature" thematic field of education.
is able to describe the framework lesson plans for chemistry education;
• possesses extensive didactic knowledge allowing to understand the relationship between the pedagogical processes of learning and teaching of an individual
•is able to list teaching methods and forms supporting active student learning in chemistry education;
• is able to characterize strategies, methods and forms of developing the pupils' literacy within the discipline of his/her subject specialization;
• can describe the principles of teaching and effective communication in the performance of his future profession;
• is able to do a complex didactic analysis of the knowledge/skills of selected thematic units from general and inorganic chemistry at primary and secondary schools;
Skills:
• is able to know one´s way around generally binding legal regulations relating to the work of a teacher, pedagogical documentation, other documentation, other conceptual and strategic documents and school materials;
• has the skills of effective planning, projecting, managing and organizing the educational process in profile educational areas or specialization;
• has extensive methodological skills in profile educational areas or specialization;
• is able to transform the scientific system of the discipline into the didactic system of the subject;
• can process practical tasks and problems of chemistry in aspects of didactics;
• is able to plan and organize classroom activities of pupils and groups of pupils;
• is able to define learning goals in the form of learning requirements;
• is able to analyze the content of the curriculum and identify its basic elements (facts, concepts, relationships, procedures);
• is able to determine the basic and developing curriculum of general and inorganic chemistry in the context of educational goals and individual needs of students;
• is able to select adequate examples, tasks and activities for pupils for the given topics of general and inorganic chemistry and activities for pupils;
• is able to model the teaching process and the knowledge transfer of general and inorganic chemistry at the level of primary and secondary education;
• can do self-evaluation and assess the appropriateness and feasibility of the teacher lesson preparations;
Competencies:
• is competent to perform the profession of a pedagogical employee, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of one's own teaching activity;
• can identify with his/her ownself profession;
• has an active and responsible approach to completing tasks within the subject.

Brief syllabus:

1. Introduction to the subject
2. Characteristics of the goals of the chemistry subject. Characteristics of the curriculum content of general and inorganic chemistry in ISCED 2 - lower secondary education and ISCED 3A - upper secondary education.
3. Cognitive and conceptual process in the teaching of general and inorganic chemistry at all levels of education (ISCED2 and ISCED3A).

4. Didactic analysis of education curriculum and its´ interpretation on the levels of ISCED2 and ISCED3A:
• the chemistry around us and the system of substances,
• composition of substances and chemical bond,
• structure of atoms and ions and chemical bond,
• the periodic table of elements and the basics of the nomenclature of inorganic compounds,
• transformations of substances,
• chemical reactions and their processes, chemical equations, types of chemical equations,
• protolytic and oxidation-redox changes,
• metals (s-elements and d-elements) and non-metals (p-elements).
During the exercises the school chemical experiments in general and inorganic chemistry, their technique and didactics are discussed.

Literature:

Balázs, K. et al. A kémiatanítás módszertana. Budapest: ELTE, 2015 (Dostupné na internete: http://pedagoguskepzes.elte.hu/images/anyagok/i3/27_Kemiatanitas_modszertana_jegyzet)
Ganajová et al. Bádateľské aktivity v prírodovednom vzdelávaní, časť A. Bratislava: ŠPU, 2016, ISBN 978-80-8118-155-9.
Hudec, T. Didaktická príručka z Chémie pre stredné školy. Trnava: Trnavská univerzita v Trnave, 2010, ISBN 978-80-8082-368-9, (dostupné na internete: https://pdf.truni.sk/dsz/didmat/che3.pdf)
Kirjuskin, D.M. A kémia tanításának módszertana. Budapest : Tankönyvkiadó, 1963. - 404. - ISBN 0008178
Levecsenko,V.V. A kémia tanítása az iskolában. Budapest : Közoktatásügyi Kiadóvállalat, 1951. – 170s. ISBN 0009897
Radnóti, K. et al. A természettudomány tanítása: Szakmódszertani kézikönyv és tankönyv. - 1. vyd. - Szeged : Mozaik Kiadó, 2014. - 575 s. - ISBN 978 963 697 764 1.
Solárová, M. et al. Metodika výuky chemie na 2.stupni základních škol a středních školách z pohledu pedagogické praxe - náměty pro začínajícího učitele. Ostrava: Ostravská univerzita, 2010, 82s. ISBN 978-80-7368-887-5. dostupné na internete: https://projekty.osu.cz/synergie/dok/opory/solarova-metodika-vyuky-chemie-na-2-stupni-zs-a-ss.pdf
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-2.stupen-zs/
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-gymnazia-so-stvorrocnym-patrocnym-vzdelavacim-programom/
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-gymnazia-osemrocnym-vzdelavacim-programom/
https://www.statpedu.sk/sk/maturitne-skusky/platne-od-sk-r-2018/2019/

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Mgr. Andrea Vargová, PhD.

Date of last update: 06.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ DC3/22	**Name:** Didactics of Chemistry II.
Types, range and methods of educational activities: **Form of study:** Seminar / Practical **Recommended extent of course (in hours):** **Per week:** 2 / 2 **For the study period:** 26 / 26 **Methods of study:** present	
Number of credits: 5	
Recommended semester/trimester of study: 3.	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: Seminar During the semester, the student submits the lessons´ preparations on selected topics and creates a portfolio from them. Within assessing portfolios, in addition to the didactic processing of the topics (max. 8 points), their submission on time (max. 2 points) is taken into account. At the end of the semester, there is an exam on the themes of the seminar. Registration for the exam is conditional upon successful completion of the exercises. Exercises During the semester, the student solves practical tasks within the subject, and processes and submits the protocol for the given laboratory tasks within one week after the laboratory exercise. Within assessing the protocols, their content and formal aspects and their submission on time are taken into account. At the end of the semester, the student has to successfully pass a written test on the topics of laboratory exercises, from which he must obtain at least 50% of the points. Participation in all exercises is mandatory, and only in case of justified absence is the missed exercise replaced individually at the end of the semester. The result of the students' summary assessment will be calculated according to the following formula: Final grade=(0.3 x the % of success on the oral exam) + (0.2 x % of success on portfolio) + (0.3 x the % of success on written test). Total student workload: 5 credits = 125-150 hours - 52 hours of participation on lessons in present form; 20 hours processing the lessons´ preparations; 13 hours processing the protocols for each laboratory task; 40-65 hours of self-learning and preparation for the written examination. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. 90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.	
Results of education: The student who successfully completes the subject: Knowledge	

•has theoretical and practical knowledge of general didactics in the profile educational areas and specialization;
is able to characterize the current State Educational Programs and the "Human and nature" thematic field of education.
is able to describe the framework lesson plans for chemistry education;
• possesses extensive didactic knowledge allowing to understand the relationship between the pedagogical processes of learning and teaching of an individual
•is able to list teaching methods and forms supporting active student learning in chemistry education;
• is able to characterize strategies, methods and forms of developing the pupils' literacy within the discipline of his/her subject specialization;
• can describe the principles of teaching and effective communication in the performance of his future profession;
• is able to do a complex didactic analysis of the knowledge/skills of selected thematic units from onorganic chemistry and biochemistry at primary and secondary schools;
Skills:
• has the skills of effective planning, projecting, managing and organizing the educational process in profile educational areas or specialization;
• has extensive methodological skills in profile educational areas or specialization;
• is able to transform the scientific system of the discipline into the didactic system of the subject;
• can process practical tasks and problems of chemistry in aspects of didactics;
• is able to plan and organize classroom activities of pupils and groups of pupils;
• is able to define learning goals in the form of learning requirements;
• is able to analyze the content of the curriculum and identify its basic elements (facts, concepts, relationships, procedures);
• is able to determine the basic and developing curriculum of onorganic chemistry and biochemistry in the context of educational goals and individual needs of students;
• is able to select adequate examples, tasks and activities for pupils for the given topics of onorganic chemistry and biochemistry and activities for pupils;
• is able to model the teaching process and the knowledge transfer of onorganic chemistry and biochemistry at the level of primary and secondary education;
• can do self-evaluation and assess the appropriateness and feasibility of the teacher lesson preparations;
Competencies:
• is competent to perform the profession of a pedagogical employee, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of one's own teaching activity;
• can identify with his/her ownself profession;
• has an active and responsible approach to completing tasks within the subject.

Brief syllabus:

1. Introduction to the subject
2. Characteristics of the goals of the chemistry subject. Characteristics of the curriculum content of general and inorganic chemistry in ISCED 2 - lower secondary education and ISCED 3A - upper secondary education.
3. Cognitive and conceptual process in the teaching of general and inorganic chemistry at all levels of education (ISCED2 and ISCED3A).
4. Didactic analysis of education curriculum and its´ interpretation on the levels of ISCED2 and ISCED3A:
• introduction to organic chemistry and biochemistry,

• chemical bond and types of chemical bonds in organic compounds,
• isomerism, the nomenclature of organic compounds,
• reaction mechanisms of organic chemistry,
• hydrocarbons and the derivatives of hydrocarbon,
• natural sources of hydrocarbons, petroleum processing,
• biogen substances,
• metabolic processes,
• the quality of life and health.
During the exercises the school chemical experiments in general and inorganic chemistry, their technique and didactics are discussed.

Literature:

Balázs, K. et al. A kémiatanítás módszertana. Budapest: ELTE, 2015 (Dostupné na internete: http://pedagoguskepzes.elte.hu/images/anyagok/i3/27_Kemiatanitas_modszertana_jegyzet)
Kireš, M. et al. Bádateľské aktivity v prírodovednom vzdelávaní, časť A. Bratislava: ŠPU, 2016, ISBN 978-80-8118-155-9, (dostupné na internete: https://www.statpedu.sk/files/articles/nove_dokumenty/ucebnice-metodiky-publikacie/badatelske-aktivity/01cast_a_web.pdf)
Hudec, T. Didaktická príručka z Chémie pre stredné školy. Trnava: Trnavská univerzita v Trnave, 2010, ISBN 978-80-8082-368-9, (dostupné na internete: https://pdf.truni.sk/dsz/didmat/che3.pdf)
Kirjuskin, D.M. A kémia tanításának módszertana. Budapest : Tankönyvkiadó, 1963. - 404. - ISBN 0008178
Levecsenko,V.V. A kémia tanítása az iskolában. Budapest : Közoktatásügyi Kiadóvállalat, 1951. – 170s. ISBN 0009897
Radnóti, K. et al. A természettudomány tanítása: Szakmódszertani kézikönyv és tankönyv. - 1. vyd. - Szeged : Mozaik Kiadó, 2014. - 575 s. - ISBN 978 963 697 764 1.
Solárová, M. et al. Metodika výuky chemie na 2.stupni základních škol a středních školách z pohledu pedagogické praxe - náměty pro začínajícího učitele. Ostrava: Ostravská univerzita, 2010, 82s. ISBN 978-80-7368-887-5. dostupné na internete: https://projekty.osu.cz/synergie/dok/opory/solarova-metodika-vyuky-chemie-na-2-stupni-zs-a-ss.pdf
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-2.stupen-zs/
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-gymnazia-so-stvorrocnym-patrocnym-vzdelavacim-programom/
https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/inovovany-svp-gymnazia-osemrocnym-vzdelavacim-programom/
https://www.statpedu.sk/sk/maturitne-skusky/platne-od-sk-r-2018/2019/

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. György Juhász, PhD., Mgr. Andrea Vargová, PhD.

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ DCU/22	**Name:** Methodology of chemical tasks

Types, range and methods of educational activities:
Form of study: Seminar / Practical
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 2.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
During the semester, the student submits their solved tasks. Within the assessment of the assignments, in addition to solving tasks (max. 8 points), their submission on time (max. 2 points) is taken into account.
At the end of the subject, the student passes a comprehensive written examination, from which he must obtain at least 50% of the points.
The result of the students' summary assessment will be calculated according to the following formula:
Final grade=(1x average % of success on the assignments + 2 x % of success on the written examination) / 3.
Total student workload: 2 credits = 50-60 hours
- 26 hours of participation on lessons in present form; 13 hours solving calculation tasks and other assigned learning tasks; 11-21 hours of self-learning and preparation for the written test.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.

Results of education:
The student who successfully completes the subject:
Knowledge
• is able to do didactic processing of school chemical tasks and create worksheets;
• has knowledge of the methodology of creating school chemistry assignments;
• possesses the supporting specific knowledge of mathematics and other natural science disciplines necessary for the application of this knowledge;
Skills
• can apply the standards of logical thinking when analyzing a chemical problem, can assess relevant procedures and methods for solving chemical calculations;
• is able to independently didactically process chemical calculation solutions;
• is able to propose alternative strategies for solving school chemical calculations;
• is capable of a comprehensive didactic analysis of the subject Chemical calculations at the educational level ISCED 2 and ISCED 3A;

• is able to model the classroom knowledge transfer from the field of chemical calculations at educational level ISCED 2 and ISCED 3A;
• is able to analyze chemical tasks in terms of learning objectives;
• is able to create a chemical task in accordance with the learning objectives;
• is able to collect tasks into thematical worksheets;
• is able to compile a set of chemical tasks to monitoring selected type of knowledge or skills and create an assessment for them;
Competencies
• is able to think creatively, and independently plan his own study;
• possesses autonomy and responsibility in decision-making in connection with the classroom teaching of chemistry;
• is able to work creatively, efficiently and independently;
• possesses abilities to perform the profession of a teacher, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of his own teaching activity;
• can identify with his own profession.
• is able to identify with the attitude of the teacher, whose duty is to support talented pupils as much as to support the education of pupils with learning problems or worse performance.

Brief syllabus:

1. Introduction to the subject. The role and objectives of chemical tasks in chemistry education. Mathematical apparatus and the development of mathematical competencies and logical thinking in chemistry education.
2. Characteristics of chemical tasks. Chemical problems - theoretical and practical.
3. Didactical principles of teaching chemical tasks in the classroom.
4. Tasks´ analysis of selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
5. Inquire-based learning tasks´ analysis of selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
6. Analysis of Case-study-tasks from the selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
7. Project-based learning tasks´ analysis of selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
8. Creation of worksheets/tests, evaluation keys, and chemical tasks with the purpose of summative and formative assessment. Creation of online assignments and tests.
9. Pupil's personality. Differentiation in the teaching of chemistry. Individualization and personalization in the teaching of chemistry. Access to gifted and weaker students.
10. Possibilities of developing professional competencies in teaching chemistry. Preparation of pupils for graduation exams. The structure of graduation questions fields in chemistry. Solution of graduation examples.
11. Chemical competitions. Tasks of correspondence competitions.
12. Didactic analysis and solving tasks of chemical competitions.

Literature:

Balázs, K. et al. A kémiatanítás módszertana. Budapest: ELTE, 2015 (Dostupné na internete: http://pedagoguskepzes.elte.hu/images/anyagok/i3/27_Kemiatanitas_modszertana_jegyzet)
Bárány, Zs.B. Kémia emelt szintű érettségi feladatok – számítási feladatok (Dostupné na internete: http://www.bzsb.hu/aloldalak/oktatasi-anyagok/Erettsegi/szamitasi-feladat.html)
Näser, K.H. Physikalisch-chemische Rechenaufgaben - 1. vyd. - Leipzig : VEB Deutscher Verlag, 1970. 378 s.

RÓZSAHEGYI, M, SIPOSNÉ-KEDVES, É., HORVÁTH, B. Kémia feladatgyűjtemény 11-12 : Közép- és emelt szintű érettségire készülőknek. - 4. vyd. - Szeged : Mozaik Kiadó, 2014. - 285 s. - ISBN 978 963 697 591 3.
Tóth, Z. A kémiai számítások tanításának alapjai. (dostupné na internete: http://refpedi.hu/sites/default/files/hir_kepek/Dr%20T%C3%B3th%20Zolt%C3%A1n_Sz%C3%A1m%C3%ADt%C3%A1sok%20tan%C3%ADt%C3%A1sa.pdf)
Rózsahegyi, M. Érettségi felvételi feladatok - Kémia. 1. vyd. Szeged : Mozaik Oktatási Stúdió, 1996. 144 s. ISBN 963 697 017 3
Villányi, A. Ötösöm lesz kémiából : Példatár . 1. vyd. Budapest : Novotrade Kiadó, 1990. 192 s. ISBN 963 586 093 X
Villányi, A. Ötösöm lesz kémiából : Megoldások. 1. vyd.Budapest : Novotrade Kiadó, 1990. 422 s. ISBN 963 585 093 X
https://www.iuventa.sk/olympiady-1/archiv-olympiad/
http://chem.korsem.sk/
http://www.equark.sk/index.php?cl=branch&iid=9

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Mgr. Katarína Szarka, PhD., Mgr. Andrea Vargová, PhD.

Date of last update: 06.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ DS-CH/22	**Name:** Master's Thesis Seminar
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 1 **For the study period:** 13 **Methods of study:** present	
Number of credits: 4	
Recommended semester/trimester of study: 3.	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: Submission of a selected bibliography and research plan related to the topic of the thesis, and drafting of a part of the thesis (about 15 pages). Attendance at the seminar is compulsory. The student prepares part of the Master's thesis and submits the bibliography. The student must hand in a ready part of the thesis to the tutor by the deadline. If the student does not hand in the ready part of the thesis within 7 days after the deadline, he/she will not receive the credits for the course. The length of the ready part of the thesis to be handed in is determined by the tutor, the formal requirements are specified in the Rector's Directive 2/2021. The work must comply with the technical rules and ethics of citation. Criteria for the evaluation of the work: – the student's analytical-synthetic thought process, – expression of personal opinion supported by theoretical knowledge, – the definition of the problem and the aim of the work, the way in which it has been developed, – the structure of the work - logical structure and proportional length of each part, – work with literature and sources of information (how they are selected and used), – compliance with the basic formal requirements of the essay, compliance with citation requirements, – aesthetic and linguistic quality of the essay. Percentages for each task: Work done in seminars: 20 %. Seminar paper: 80 %. The student must complete at least 50 % of all assignments.	
Results of education: Knowledge: The student is able to: - list and explain the general requirements for the preparation of the Master's thesis, describe and characterize the content structure of the Master's thesis and its parts (introduction, main body, appendices),	

- explain the concepts of phenomenon and fact, list and describe ways of investigating educational phenomena,
- describe in more detail the main methods of collecting and processing the data presented in the Master's thesis,
- identify the basic requirements for the author of a thesis, describe and characterise the model, characteristics and formal structure of a thesis,
- list and explain the formal requirements for the Master's thesis,
- define the concept of an abstract, describe its structure, describe the characteristics of a quality abstract, list the most common mistakes in abstract preparation, distinguish between an abstract and an annotation, an extract, a summary and an overview,
- explain the concepts of citation, quotation, paraphrasing, compilation, plagiarism, distinguish between quotating and paraphrasing, and illustrate different citation and referencing techniques with examples,
- define and interpret in his (her) own words the basic concepts and motifs of the chosen subject area,
- be familair with the basic terms used in the thesis,
- explain thebasic terms used in an essay,
- construct (elaborate) the theoretical plane of the thesis, including all its important aspects,
- analyse and justify the conclusions of the thesis,
- critically analyse, re-evaluate and use in theory the knowledge gained.

Skills:

The student is able to:
- write a draft of his (her) own Master's thesis,
- explain the methodological rules for writing a Master's thesis,
- define the main question and the aim of the thesis, formulate hypotheses where appropriate,
- plan a timetable for the preparation of the Master's thesis, including its table of contents,
- work with literature (primary and secondary sources), search for information in library information databases,
- prepare the text of the Master's thesis, based on the knowledge acquired, by formulating ideas in a logical and precise way, producing a quality abstract, writing an introduction and conclusion, taking into account the criteria given,
- present the knowledge acquired in the field, recognising its complexity and drawing conclusions,
- apply knowledge of the ethics and techniques of citation and drafting,
- use correctly the various methods of citation and referencing and compile a bibliography correctly,
- create (develop) the practical aspects of the thesis, including all relevant aspects,
- analyse, synthesise and compare knowledge and propose solutions on this basis,
- draw conclusions and formulate practical implications through critical analysis,
- critically analyse, reassess and apply the knowledge acquired in practice,
- present, discuss and support the ideas with proper arguments, while writing the thesis,
- present, in a group of students and in the presence of the tutor, the outputs of the activity and justify their relevance and practical use,
- complete the Master's thesis and prepare for its public defence,
- to grade the strengths and weaknesses of the topic of the thesis and the thesis itself,
- critically evaluate the methods and procedures used in the thesis and make suggestions for their practical application,
- acquire independent knowledge in the chosen field,
- apply theoretical knowledge to teaching practice.

Competences:
The student
- is aware of the importance of respecting academic ethics and the ethical implications for his/her own student and future teaching activities,
- acts in accordance with the rules of good conduct,
- has mastered the basics of social appearance, and is dressed appropriately for the state examination,
- adheres to the wthical principles of citation
- expresses his/her beliefs and opinions in a straightforward and honest manner, while accepting that the other party has the right to form his/her own opinion,
- bears and accepts the consequences of his/her own actions.

Brief syllabus:

1. Requirements for the Master's thesis in the SJE guidelines.
2. A concise description of the Master's thesis.
3. The importance of the Master's thesis
4. Selection of the topic for the Master's thesis.
5. Preparation of a selected bibliography for the thesis.
6. Tasks and objectives of the Master's thesis.
7. Choosing the appropriate citation.
8. Content of the Master's thesis.
9. Formulating a strategy for the development of each part (chapter).
10. Working with reference books and journals.
11. Use of the Internet and online publications.
12. Preparing and carrying out the research, and getting ready for the defence of the Master's thesis.

Literature:

A magyar helyesírás szabályai. 2015. Budapest: Akadémiai Kiadó. 12. kiadás. ISBN 978 963 05 9631 2
Madarásová, J. (red.) 2000. Pravidlá slovenského pravopisu. Bratislava: VEDA. ISBN 8022406554
Smernica rektora č. 2/2021 o úprave, registrácii, sprístupnení a archivácii záverečných, rigoróznych a habilitačných prác na Univerzite J. Selyeho. 2021. Komárno: UJS
Majoros P.: Kutatásmódszertan: avagy: Hogyan írjunk könnyen, gyorsan jó diplomamunkát?- 1. vyd. –Budapest: Nemzeti Tankönyvkiadó, 1997. – 131 s. – ISBN9631883698.
Turek I.: Ako písať diplomovú prácu – Prešov: Metodické centrum Prešov, 1999. – 28 s. – ISBN8080451613
Chajdiak, J.: Štatistika jednoducho v Exceli. - 1. vyd. - Bratislava : Statis, 2013. - 340 s. - ISBN 978-80-85659-74-0.
Katuščák, D.: Ako písať záverečné a kvalifikačné práce. 5. vyd. - Nitra : Enigma, 2007. - 164 s. - ISBN 978-80-89132-45-4
Nagy-György, J.: Valószínűségszámítás és statisztika példatár : POLYGON Jegyzettár - 1.vyd. - Szeged : Szegedi Egyetemi Kiadó POLYGON, 2010. - 111 s.
Silverman, D.: Ako robiť kvalitatívny výskum /. - Bratislava : Ikar a.s., 2005. - 328 s. – ISBN 80-551-0904-4.
Marko J.: Ako písať záverečnú prácu. - 1. vyd. - Zvolen : TU, 2010. - 66 s. - ISBN 978-80-228-2112-4.
Murray R.: How to Write a Thesis - 3. vyd. - England : McGraw-Hill Open University Press, 2011. - 326 s. - ISBN 978-0-33-524428-7.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: doc. RNDr. Róbert Gyepes, PhD., doc. Ing. Ondrej Hegedűs, PhD., Mgr. Alexandra Hengerics Szabó, PhD., Dr. habil. PaedDr. György Juhász, PhD., Attila Kardos, PhD., prof. Róbert Mészáros, DSc., Mgr. Katarína Szarka, PhD., Dr. habil. Imre Varga, PhD., Mgr. Andrea Vargová, PhD.

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ IKT/22	**Name:** IKT in chemistry teaching
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 1.	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: During the semester the assignments submitted by the student will be evaluated. When evaluating the submitted assignments, in addition to the right solutions (for which you can get a maximum of 8 points), the submission of the assignments by the deadline is also taken into account (max. 2 points). During the semester, the student works continuously on a seminar paper written on the chosen topic of the subject. The paper must be submitted at the end of the seminar. At the end of the course, the student takes part in a written examination. In order to successfully finish the course 50 % of the maximally available points must be obtained. At the final evaluation of the course the results of the submitted assignments, the seminar paper and the written examination are taken into account. Final grade=(1 x the % expression of the performance achieved on the submitted assignments + 1 x the % expression of the performance achieved in the seminar + 1 x the % expression of the performance achieved in the written examination)/3. Total student load: 3 credits = 75-90 hours, of which - participation in 26 hours of face-to-face education; 13 hours of calculation tasks or solving other chemical tasks; 23-38 hours of independent study and preparation for the written examination.. The condition for successful completion of the course is to obtain at least 50% of the maximum score. The course is graded on the following grading scale: A – 100–90%, B – 89–80%, C – 79–70%, D – 69–60%, E – 59–50%	
Results of education: After successfully completing the subject, the student: Knowledge: ● has knowledge about the digital society related to the teaching profession and its performance; ● has knowledge of the cognitive learning process and the implementation of the learning process in the digital world; ● knows the risks of the digital world; ● knows the basic principles of the operation of ICT, the multimedia elements of software products and the operation of web 2.0 technologies; ● can compare and characterize education in a traditional school and education in the digital society;	

● can compare and characterize concepts such as communication, interactive and non-interactive communication, digitalization, globalization, information society;
● knows the challenges of the digital world, which are reflected in the teaching of chemistry;
● can characterize the basic concepts of information and communication technology and digital technology;
● knows the modern theoretical models of the learning process and the integration of ICT into the process;
● knows the possibilities of using ICT in chemistry education, as well as the possibilities of using educational software in the student's active learning process;
● knows the strategies, methods and forms for developing students' digital literacy within the subject area;
● knows the principles of effective communication in the digital world;
Skills:
● has extensive methodological abilities and skills in the field of information and communication technologies;
● independently applies appropriate work methods in the digital world;
● is able to navigate the digital information world and is able to use e-resources during his professional activities;
● is able to navigate the range of possibilities for the use of digital technology by supporting the development processes of individuals, their lifelong positive stimulation and the developmental differences of individuals resulting from health or social disadvantages;
● integrates ICT/DT into the chemistry teaching process in accordance with the ceducational content of the ŠVP ISCED 2 and ISCED 3A program;
Competencies:
● is socially committed, has socially accepted civic attitudes, has developed a positive attitude towards his profession, the target group of his professional activity and his own lifelong learning, with regard to the requirements of the digital society;
● is competent to practice the profession of a pedagogical employee, meets the requirements of the professional standards of a beginning pedagogical employee;
● is able to react and improve and perfect the effectiveness of their own educational activities in the digital society

Brief syllabus:

1. Introduction to the subject - the characterization of education in a traditional school compared to the characterization of education in a digital society (historical overview of the development of society and its transformation into a digital society, education in a digital society).
2. Basic principles of ICT operation, hardware devices and software applications, multimedia elements, web 2.0 technologies.
3. Characterization of the following concepts: communication - interactive and non-interactive digitalization, globalization, information society, digital literacy, the dangers of the digital world for school-aged children.
4. The process of information processing, the use of digital resources in education.
5. Educational theories and the digital world, the integration of ICT into educational theories, learning styles and their ICT support.
6. The ICT competences of students and teachers in education.
7. The use of ICT in chemistry education, the role of the computer in education, the concept of educational software.
8. e-Learning, e-learning materials, the possibilities of e-learning in chemistry education.
9. m-Learning, the use of mobile instruments and devices in chemistry education.
10. Integrated laboratory systems, evaluation of the results of chemical experiments.

11. Implementation of chemistry lessons with the help of ICT, forms and structure of lessons.

Literature:

Abonyi-Tóth, A., Turcsányi_Szabó, M. A mobiltechnológiával támogatott tanulás és tanítás módszerei. Educatio Társadalmi Szolgáltató Nonprofit Kft., 2015, (dostupné na internete: https://www.educatio.hu/pub_bin/download/tamop311_II/eredmenyek/m_learning/mlearning_kotet.pdf)
Cassells, D. et al. Výchova digitálnych občanov. Brusel: e-Twinning, 2016, ISBN 9789492414663, (dostupné na internete: https://www.etwinning.net/eun-files/book2016/SK_eTwinningBook.pdf)
Kalaš, Ivan et al. Premeny školy v digitálnom veku. Bratislava: SPN – Mladé letá,s.r.o.,2013. ISBN 978-80-10-02409-4. Košice: pre UIPŠ vydal elfa, s.r.o., 2010. ISBN 978-80-8086-143-8.
Lévai, D., Papp-Danka, A. Interaktív oktatásinformatika. Eger: Eszterházy Károly Főiskola, ISBN 978-615-5297-74-8, (dostupné na internete: http://www.eltereader.hu/media/2016/02/Interaktiv_Oktatasinformatika_READER.pdf)
Ollé, J. Virtualis kornyezet, virtualis oktatas. Budapest: ELTE Eötvös Kiadó, 2012, ISBN 978 963 284 283 7, (dostupné na internete: http://www.eltereader.hu/media/2013/11/Oll%C3%A9_1_kotet_READER.pdf)
Ollé, J. et al. Oktatásinformatikai módszerek: Tanítás és tanulás az információs társadalomban. Budapest: ELTE Eötvös Kiadó, 2013, ISBN 978 963 312 157 3, (dostupné na internete: http://www.eltereader.hu/media/2013/11/Olle2_okt-inform_READER.pdf)

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. György Juhász, PhD.

Date of last update: 06.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ OB/22	**Name:** Master's Thesis and Defense
Types, range and methods of educational activities: **Form of study:** **Recommended extent of course (in hours):** **Per week: For the study period:** **Methods of study:** present	
Number of credits: 8	
Recommended semester/trimester of study:	
Level of study: II.	
Prerequisites:	

Conditions for passing the subject:

While writing the Master's thesis, the student follows the instructions of the supervisor and the Rector's guidelines on the preparation, registration, access and archiving of Bachelor and Master's theses, dissertations and habilitation theses written at Selye János University. The recommended length of the Master's thesis is 50 to 70 pages (90000 to 126 000 characters with spaces). The deadline for submission of the Master's thesis is specified in the timetable for the academic year. The Master's thesis is checked for authenticity in the central register of final theses. A report is drawn up on the outcome.

The examination of authenticity is a prerequisite for the defence. The submission of the Master's thesis includes a licence agreement between the student and the Slovak Republic, represented by the University, on the use of digital copies of the Master's thesis.

The Master's thesis is evaluated by the supervisor and the assessor who prepare their evaluation on the basis of the criteria provided.

The supervisor mainly assesses the fulfilment of the objective, the student's autonomy and initiative in the development of the topic, the cooperation with the supervisor, the logical structure of the Master's thesis, the chosen methods and methodology, the professional quality of the thesis, the depth and quality of the development of the topic, the usefulness of the thesis, the applicability of its results, the work with literature, the relevance of the sources used, as well as the formal features, spelling, style and originality of the thesis.

The assessor focuses on the relevance and appropriateness of the topic of the thesis, the aim of the thesis and its fulfilment, the logical structure of the Master's thesis, the sequencing and division of chapters, the appropriateness of the methods and methodology used, and the professional quality of the thesis, the depth and quality of the treatment of the topic, the usefulness of the thesis, the applicability of its results, the work with the literature, the relevance of the sources used, and the formal features, spelling, style and originality of the thesis.

The examination board will assess the originality of the thesis, the degree of student involvement in the solution of the academic problem, the student's self-reliance and ability to solve the scientific problem - including the search for literature, the formulation of objectives, the choice of method, the selection of research material, the ability to evaluate, the ability to discuss the results, the summary and presentation of the results, and the relevance to the educational process, etc.

The committee will also assess the ability to present the results, including answers to questions on the topic, adherence to time constraints, etc.
The State Examination Board will evaluate the examination in an informal meeting and decide the mark. The grading is a complex assessment of the quality of the Master's thesis and its defence, taking into account the reviews and the process of thesis defence. The committee will mark the defence with an aggregate mark. The mark may be the same as, or better or worse than, the mark given in the marks, depending on the thesis defence.
The grading scale is A - 100-90%, B - 89-80%, C - 79-70%, D - 69-60%, E - 59-50%. A student who does not achieve 50% will not receive credit.
The results of the oral and theoretical part of the examination will be announced publicly by the chairperson of the board in public.

Results of education:
Knowledge:
- The student is familiar with the structure of an academic publication,
- The student can use the resources in an independent and creative way,
- The student is able to analyse and evaluate the problem under study in his/her field of research,
- The student is able to organise and apply the theoretical knowledge acquired by him (her) in teaching practice,
- The student is able to select research methods and procedures appropriately and to apply them effectively.

Skills:
- The Master's thesis demonstrates the student's knowledge of the theoretical and practical aspects of the problem under study,
- The student is able to present and defend his/her own professional viewpoints on issues related to teaching, and is able to find solutions to these problems,
- The student is able to learn independently, enabling him (her) to continue his (her) studies,
- The student is able to to understand the complexity of phenomena and to make decisions even when information is limited, including his (her) social and ethical responsibility in making decisions,
- The student is able to collect and interpret relevant data (facts) in the field of his (her) study and to make decisions that take into account social, scientific and ethical aspects,
- The student is able to support the ideas presented with arguments and to draw practical conclusions and formulate proposals,
- The student is able to present the results of the Master's thesis,
- The student is able to respect the principles of academic integrity and ethics.

Competences:
The student is able to
- express his/her own linguistic and professional culture and approach to the professional issues encountered in the course of his/her studies, in an appropriate way
- reason and apply knowledge methodologically, both theoretically and practically,
- put knowledge into practice and to organise it,
- apply his (her) knowledge in a creative way in the performance of basic tasks, furthermore, the students is able to analyse the problem and to organise new knowledge,
- answer the questions of the supervisor and the assessor to the required standard and thus be able to defend their Master's thesis successfully.

Brief syllabus:
The procedure for defending the Master's Thesis is as follows:
1. The student presents his/her thesis.

2. The main points of the thesis supervisor' and opponent's reviews are presented.
3. The student answers the questions of the supervisor and the opponent.
4. Professional discussion of the Master's Thesis, when the student answers questions.
The presentation of the Master's thesis should mainly include the following points:
1. A brief justification of the choice of topic, its relevance and practical utility.
2. Explanation of the objectives of the thesis and the methods used.
3. The main content of the thesis.
4. The conclusions and proposals drawn by the student.
A copy of the thesis and its electronic presentation are provided to the student during the presentation. The student presents the thesis on his own for a minimum of 10 minutes. He/she may use computing devices.
The final thesis is available to the committee before and during thesis defence.

Literature:
Katuščák, D. Ako písať vysokoškolské a kvalifikačné práce. Bratislava: Enigma, 2004.
Aktuálna Smernica rektora o úprave, registrácii, sprístupnení a archivácii záverečných prác na Univerzite J. Selyeho – dostupné na https://www.ujs.sk/documents/Smernica_c.2-2021o_zaverecnych_pracach_.pdf

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher:

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ PPX4/22	**Name:** Teaching Practice IV.

Types, range and methods of educational activities:
Form of study: Practical
Recommended extent of course (in hours):
Per week: For the study period: 20s
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 2.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
The final assessment is a portfolio based on the teaching aids developed during the pedagogical practice. The conditions for the completion of the course are regulated by the Dean's Regulation entitled “The Basic Principles of Pedagogical Practice at the J. Selye University Faculty of Education”. The student is obliged to follow the sections of this document concerning active pedagogical practice (PPX4).
Mandatory parts of the portfolio:
- A protocol certifying the completion of the pedagogical practice
- Analysis of observed lessons and observation forms filled in
- Lesson plans, evaluation and analysis of the lessons taught
- Other documents and attachments related to the pedagogical practice
Assessment of the subject: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%. An Fx grade may be given if the student achieves less than 50% of the total score.
Student's workload: 2 credits = 50 hours (20 hours of pedagogical practice: 5 hours of observation, 5 hours of analysis (of lessons observed), 5 hours of teaching, 5 hours of analysis (of lessons taught); 30 hours of preparation: preparation for pedagogical practice - consultation with the practice teacher, preparation for the lesson observation, preparation for the lessons to be taught, preparation of the portfolio and documentation)

Results of education:
Knowledge:
The student
- is able to observe and analyse high school and middle school activities.
- is able to evaluate and analyse activities of students of upper and middle school.
- is able to document observed upper primary and secondary school activities and activities.
- is able to consult school documents.
- is familiar with the staffing structure and facilities of the school.
- is familiar with the specific activities of the teacher during the lessons.
- knows and understands the environment, culture and organisation of primary and secondary schools.
Skills:
The student

- is able to identify different manifestations of the structural elements of personality, the psychological processes of the learner in the process of studies and in social interactions.
- is familiar with specific activities of the teacher throughout the day, in the classroom and while teaching subjects related to his/her field of specialisation in primary and secondary schools.
- can identify the teaching objectives set by the teacher, the procedures used to achieve them and the extent to which they are achieved.
- can identify various teaching methods used during the lesson.
- describes the didactic aids, communication technologies and tools used in the teaching process, as well as the possibilities of using computers, interactive whiteboards, the Internet, special educational programmes and software, dynamic systems, interactive learning materials and portals in the teaching of subjects in his/her field of specialisation.
- describes the processes of student assessment in the teaching process.
- identifies the teaching and communication style, as well as professional skills of the teacher.
- is able to process, evaluate and reflect on the results of observation in the context of educational theory.
- recognises his/her own level of competence.
- is able to identify common professional problems and to search for, formulate and solve them from a theoretical and practical background (using various practical procedures in practice).
- is able to identify gifted learners, learners with difficulties or special educational needs, disadvantaged learners, learners with multiple disadvantages, as well as learners with special needs, in order to provide them with appropriate guidance in order to enter the labour market.
- is able to prepare a didactically correct written lesson (including all necessary components such as creativity, autonomy, individualisation and alternativity.
- is able to consult the practice teacher on his/her own written preparation.
- is able to properly prepare, teach and evaluate a lesson.
- is able to document the results, as well as to professionally write reflections and self-reflections on the lesson planned, prepared, implemented and evaluated.

Competences:

The student

- takes a position on observed phenomena based on prior theoretical knowledge.
- self-reflects and receives feedback on his (her) own performance from students, colleagues and practitioners.
- presents own personality traits, communication style, values and professional skills in a responsible manner.
- gives feedback and evaluates students' learning outcomes in accordance with assessment principles for the appropriate level of teaching.
- promotes interaction between learners.
- recognises students' expressions of individuality in the context of the formal social group within the classroom, the specific features of students' learning, their particular educational needs and applies elements of differentiation in teaching.
- implements classroom teaching using teaching methods, strategies, resources and aids optimised by the disciplinary-didactic theory of her (his) field, as well as information and communication technologies.
- understands the relationship between teaching principles, consequences and learning effectiveness.
- reflects on her (his) own pedagogical skills.
- is able to develop self-awareness of the teaching profession in a targeted way.
- is able to plan independently activities that develop knowledge in the context of the teaching profession.

- is able to create the atmosphere of trust, helpfulness, encouragement, attentive acceptance, and openness, as well as to recognize and manage of the working style of others.
- optimises a good atmosphere in the learning group (school classroom) and creates a stimulating and non-threatening environment for teaching and learning by applying rules and safe working conditions, and by using proper methods to motivate and activate learners.

Brief syllabus:

Observation and evaluation of the external and internal environment of a primary and secondary school in practice.
Learning about and working with the pedagogical documentation of the class and the school.
Observation of the creation of conditions, implementation and evaluation of lessons in upper primary and secondary schools.
Carrying out a professional analysis of the lessons observed in collaboration with the practice teacher.
Documenting the process and results of each lesson observed.
Didactical procedures for the preparation of the written preparation (with all its components), consultation with the practice teacher.
Preparation of the necessary conditions for the lesson.
Implementation of the planned and prepared lesson, by using innovative strategies, as well as appropriate teaching tools from primary and secondary schools.
Evaluating the lesson, using planned and selected methods and evaluation tools from the point of view of the teacher, the students (and elements of self-evaluation).
Professional analysis done together with the student's practice teacher: preparation, documentation and evaluation of the preparation and its use, as well as other components of the lesson.
Preparation of a portfolio of the lessons observed, with all its components, based on criteria predefined by the practice teacher, using autonomy and alternativity, based on current trends in didactics.

Literature:

Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike ISCED 2 – nižšie sekundárne vzdelávanie. https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf
Štátny vzdelávací program pre gymnázia v Slovenskej republike ISCED 3A – Vyššie sekundárne vzdelávanie. https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3_spu_uprava.pdf
Zákon č. 245/2008 Z. z. – Zákon o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. Bratislava : MŠ SR, 2008 (respektíve aktuálny školský zákon).
Aktuálny vnútorný predpis UJS: Zásady realizácie pedagogickej praxe na Pedagogickej fakulte UJS
Gadušová, Z. a kol.: Mentor Training : Ostrava : Ostravská univerzita, 2021. - online, 268 s. - ISBN 978-80-7599-294-9.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
Teacher: Dr. habil. PaedDr. György Juhász, PhD., Mgr. Katarína Szarka, PhD.					
Date of last update: 06.07.2022					
Approved by: doc. RNDr. Róbert Gyepes, PhD.					

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ PPX5/22	**Name:** Teaching Practice V.

Types, range and methods of educational activities:
Form of study: Practical
Recommended extent of course (in hours):
Per week: For the study period: 20s
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 3.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
The final assessment is a portfolio based on the teaching aids developed during the pedagogical practice. The conditions for the completion of the course are regulated by the Dean's Regulation entitled “The Basic Principles of Pedagogical Practice at the J. Selye University Faculty of Education”. The student is obliged to follow the sections of this document concerning active pedagogical practice (PPX5).
Mandatory parts of the portfolio:
- A protocol certifying the completion of the pedagogical practice
- Analysis of observed lessons and observation forms filled in
- Lesson plans, evaluation and analysis of the lessons taught
- Other documents and attachments related to the pedagogical practice
Assessment of the subject: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%. An Fx grade may be given if the student achieves less than 50% of the total score.
Student's workload: 2 credits = 50 hours (20 hours of pedagogical practice: 5 hours of observation, 5 hours of analysis (of lessons observed), 5 hours of teaching, 5 hours of analysis (of lessons taught); 30 hours of preparation: preparation for pedagogical practice - consultation with the practice teacher, preparation for the lesson observation, preparation for the lessons to be taught, preparation of the portfolio and documentation)

Results of education:
Knowledge:
The student
- is able to observe and analyse high school and middle school activities.
- is able to evaluate and analyse activities of students of upper and middle school.
- is able to document observed upper primary and secondary school activities and activities.
- is able to consult school documents.
- is familiar with the staffing structure and facilities of the school.
- is familiar with the specific activities of the teacher during the lessons.
- knows and understands the environment, culture and organisation of primary and secondary schools.
Skills:
The student

- is able to identify different manifestations of the structural elements of personality, the psychological processes of the learner in the process of studies and in social interactions.
- is familiar with specific activities of the teacher throughout the day, in the classroom and while teaching subjects related to his/her field of specialisation in primary and secondary schools.
- can identify the teaching objectives set by the teacher, the procedures used to achieve them and the extent to which they are achieved.
- can identify various teaching methods used during the lesson.
- describes the didactic aids, communication technologies and tools used in the teaching process, as well as the possibilities of using computers, interactive whiteboards, the Internet, special educational programmes and software, dynamic systems, interactive learning materials and portals in the teaching of subjects in his/her field of specialisation.
- describes the processes of student assessment in the teaching process.
- identifies the teaching and communication style, as well as professional skills of the teacher.
- is able to process, evaluate and reflect on the results of observation in the context of educational theory.
- recognises his/her own level of competence.
- is able to identify common professional problems and to search for, formulate and solve them from a theoretical and practical background (using various practical procedures in practice).
- is able to identify gifted learners, learners with difficulties or special educational needs, disadvantaged learners, learners with multiple disadvantages, as well as learners with special needs, in order to provide them with appropriate guidance in order to enter the labour market.
- is able to prepare a didactically correct written lesson (including all necessary components such as creativity, autonomy, individualisation and alternativity.
- is able to consult the practice teacher on his/her own written preparation.
- is able to properly prepare, teach and evaluate a lesson.
- is able to document the results, as well as to professionally write reflections and self-reflections on the lesson planned, prepared, implemented and evaluated.

Competences:

The student

- takes a position on observed phenomena based on prior theoretical knowledge.
- self-reflects and receives feedback on his (her) own performance from students, colleagues and practitioners.
- presents own personality traits, communication style, values and professional skills in a responsible manner.
- gives feedback and evaluates students' learning outcomes in accordance with assessment principles for the appropriate level of teaching.
- promotes interaction between learners.
- recognises students' expressions of individuality in the context of the formal social group within the classroom, the specific features of students' learning, their particular educational needs and applies elements of differentiation in teaching.
- implements classroom teaching using teaching methods, strategies, resources and aids optimised by the disciplinary-didactic theory of her (his) field, as well as information and communication technologies.
- understands the relationship between teaching principles, consequences and learning effectiveness.
- reflects on her (his) own pedagogical skills.
- is able to develop self-awareness of the teaching profession in a targeted way.
- is able to plan independently activities that develop knowledge in the context of the teaching profession.

- is able to create the atmosphere of trust, helpfulness, encouragement, attentive acceptance, and openness, as well as to recognize and manage of the working style of others.
- optimises a good atmosphere in the learning group (school classroom) and creates a stimulating and non-threatening environment for teaching and learning by applying rules and safe working conditions, and by using proper methods to motivate and activate learners.

Brief syllabus:

Observation and evaluation of the external and internal environment of a primary and secondary school in practice.
Learning about and working with the pedagogical documentation of the class and the school.
Observation of the creation of conditions, implementation and evaluation of lessons in upper primary and secondary schools.
Carrying out a professional analysis of the lessons observed in collaboration with the practice teacher.
Documenting the process and results of each lesson observed.
Didactical procedures for the preparation of the written preparation (with all its components), consultation with the practice teacher.
Preparation of the necessary conditions for the lesson.
Implementation of the planned and prepared lesson, by using innovative strategies, as well as appropriate teaching tools from primary and secondary schools.
Evaluating the lesson, using planned and selected methods and evaluation tools from the point of view of the teacher, the students (and elements of self-evaluation).
Professional analysis done together with the student's practice teacher: preparation, documentation and evaluation of the preparation and its use, as well as other components of the lesson.
Preparation of a portfolio of the lessons observed, with all its components, based on criteria predefined by the practice teacher, using autonomy and alternativity, based on current trends in didactics.

Literature:

Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike ISCED 2 – nižšie sekundárne vzdelávanie. https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf
Štátny vzdelávací program pre gymnázia v Slovenskej republike ISCED 3A – Vyššie sekundárne vzdelávanie. https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3_spu_uprava.pdf
Zákon č. 245/2008 Z. z. – Zákon o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. Bratislava : MŠ SR, 2008 (respektíve aktuálny školský zákon).
Aktuálny vnútorný predpis UJS: Zásady realizácie pedagogickej praxe na Pedagogickej fakulte UJS
Gadušová, Z. a kol.: Mentor Training : Ostrava : Ostravská univerzita, 2021. - online, 268 s. - ISBN 978-80-7599-294-9.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
Teacher: Dr. habil. PaedDr. György Juhász, PhD., Mgr. Katarína Szarka, PhD.					
Date of last update: 07.07.2022					
Approved by: doc. RNDr. Róbert Gyepes, PhD.					

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ PPX6/22	**Name:** Teaching Practice VI.

Types, range and methods of educational activities:
Form of study: Practical
Recommended extent of course (in hours):
Per week: For the study period: 40s
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 4.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
The final assessment is a portfolio based on the teaching aids developed during the pedagogical practice. The conditions for the completion of the course are regulated by the Dean's Regulation entitled “The Basic Principles of Pedagogical Practice at the J. Selye University Faculty of Education”. The student is obliged to follow the sections of this document concerning active pedagogical practice (PPX6).
Mandatory parts of the portfolio:
- A protocol certifying the completion of the pedagogical practice
- Analysis of observed lessons and observation forms filled in
- Lesson plans, evaluation and analysis of the lessons taught
- Other documents and attachments related to the pedagogical practice
Assessment of the subject: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%. An Fx grade may be given if the student achieves less than 50% of the total score.
Student's workload: 2 credits = 50 hours (20 hours of pedagogical practice: 5 hours of observation, 5 hours of analysis (of lessons observed), 5 hours of teaching, 5 hours of analysis (of lessons taught); 30 hours of preparation: preparation for pedagogical practice - consultation with the practice teacher, preparation for the lesson observation, preparation for the lessons to be taught, preparation of the portfolio and documentation)

Results of education:
Knowledge:
The student
- is able to observe and analyse high school and middle school activities.
- is able to evaluate and analyse activities of students of upper and middle school.
- is able to document observed upper primary and secondary school activities and activities.
- is able to consult school documents.
- is familiar with the staffing structure and facilities of the school.
- is familiar with the specific activities of the teacher during the lessons.
- knows and understands the environment, culture and organisation of primary and secondary schools.
Skills:
The student

- is able to identify different manifestations of the structural elements of personality, the psychological processes of the learner in the process of studies and in social interactions.
- is familiar with specific activities of the teacher throughout the day, in the classroom and while teaching subjects related to his/her field of specialisation in primary and secondary schools.
- can identify the teaching objectives set by the teacher, the procedures used to achieve them and the extent to which they are achieved.
- can identify various teaching methods used during the lesson.
- describes the didactic aids, communication technologies and tools used in the teaching process, as well as the possibilities of using computers, interactive whiteboards, the Internet, special educational programmes and software, dynamic systems, interactive learning materials and portals in the teaching of subjects in his/her field of specialisation.
- describes the processes of student assessment in the teaching process.
- identifies the teaching and communication style, as well as professional skills of the teacher.
- is able to process, evaluate and reflect on the results of observation in the context of educational theory.
- recognises his/her own level of competence.
- is able to identify common professional problems and to search for, formulate and solve them from a theoretical and practical background (using various practical procedures in practice).
- is able to identify gifted learners, learners with difficulties or special educational needs, disadvantaged learners, learners with multiple disadvantages, as well as learners with special needs, in order to provide them with appropriate guidance in order to enter the labour market.
- is able to prepare a didactically correct written lesson (including all necessary components such as creativity, autonomy, individualisation and alternativity.
- is able to consult the practice teacher on his/her own written preparation.
- is able to properly prepare, teach and evaluate a lesson.
- is able to document the results, as well as to professionally write reflections and self-reflections on the lesson planned, prepared, implemented and evaluated.

Competences:

The student

- takes a position on observed phenomena based on prior theoretical knowledge.
- self-reflects and receives feedback on his (her) own performance from students, colleagues and practitioners.
- presents own personality traits, communication style, values and professional skills in a responsible manner.
- gives feedback and evaluates students' learning outcomes in accordance with assessment principles for the appropriate level of teaching.
- promotes interaction between learners.
- recognises students' expressions of individuality in the context of the formal social group within the classroom, the specific features of students' learning, their particular educational needs and applies elements of differentiation in teaching.
- implements classroom teaching using teaching methods, strategies, resources and aids optimised by the disciplinary-didactic theory of her (his) field, as well as information and communication technologies.
- understands the relationship between teaching principles, consequences and learning effectiveness.
- reflects on her (his) own pedagogical skills.
- is able to develop self-awareness of the teaching profession in a targeted way.
- is able to plan independently activities that develop knowledge in the context of the teaching profession.

- is able to create the atmosphere of trust, helpfulness, encouragement, attentive acceptance, and openness, as well as to recognize and manage of the working style of others.
- optimises a good atmosphere in the learning group (school classroom) and creates a stimulating and non-threatening environment for teaching and learning by applying rules and safe working conditions, and by using proper methods to motivate and activate learners.

Brief syllabus:

Observation and evaluation of the external and internal environment of a primary and secondary school in practice.
Learning about and working with the pedagogical documentation of the class and the school.
Observation of the creation of conditions, implementation and evaluation of lessons in upper primary and secondary schools.
Carrying out a professional analysis of the lessons observed in collaboration with the practice teacher.
Documenting the process and results of each lesson observed.
Didactical procedures for the preparation of the written preparation (with all its components), consultation with the practice teacher.
Preparation of the necessary conditions for the lesson.
Implementation of the planned and prepared lesson, by using innovative strategies, as well as appropriate teaching tools from primary and secondary schools.
Evaluating the lesson, using planned and selected methods and evaluation tools from the point of view of the teacher, the students (and elements of self-evaluation).
Professional analysis done together with the student's practice teacher: preparation, documentation and evaluation of the preparation and its use, as well as other components of the lesson.
Preparation of a portfolio of the lessons observed, with all its components, based on criteria predefined by the practice teacher, using autonomy and alternativity, based on current trends in didactics.

Literature:

Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike ISCED 2 – nižšie sekundárne vzdelávanie. https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf
Štátny vzdelávací program pre gymnázia v Slovenskej republike ISCED 3A – Vyššie sekundárne vzdelávanie. https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3_spu_uprava.pdf
Zákon č. 245/2008 Z. z. – Zákon o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. Bratislava : MŠ SR, 2008 (respektíve aktuálny školský zákon).
Aktuálny vnútorný predpis UJS: Zásady realizácie pedagogickej praxe na Pedagogickej fakulte UJS
Gadušová, Z. a kol.: Mentor Training : Ostrava : Ostravská univerzita, 2021. - online, 268 s. - ISBN 978-80-7599-294-9.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
Teacher: Dr. habil. PaedDr. György Juhász, PhD., Mgr. Katarína Szarka, PhD.					
Date of last update: 07.07.2022					
Approved by: doc. RNDr. Róbert Gyepes, PhD.					

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ RDC/22	**Name:** Development of pupils´ learning process in chemistry education

Types, range and methods of educational activities:
Form of study: Seminar / Practical
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 2.

Level of study: II.

Prerequisites:

Conditions for passing the subject:
During the semester, the student submits their solved tasks. Within the assessment of the assignments, in addition to solving tasks (max. 8 points), their submission on time (max. 2 points) is taken into account.
At the end of the subject, the student passes a comprehensive written examination, from which he must obtain at least 50% of the points.
The result of the students' summary assessment will be calculated according to the following formula:
Final grade=(1x average % of success on the assignments + 2 x % of success on the written examination) / 3.
Total student workload: 2 credits = 50-60 hours
- 26 hours of participation on lessons in present form; 13 hours solving calculation tasks and other assigned learning tasks; 11-21 hours of self-learning and preparation for the written test.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.

Results of education:
The student who successfully completes the subject:
Knowledge
• is able to do didactic processing of school chemical tasks and create worksheets;
• has knowledge of the methodology of creating school chemistry assignments;
• possesses the supporting specific knowledge of mathematics and other natural science disciplines necessary for the application of this knowledge;
Skills
• can apply the standards of logical thinking when analyzing a chemical problem, can assess relevant procedures and methods for solving chemical calculations;
• is able to independently didactically process chemical calculation solutions;
• is able to propose alternative strategies for solving school chemical calculations;
• is capable of a comprehensive didactic analysis of the subject Chemical calculations at the educational level ISCED 2 and ISCED 3A;

• is able to model the classroom knowledge transfer from the field of chemical calculations at educational level ISCED 2 and ISCED 3A;
• is able to analyze chemical tasks in terms of learning objectives;
• is able to create a chemical task in accordance with the learning objectives;
• is able to collect tasks into thematical worksheets;
• is able to compile a set of chemical tasks to monitoring selected type of knowledge or skills and create an assessment for them;
Competencies
• is able to think creatively, and independently plan his own study;
• possesses autonomy and responsibility in decision-making in connection with the classroom teaching of chemistry;
• is able to work creatively, efficiently and independently;
• possesses abilities to perform the profession of a teacher, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of his own teaching activity;
• can identify with his own profession.
• is able to identify with the attitude of the teacher, whose duty is to support talented pupils as much as to support the education of pupils with learning problems or worse performance.

Brief syllabus:

1. Introduction to the subject. Pupil's personality. Differentiation in the teaching of chemistry. Individualization and personalization in the teaching of chemistry. Access to gifted and weaker pupils.
2. The role and objectives of chemical tasks in chemistry education. Mathematical apparatus and the development of mathematical competencies and logical thinking in chemistry education.
3. Characteristics of chemical tasks. Chemical problems - theoretical and practical.
4. Didactical principles of teaching chemical tasks in the classroom.
5. Tasks´ analysis of selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
6. Inquire-based learning tasks´ analysis of selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
7. Analysis of Case-study-tasks from the selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
8. Project-based learning tasks´ analysis of selected topics of teaching chemistry at the education level ISCED 2 and ISCED 3A, their solution and the creation of similar tasks.
9. Creation of worksheets/tests, evaluation keys, and chemical tasks with the purpose of summative and formative assessment. Creation of online assignments and tests.
10. Possibilities of developing professional competencies in teaching chemistry. Preparation of pupils for graduation exams. The structure of graduation questions fields in chemistry. Solution of graduation examples.
11. Chemical competitions. Tasks of correspondence competitions.
12. Didactic analysis and solving tasks of chemical competitions.

Literature:

Balázs, K. et al. A kémiatanítás módszertana. Budapest: ELTE, 2015 (Dostupné na internete: http://pedagoguskepzes.elte.hu/images/anyagok/i3/27_Kemiatanitas_modszertana_jegyzet)
Bárány, Zs.B. Kémia emelt szintű érettségi feladatok – számítási feladatok (Dostupné na internete: http://www.bzsb.hu/aloldalak/oktatasi-anyagok/Erettsegi/szamitasi-feladat.html)
Näser, K.H. Physikalisch-chemische Rechenaufgaben - 1. vyd. - Leipzig : VEB Deutscher Verlag, 1970. 378 s.

RÓZSAHEGYI, M, SIPOSNÉ-KEDVES, É., HORVÁTH, B. Kémia feladatgyűjtemény 11-12 : Közép- és emelt szintű érettségire készülőknek. - 4. vyd. - Szeged : Mozaik Kiadó, 2014. - 285 s. - ISBN 978 963 697 591 3.
Tóth, Z. A kémiai számítások tanításának alapjai. (dostupné na internete: http://refpedi.hu/sites/default/files/hir_kepek/Dr%20T%C3%B3th%20Zolt%C3%A1n_Sz%C3%A1m%C3%ADt%C3%A1sok%20tan%C3%ADt%C3%A1sa.pdf)
Rózsahegyi, M. Érettségi felvételi feladatok - Kémia. 1. vyd. Szeged : Mozaik Oktatási Stúdió, 1996. 144 s. ISBN 963 697 017 3
Villányi, A. Ötösöm lesz kémiából : Példatár . 1. vyd. Budapest : Novotrade Kiadó, 1990. 192 s. ISBN 963 586 093 X
Villányi, A. Ötösöm lesz kémiából : Megoldások. 1. vyd.Budapest : Novotrade Kiadó, 1990. 422 s. ISBN 963 585 093 X
https://www.iuventa.sk/olympiady-1/archiv-olympiad/
http://chem.korsem.sk/
http://www.equark.sk/index.php?cl=branch&iid=9

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Mgr. Katarína Szarka, PhD., Mgr. Andrea Vargová, PhD.

Date of last update: 06.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ STV/22	**Name:** Modern trends in chemistry education
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 1	
Recommended semester/trimester of study: 3.	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: During the semester, the student submits their solved tasks. Within the assessment of the assignments, in addition to solving tasks (max. 8 points), their submission on time (max. 2 points) is taken into account. At the end of the subject, the student passes a comprehensive written examination, from which he must obtain at least 50% of the points. The result of the students' summary assessment will be calculated according to the following formula: Final grade=(1x average % of success on the assignments + 2 x % of success on the written examination) / 3. Total student workload: 1 credit = 25-30 hours - 26 hours of participation on lessons in present form; 4 hours solving calculation tasks and other assigned learning tasks; and self-learning. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. 90-100% is required to achieve an A grade; for grade B 80-89%; for grade C 70-79%; for D rating 60-69% and for E rating 50-59% of the total number of points.	
Results of education: The student who successfully completes the subject: Knowledge • is able to name and characterize several teaching methods and forms supporting active student learning; • is able to explain the impact of verbal and non-verbal communication on the classroom climate; • is able to describe psychological aspects of motivation and motive; • is able to list and characterize the forms, methods and strategies of motivation and activation within the profile subject; • is able to apply the principles of effective communication supporting active student learning; • is able to characterize the philosophical and methodological starting points, forms and types of student assessment and their psychodidactic aspects; • possesses the theoretical foundations of assessment and feedback; • is able to provide an overview of new trends in assessment in education;	

• has knowledge of methodological instructions and rules regarding the assessment and classification of pupils;
• is able to adequately apply and integrate diverse assessments in chemistry education;
Skills
• has the skills of effective planning, projecting, managing and organizing the educational process in profile educational areas or specialization;
• is ready to plan and manage educational activities and learning of a group of pupils and the whole class;
• is able to select appropriate tasks for the given topics, which motivate students to take action in their learning process and support their active learning;
• is able to independently and adequately implement pedagogical evaluation;
• is capable of self-evaluation and thus ensuring monitoring of his/her professional development;
• is able to evaluate pupils with regard to their developmental and individual characteristics;
• is able to apply various forms and methods of assessment;
• is able due to reflection to evaluate the teaching process in comparison with the projected teaching process and to make the necessary corrections;
• is able to evaluate pupils without prejudices and stereotypes;
• is able to apply the above in practice when creating models for chemistry lessons;
Competencies
• is able to think creatively, and independently plan his own study;
• possesses autonomy and responsibility in decision-making in connection with the classroom teaching of chemistry;
• is capable of implementing educational diagnostic and evaluation processes;
• possesses abilities to perform the profession of a teacher, meets the requirements of the professional standard of a beginning pedagogical employee;
• is able to reflect and improve on the effectiveness of his own teaching activity;
• is able to work creatively, efficiently and independently;
• can identify with his own profession.

Brief syllabus:

The course focuses on the trends of two main areas of teaching chemistry:
1. Constructivist concepts of chemistry education:
• Trends in the teaching of chemistry. Competence-based learning teaching of chemistry. Developing pupils' competencies through learning tasks.
• Problem teaching in the context of chemistry teaching.
• Inquiry-based learning in the context of chemistry teaching.
• The role of teacher and learner in the constructivist learning process.
• Characteristics of project management in education. Project method. Project-based learning in the context of chemistry teaching.
• Characteristics of cooperative learning. Application of cooperative learning in the context of chemistry teaching.
2. Current concepts of school assessment
• Self-regulating learning and reflection-based learning.
• Basic concepts of evaluation - forms and methods of evaluation. Classification.
• Functions and general principles of evaluation.
• Current trends of classroom assessment.
• The type of learning outcomes in the subject of chemistry and the way of collecting the learning evidence.
• The concept of portfolio/e-portfolio and its role and possibilities in chemistry education.
• Authentic assessment strategies and tools.

• Description and characterization of the pedagogical terms: assessment for/of/as learning and their types. Assessment strategies and tools in chemistry education and the possibilities of their implementation in the practice of the chemistry teachers.
• Characteristics of self-reflection, peer assessment, group assessment, metacognitive assessment and implementation of their strategies and tools.

Literature:

Garai, I., Vincze,B., Szabó,Z.A. Hiteles pedagógia. Budapest: ELTE Eötvös Kiadó, 2016. 126s. ISBN 978-963-284-828-0. Dostupné na internete: http://www.eltereader.hu/media/2016/11/Hiteles_pedagogia_Golnhofer_READER1.pdf
Gavora, P. Akí sú moji žiaci? - 3. vyd. - Nitra : Enigma, 2011. - 222 s. - ISBN 978-80-89132-91-1.
Károly, K & Homonnay, Z. Diszciplínák tanítása – a tanítás diszciplínái 4. - A tanulás és tanítás értékelése. Budapest: ELTE Eötvös Kiadó, 2017. 356s. ISBN 978-963-284-909-6. Dostupné na internete: http://www.eltereader.hu/media/2017/07/Diszciplinak_4_READER.pdf
Slavík, J. Hodnocení v současné škole : Východiska a nové metodypro praxi. - 1. vyd. - Praha : Portál, 1999. - 190 s. - ISBN 80-7178-262-9
Turek, I. Zvyšovanie efektívnosti vyučovania. Bratislava : Metodické centrum, 1997. 316s. ISBN 8088796490
Vidákovich, T. Diagnosztikus pedagógiai értékelés. Budapest : AkadémiaiKiadó, 1990. 232. ISBN 9630559676
Zelina, M. Stratégie a metódy rozvoja osobnosti : Metódy výchovy. 2. vyd. - Bratislava : Iris, 1996. - 234 s. - ISBN 80-967013-4-7
Starý, K. & Laufková, V. a kol. Formativní hodnotení ve výuce - 1. vyd. - Praha : Portál, 2016. - 175 s. - ISBN 978-80-262-1001-6.
Szarka, K. Súčasné trendy školského hodnotenia: Koncepcia rozvíjajúceho hodnotenia. 1. vyd. Komárom: Kompress, 2017. 147 s. ISBN 978-963-12-9692-1.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Mgr. Andrea Vargová, PhD., Mgr. Katarína Szarka, PhD.

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KCH/CHdm/ŠS/22	**Name:** State Examination
Types, range and methods of educational activities: **Form of study:** **Recommended extent of course (in hours):** **Per week: For the study period:** **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study:	
Level of study: II.	
Prerequisites:	
Conditions for passing the subject: All students who have met the requirements of the programme of study in the final year of their studies may take the state examination at the regular time according to the study schedule. In the oral state examination, the student gives an account of his/her knowledge and skills in his/her field of specialisation and the interdisciplinary connection with the relevant fields of specialisation. He/she demonstrates the ability to select the content of education in accordance with the required and expected educational objectives and to enrich it with school and regional characteristics. The student demonstrates the ability to communicate information, ideas, problems and solutions to professional and lay audience. The state examination takes the form of a colloquium in which the student's performance is assessed on a scale from A to FX. The grade counts for the overall state examination grade. The oral examination is graded on the following scale: A - 100-90%, B - 89-80%, C - 79-70%, D - 69-60%, E - 59-50%. A student who fails to achieve 50% receives no credit. The results of the state examination and the thesis defence are publicly announced by the chair of the board.	
Results of education: Knowledge: - the student has acquired knowledge in the compulsory and profile subjects of the study programme, - the student is able to define and interpret basic concepts in his/her own words, to explain and describe basic processes, to characterise and to apply academic methods of research in the areas indicated in the subject's thematic plan, - the student is able to analyse and evaluate the knowledge acquired in the subject. - be able to characterise the concept of teaching, to list the different types of teaching and to describe the framework for teaching and learning for 11-19 year olds. Skills: - the student is able to present his/her expertise, - the student is able to hand over his/her knowledge - the student is able to organise and apply the theoretical knowledge acquired in practical teaching activities, - the student can select and apply teaching procedures appropriately,	

- the student is able to guide the learner in the acquisition of knowledge, taking into account the individual needs of the learner,
- the student has the ability to organise and apply the knowledge acquired in the course of his (her) studies.
Competences:
- the student is able to express his/her linguistic and professional culture in the oral examination,
- the student is able to use the knowledge acquired in a wider context,
- the student is able to put the knowledge acquired into practice and organise it,
- the student is able to use his/her knowledge in a creative way while solving problems, as well as to analyse the problem and organise new solutions,
- the student is able to answer the questions of the committee at the expected level.

Brief syllabus:
I. General didactics of chemistry
II. Selected chapters of chemistry didactics
III. Selected chapters of chemistry

Literature:
Literature indicated in the information sheets of the study programme

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher:

Date of last update: 07.07.2022

Approved by: doc. RNDr. Róbert Gyepes, PhD.