

CONTENT

| | |
|--|----|
| 1. Advanced electrochemistry..... | 3 |
| 2. Advanced experimental methods in physical chemistry..... | 5 |
| 3. Advanced physical chemistry 1..... | 7 |
| 4. Advanced physical chemistry 2..... | 9 |
| 5. Applied electrochemistry..... | 11 |
| 6. Certified training course..... | 13 |
| 7. Citation in the International Scientific Journal..... | 14 |
| 8. Citation in the Local Scientific Journal..... | 15 |
| 9. Citation in the Monograph..... | 16 |
| 10. Co-investigator of the applied research project..... | 17 |
| 11. Co-worker of a Local Project..... | 18 |
| 12. Co-worker of an International Project..... | 19 |
| 13. Defence of Doctoral Thesis..... | 20 |
| 14. Elaboration of reviewer report..... | 22 |
| 15. English Language for PhD Students 1..... | 23 |
| 16. English Language for PhD Students 2..... | 25 |
| 17. International Journal..... | 27 |
| 18. International Study Stay less than 30 Days..... | 28 |
| 19. International Study Stay more than 30 Days..... | 29 |
| 20. International conference abroad..... | 30 |
| 21. Local Conference..... | 31 |
| 22. Local Conference with Foreign Participation..... | 32 |
| 23. Local Journal..... | 33 |
| 24. Mass Spectrometric Identification..... | 34 |
| 25. Member of the internal project team..... | 35 |
| 26. Membership in a Conference organizing Committee..... | 36 |
| 27. Monograph..... | 37 |
| 28. Monograph in a renowned publishing house..... | 38 |
| 29. Non-Reviewed International or National Proceedings..... | 39 |
| 30. Patents, Inventions, Software..... | 40 |
| 31. Pedagogy for University Teachers..... | 41 |
| 32. Physical supramolecular chemistry..... | 43 |
| 33. Popularisation of science..... | 45 |
| 34. Presentation in Seminar..... | 46 |
| 35. Principal investigator of an internal grant (VVGS)..... | 47 |
| 36. Psychology for University Lecturers..... | 48 |
| 37. Q1 journal as co-author..... | 50 |
| 38. Q1 journal as first or corresponding author..... | 51 |
| 39. Q2 journal as co-author..... | 52 |
| 40. Q2 journal as first or corresponding author..... | 53 |
| 41. Q3 journal as co-author..... | 54 |
| 42. Q3 journal as first or corresponding author..... | 55 |
| 43. Q4 journal as co-author..... | 56 |
| 44. Q4 journal as first or corresponding author..... | 57 |
| 45. Reviewed International or Local Proceedings..... | 58 |
| 46. SCI Citation..... | 59 |
| 47. Scientific work after sending to the editorial office..... | 60 |
| 48. Spring School for PhD Students..... | 61 |

| | |
|--|----|
| 49. Supervision of a Students Scientific Work..... | 63 |
| 50. Teaching activities 1 h/s..... | 64 |
| 51. Teaching activities 2 h/s..... | 65 |
| 52. Teaching activities 3 h/s..... | 66 |
| 53. Teaching activities 4 h/s..... | 67 |
| 54. Thesis consultant..... | 68 |
| 55. Thesis supervising..... | 69 |
| 56. Trends in physical chemistry I..... | 70 |
| 57. Trends in physical chemistry II..... | 72 |
| 58. Writing Dissertation Work..... | 74 |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PECH/15 | Course name: Advanced electrochemistry |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar/exercise will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. The exam is observed in a regular oral form, resp. in case of restrictions of contact forms of the pedagogical process, the exam is performed by a suitable distance - electronic form. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. | |
| Learning outcomes: Students will gain theoretical knowledge and practical skills on advanced electrochemical methods.. | |
| Brief outline of the course: 1. Thermodynamics of electrochemical reactions. 2. Kinetics of electrochemical reactions. 3. Spectroelectrochemistry. 4. Electrochemical quartz crystal microbalances. 5. Electrochemiluminescence. 6. Two-pulse chronoamperometry. 7. Reverse pulse voltammetry. 8. Differential multipulse voltammetric techniques. | |
| Recommended literature: Scholz,F.: Elektroanalytical Methods, Springer, 2002. Wang,J.: Analytical Electrochemistry,Wiley-VCH,2000. | |

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| Course language: Slovak language. | |
| Notes: Teaching is carried out in person or, if necessary, remotely using the bbb or MS Teams tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously. | |
| Course assessment Total number of assessed students: 6 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Ivana Šišoláková, PhD., univerzitná docentka, doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Jana Shepa, PhD. | |
| Date of last modification: 26.11.2021 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PEMFCH/22 | Course name: Advanced experimental methods in physical chemistry |
| Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 4 Per study period: 56 Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar/exercise will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. Mastering tasks with relevant results and processing the results of experimental work in the form of a protocol and its acceptance. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. The evaluation is carried out on the basis of protocols. In the case of distance learning based on a paper on a selected topic and its presentation. | |
| Learning outcomes: Students will acquire knowledge and necessary skills about advanced experimental methods in physical chemistry. | |
| Brief outline of the course: - Determination of various charging / discharging parameters for Li-ion batteries - cycling, determination of charge transfer resistance, oxidation-reduction reactions, diffusion of Li ⁺ ions, determination of exchange current density and others. - Study of electrochemical properties of solar cells - filling factor, solar cell efficiency, internal resistance, influence of these parameters on the degradation of organic solar cells. - Use of electrochemical impedance spectroscopy in the characterization of hybrid systems and the state of degradation of second life Li-ion batteries. - Study of degradation of polymeric materials and layers by various methods. - Study of electrocatalytic activity of nanoparticle catalysts. - Electrostatic spinning. | |

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| <ul style="list-style-type: none"> - Study of antioxidant activity of various materials. - Thermal analysis with mass spectrometry as a useful method in the characterization of materials. - Surface chemistry and thermoporometry. - Use of electrochemical methods in the characterization of sensors. - Determination of analytical properties of sensors using cyclic voltammetry method. - Determination of analytical properties of sensors using chronoamperometry method. | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment | |
| Total number of assessed students: 4 | |
| N | P |
| 0.0 | 100.0 |
| Provides: doc. RNDr. Miroslav Almáši, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Ivana Šišoláková, PhD., univerzitná docentka, prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc. | |
| Date of last modification: 27.10.2021 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PFCH1/2014/14 | Course name: Advanced physical chemistry 1 |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. The exam is observed in a regular oral form, resp. in case of restrictions of contact forms of the pedagogical process, the exam is performed by a suitable distance - electronic form. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. 5. Part of the preparation of students for lectures and seminars is self-study. The share of direct tuition is 70%, and the share of self-study is 30%. | |
| Learning outcomes: Students will gain detailed knowledge on heterogenous catalysis. | |
| Brief outline of the course: Completed knowledges from heterogenous catalysis, methods of catalysts study, catalytic reactions study. Transport phenomena during heterogenous catalysis. Calculation of kinetic constants and methods of catalysts characterisation. Main impact is in area of catalysts for methane conversion to hydrogen or useful chemicals. | |
| Recommended literature: 1. Atkins : Physical Chemistry I.-IV. 2. P.C.Schmidt: Methods in Physical Chemistry, Wiley-VCH GmbH, 2012. | |
| Course language: Slovak, English. | |

Notes:

Teaching is carried out in person or, if necessary, remotely using the bbb or MS Teams tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

Course assessment

Total number of assessed students: 20

| N | P |
|-----|-------|
| 0.0 | 100.0 |

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Jana Shepa, PhD., RNDr. Ivana Šišoláková, PhD., univerzitná docentka

Date of last modification: 25.04.2022

Approved: prof. RNDr. Renáta Oriňaková, DrSc.

COURSE INFORMATION LETTER

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|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PFCH2/2014/14 | Course name: Advanced physical chemistry 2 |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. The exam is observed in a regular oral form, resp. in case of restrictions of contact forms of the pedagogical process, the exam is performed by a suitable distance - electronic form. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. 5. Part of the preparation of students for lectures and seminars is self-study. The share of direct tuition is 70%, and the share of self-study is 30%. | |
| Learning outcomes: Students will gain extended knowledge on chemical kinetics, photochemistry, laser spectroscopy and electrochemistry. Course forms a basis for PhD students to solve problems in experimental work and to find suitable evaluations. | |
| Brief outline of the course: 1. Thermal properties of compounds, heat accumulation and transport. 2. Fast reactions and ways to measure them. 3. Relaxation time and relation to kinetic constants. 4. Photochemical methods . General principles of laser spectroscopy, dynamic spectroscopic transitions between electron states. 5. Relaxation of excited molecules, He-Ne laser, resolution in laser spectroscopy. 6. Theory of electrochemical processes, electrochemistry - spectroscopy . 7. Elektrical doublelayer. | |

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| 8. Butler-Volmer equation and application. 9. Elektrochemical methods , kinetic currents. 10. Galvanostatic methods. 11. Potentiostatic methods. | |
| Recommended literature: 1. Atkins: Fyzikálna chémia I-IV. 2. Barthel J.: Physical Chemistry of Electrolyte Solutions. Springer , 1998. | |
| Course language: Slovak language. | |
| Notes: Teaching is carried out in person or, if necessary, remotely using the bbb or MS Teams tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously. | |
| Course assessment Total number of assessed students: 18 | |
| N | P |
| 0.0 | 100.0 |
| Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc. | |
| Date of last modification: 25.04.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

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|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ APECH/22 | Course name: Applied electrochemistry |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. The exam is observed in a regular oral form, resp. in case of restrictions of contact forms of the pedagogical process, the exam is performed by a suitable distance - electronic form. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. | |
| Learning outcomes: Students will gain knowledge and skills on applications of electrochemistry in battery and hydrogen technologies for a low-carbon economy and in electrochemical biosensors. | |
| Brief outline of the course: - Study of degradation processes in Li-ion batteries - corrosion of current collectors, degradation of the structure, formation of dendrites of metallic Li, formation of side products, decomposition of electrolyte. - Sodium batteries and their electrochemical characterization. - Solid state batteries - polymer electrolytes and the use of flame retardants. - Applications of electrochemical methods in hydrogen technologies. - Electrochemical hydrogen evolution reaction. - Different types of electrolyzers and fuel cells. - Electrochemical biosensors for the detection of viruses. - Electrochemical biosensors for the detection of biologically relevant biomarkers. - Biosensor surface treatment methods to analytical properties improvement. | |

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| Recommended literature: | |
| Course language: Slovak language. | |
| Notes: Teaching is carried out in person or, if necessary, remotely using the bbb or MS Teams tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously. | |
| Course assessment Total number of assessed students: 6 | |
| N | P |
| 0.0 | 100.0 |
| Provides: doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Ivana Šišoláková, PhD., univerzitná docentka, prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Jana Shepa, PhD. | |
| Date of last modification: 25.11.2021 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

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|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ COK/22 | Course name: Certified training course |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 4 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Completion of a certified professional/training course. | |
| Learning outcomes: The PhD student acquires up-to-date scientific knowledge, develops the capabilities of scientific work and familiarizes himself with the methodologies of making scientific knowledge available. He confronts his own knowledge and skills with other course participants, develops the abilities of peer discussion in the given scientific field. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 1 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ CZC/22 | Course name: Citation in the International Scientific Journal |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 4 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Obtained citation in a foreign scientific journal. | |
| Learning outcomes: Obtaining a citation demonstrates broad and very well-founded scientific knowledge in the researched field, based on the ability to formulate research questions, to reflect on a scientific problem in such a way that generates new knowledge. At the same time, a citation in an indexed source demonstrates the competence to communicate new knowledge, which is a significant contribution to scientific knowledge, at the highest expert level | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 15 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ CDC/22 | Course name: Citation in the Local Scientific Journal |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Citation in a national scientific journal | |
| Learning outcomes: Obtaining a citation demonstrates broad and very well-founded scientific knowledge in the researched field, based on the ability to formulate research questions, to reflect on a scientific problem in such a way that generates new knowledge. At the same time, a citation in an indexed source demonstrates the competence to communicate new knowledge, which is a significant contribution to scientific knowledge, at the highest expert level | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ CM/22 | Course name: Citation in the Monograph |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 8 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Obtained citation registered in SCI or Scopus. | |
| Learning outcomes: Obtaining a citation demonstrates broad and very well-founded scientific knowledge in the researched field, based on the ability to formulate research questions, to reflect on a scientific problem in such a way that generates new knowledge. At the same time, a citation in an indexed source demonstrates the competence to communicate new knowledge, which is a significant contribution to scientific knowledge, at the highest expert level. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/SPAV/22 | Course name: Co-investigator of the applied research project |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Co-investigator of the applied research project | |
| Learning outcomes: The PhD student demonstrates the ability to participate in teamwork, to bring his own contribution to the solution of the project objective of applied research and to take responsibility for assigned tasks. By solving an applied research project, he acquires the ability to implement the project objective according to the established procedure, to follow the project schedule, to coordinate his own activities with colleagues, to participate in the creation of applied research outputs. The PhD student gains valuable experience from the practical course of a grant project with a focus on applied research. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/SDP/22 | Course name: Co-worker of a Local Project |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Co-investigator of the domestic project | |
| Learning outcomes: The PhD student demonstrates the ability to participate in teamwork, to bring his own contribution to the solution of the project objective and to take responsibility for the assigned tasks. By solving the domestic project, he acquires the ability to implement the project intention according to the established procedure, to follow the project schedule, to coordinate his own activities with colleagues, to participate in the creation of outputs. The PhD student gains valuable experience from the practical course of the grant project. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 59 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ SMPR/04 | Course name: Co-worker of an International Project |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 15 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Membership in the research team of an international project. | |
| Learning outcomes: Active involvement by solving a specific task within a team of international project solvers. The PhD student demonstrates the ability to work in a team, take responsibility for the assigned task, adhere to the time schedule and fulfill the project outputs. The PhD student gains personal experience from the implementation of an international project, participation in its key stages, creation of measurable outputs, grant funding of science. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 44 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ODZP/15 | Course name: Defence of Doctoral Thesis |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 30 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: The Dissertation thesis is the result of the student's own scientific research. It must not show elements of academic fraud and must meet the criteria of correct research practice defined in the Rector's Decision no. 21/2021, which lays down the rules for assessing plagiarism at Pavel Jozef Šafárik University in Košice and its constituents. Fulfillment of the criteria is verified mainly in the process of supervising and in the process of the thesis defense. Failure to do so is grounds for disciplinary action. | |
| Learning outcomes: The Dissertation thesis has elements of a scientific work and the student demonstrates extensive mastery of the theory and professional terminology of the field of study, acquisition of knowledge, skills and competences in accordance with the declared profile of the graduate of the field of study, as well as the ability to apply them in an original way in solving selected problems of the field of study. The student demonstrates the ability of independent scientific work in terms of content, formal and ethical aspects. Further details of the Dissertation thesis are determined by Directive no. 1/2011 on the essential prerequisites of final theses and by the Study Rules of Procedure at UPJŠ in Košice for doctoral studies. The doctoral student demonstrated the ability and readiness for independent scientific and creative activity in the field of study of philology in accordance with the expectations of the relevant qualification framework and the profile of the graduate. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 76 | |
| N | P |
| 0.0 | 100.0 |

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| Provides: |
| Date of last modification: 08.11.2022 |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. |

COURSE INFORMATION LETTER

| | |
|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ VPZP/22 | Course name: Elaboration of reviewer report |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 3 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Elaboration of reviewer report | |
| Learning outcomes: The PhD student demonstrates broad and scientifically based knowledge in the field of study, as well as knowledge of a wide range of methods and approaches. Demonstrates the ability to critically assess a professional problem and its proposed solution, as well as to evaluate it and possibly recommend another solution. He applies knowledge and skills from the field of pedagogical sciences to his own field. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 1 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: CJP/AJD1/07 | Course name: English Language for PhD Students 1 |
| Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: distance, present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: 1. | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Completion of e-course English for PhD Students (lms.upjs.sk), consultations (1-3). Written assignments - Professional/Academic CV, Short Academic Biography. | |
| Learning outcomes: The development of students' language skills - reading, writing, listening, speaking; improvement of their linguistic competence - students acquire knowledge of selected phonological, lexical and syntactic aspects; development of pragmatic competence - students acquire skills for effective and purposeful communication, with focus on Academic English and English for specific/professional purposes, level B2. | |
| Brief outline of the course: Specific aspects of academic and professional English with focus on correct pronunciation, vocabulary development (noun and verb collocations, phrasal verbs, prepositional phrases, word-formation, formal/informal language, etc.), selected aspects of English grammar (prepositions, grammar tenses, passive voice, etc.), academic writing (professional/academic CV, Short Academic Biography). | |
| Recommended literature: Moore, J.: Oxford Academic Vocabulary Practice. OUP, 2017. Kolaříková, Z., Petruňová, H., Tímková, R.: Angličtina v akademickom prostredí – cvičebnica. Košice, Vydavateľstvo ŠafárikPress, 2021. Tomaščíková, S., Rozenfeld, J. Developing Academic English in Speaking and Writing. Vydavateľstvo ŠafárikPress, 2021. McCarthy, M., O'Dell, F.: Academic Vocabulary in Use. CUP, 2008. Štěpánek, L., J. De Haaf a kol.: Academic English-Akademická angličtina. Grada Publishing, a.s., 2011. Armer, T.: Cambridge English for Scientists. CUP, 2011. lms.upjs.sk | |
| Course language: English, level B2 according to CEFR | |
| Notes: | |

| | | | | | |
|--|-----|-------|-----|-------|-------|
| Course assessment | | | | | |
| Total number of assessed students: 813 | | | | | |
| N | Ne | P | Pr | abs | neabs |
| 0.0 | 0.0 | 43.79 | 0.0 | 56.09 | 0.12 |
| Provides: Mgr. Zuzana Kolaříková, PhD. | | | | | |
| Date of last modification: 06.09.2024 | | | | | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | | | | | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: CJP/AJD2/07 | Course name: English Language for PhD Students 2 |
| Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: distance, present | |
| Number of ECTS credits: 3 | |
| Recommended semester/trimester of the course: 2. | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Test, oral exam in accordance with the exam requirements (available at the web-site of the LTC and in MS TEAMS) | |
| Learning outcomes: The development of students' language skills - reading, writing, listening, speaking, improvement of their linguistic competence - students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence - students can effectively use the language for a given purpose, with focus on Academic English and English for specific/professional purposes, level B2. | |
| Brief outline of the course: Academic communication (self-presentation, presenting at scientific meetings and conferences). Specific aspects of academic and professional English with focus on vocabulary development (formality, academic word-list), English grammar (passive voice, nominalisation), language functions (expressing opinion, cause/effect, presenting arguments, giving examples, describing graphs/charts/schemes, etc.). Cross-language interference. | |
| Recommended literature: Moore, J.: Oxford Academic Vocabulary Practice. OUP, 2017. Kolaříková, Z., Petruňová, H., Tímková, R.: Angličtina v akademickom prostredí (cvičebnica). UPJŠ Košice, 2021. Tomaščíková, S., Rozenfeld, J. Developing Academic English in Speaking and Writing. Vydavateľstvo ŠafárikPress, 2021. McCarthy, M., O'Dell, F.: Academic Vocabulary in Use. CUP, 2008. Štěpánek, L., J. De Haaf a kol.: Academic English-Akademická angličtina. Grada Publishing, a.s., 2011. Armer, T.: Cambridge English for Scientists. CUP, 2011. | |
| Course language: B2 level according to CEFR | |
| Notes: | |

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|---|-----|-------|------|------|-------|
| Course assessment | | | | | |
| Total number of assessed students: 776 | | | | | |
| N | Ne | P | Pr | abs | neabs |
| 0.26 | 0.0 | 94.07 | 1.03 | 4.51 | 0.13 |
| Provides: Mgr. Zuzana Kolaříková, PhD., Mgr. Ivana Kupková, PhD. | | | | | |
| Date of last modification: 03.02.2025 | | | | | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | | | | | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ ZC/22 | Course name: International Journal |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 8 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a foreign journal as an author/co-author. | |
| Learning outcomes: By publishing in a foreign journal as an author/co-author, the PhD student demonstrates a high level of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 4 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ ZSP1/22 | Course name: International Study Stay less than 30 Days |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Completion of a foreign study stay lasting less than 30 days. | |
| Learning outcomes: By completing a shorter study stay, the PhD student demonstrates the ability to reflect on research problems and work critically with sources at an expert level and in an interdisciplinary context, while being able to generate new knowledge. He is able to actively communicate at an expert level in more than one language. He acts as a responsible independent scientist, works independently and in a group with the aim of pushing the boundaries of knowledge and transferring them to other areas of research, to practice and to the wider public. He can competently argue and explain his ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 8 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ ZSP2/22 | Course name: International Study Stay more than 30 Days |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Completion of a foreign study stay lasting more than 30 days. | |
| Learning outcomes: By completing the study stay, the PhD student demonstrates the ability to reflect on research problems and work critically with sources at an expert level and in an interdisciplinary context, while being able to generate new knowledge. He is able to actively communicate at an expert level in more than one language. He acts as a responsible independent scientist, works independently and in a group with the aim of pushing the boundaries of knowledge and transferring them to other areas of research, to practice and to the wider public. He can competently argue and explain his ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 7 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ MKZ/22 | Course name: International conference abroad |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Active participation in an international conference abroad. | |
| Learning outcomes: By actively participating in an international scientific conference abroad, the PhD student demonstrates a high level of ability to identify, evaluate, and apply correct scientific methods or research methodology in his scientific field. He demonstrates the ability to reflect on a specific scientific problem by using the latest approaches and applying them critically. Demonstrates competence to use existing theories and concepts in an innovative way, as well as generate new original scientific knowledge and communicate research results to a wider audience by adequate means and through a foreign language. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 30 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--------------------------------------|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/DK/04 | Course name: Local Conference |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Active participation in the home conference. | |
| Learning outcomes: By actively participating in the national scientific conference, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology in his scientific field. He demonstrates the ability to reflect on a specific scientific problem by using the latest approaches and applying them critically. Demonstrates competence in using existing theories and concepts in an innovative way, as well as generating new original scientific knowledge and communicating research results to a wider audience using adequate means and through the Slovak language. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 134 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/DKZU/22 | Course name: Local Conference with Foreign Participation |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Active participation in a national conference with foreign participation. | |
| Learning outcomes: By actively participating in a scientific conference, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology in his scientific field. He demonstrates the ability to reflect on a specific scientific problem by using the latest approaches and applying them critically. Demonstrates competence to use existing theories and concepts in an innovative way, as well as generate new original scientific knowledge and communicate research results to a wider audience by adequate means and through Slovak or a foreign language. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 41 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|-----------------------------------|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ DC/22 | Course name: Local Journal |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 6 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a national journal as author/co-author. | |
| Learning outcomes: By publishing in a national journal as an author/co-author, the PhD student demonstrates a high level of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

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|--|-----|---|-----|-----|-----|-----|------|
| University: P. J. Šafárik University in Košice | | | | | | | |
| Faculty: Faculty of Science | | | | | | | |
| Course ID: ÚCHV/IMS1/03 | | Course name: Mass Spectrometric Identification | | | | | |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present | | | | | | | |
| Number of ECTS credits: 4 | | | | | | | |
| Recommended semester/trimester of the course: | | | | | | | |
| Course level: III. | | | | | | | |
| Prerequisites: | | | | | | | |
| Conditions for course completion: | | | | | | | |
| Learning outcomes: | | | | | | | |
| Brief outline of the course: General principles of mass spectrometry. Analytical mass spectrometry. Detectors in mass spectrometry and resolution. Quadrupoles, ion traps, TOF analyzers. Analytes ionization, molecular spectra obtained from different ion sources. Identification with MS. Determination of molar mass. Fragmentation, spectra, and structural information. Identification by spectra comparison. Total ion current. Monitoring of selected ion/fragment. The use of hyphenated and coupled chromatographic methods. Tandem MS-MS, GC-MSD, HPLC-MS, microcolumn application. MALDI ToF MS, ToF SIMS and methods of surface analysis. Evaluation of mass spectrum. | | | | | | | |
| Recommended literature: | | | | | | | |
| Course language: | | | | | | | |
| Notes: | | | | | | | |
| Course assessment Total number of assessed students: 2 | | | | | | | |
| A | B | C | D | E | FX | N | P |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 |
| Provides: prof. RNDr. Andrej Oriňak, PhD. | | | | | | | |
| Date of last modification: 07.11.2022 | | | | | | | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | | | | | | | |

COURSE INFORMATION LETTER

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|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ SIG/22 | Course name: Member of the internal project team |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 3 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Co-worker of project supported by internal grant schemes (VVGS) | |
| Learning outcomes: The PhD student demonstrates the ability to participate in teamwork, to bring his own contribution to the solution of the project objective within the internal grant system at UPJŠ. By solving the internal VVGS grant, he acquires the ability to implement the project plan according to the established procedure, adhere to the project schedule, coordinate his own activities with colleagues, and participate in the creation of outputs. The PhD student gains valuable experience from the practical course of the grant project. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 23 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

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|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ POVK/22 | Course name: Membership in a Conference organizing Committee |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 3 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Work in the organizing committee of the conference | |
| Learning outcomes: By working in the organizing committee of the conference, the PhD student demonstrates the abilities and competences to organize a scientific or professional event independently or in a team, to manage the implementation in terms of time and content, to communicate effectively verbally and in writing using various technical means as needed, including in a foreign language at a professional level with various types of people, if necessary, correctly recommend solutions or make independent decisions. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 6 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|-------------------------------|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ MONB/22 | Course name: Monograph |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 20 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Co-author of the monograph. | |
| Learning outcomes: By publishing a monograph, the PhD student demonstrates a high level of ability to identify, evaluate, and apply correct scientific methods or research methodology. It demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The doctoral student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/MONA/22 | Course name: Monograph in a renowned publishing house |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 40 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Co-author of a monograph in a renowned publishing house. | |
| Learning outcomes: By publishing a monograph in a renowned publishing house, the PhD student demonstrates a high level of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The doctoral student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ NRZ/22 | Course name: Non-Reviewed International or National Proceedings |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: A publication published in a non-reviewed foreign or national journal as an author/co-author. | |
| Learning outcomes: By publishing in a non-reviewed foreign or national journal as an author/co-author, the PhD student demonstrates the ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to finalize his own thoughts in a written speech. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 20 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PVS/04 | Course name: Patents, Inventions, Software |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Patent filed, invention, software product created. | |
| Learning outcomes: The PhD student demonstrates the ability to create an innovative product in a given scientific field, or with impact on an interdisciplinary scale or in technical practice. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: KPE/ PgVU/17 | Course name: Pedagogy for University Teachers |
| Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: Per study period: 28s Course method: distance, present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Development of a teaching diary—100% 2. Compulsory active participation and attendance in accordance with the Study Regulations. | |
| Learning outcomes: After completing the course, the student will acquire knowledge, skills, and competencies, i.e., will be able to: Knowledge Define and apply basic didactic principles, methods, forms, and tools in the teaching process of university-level professional subjects. Identify and specify educational procedures of a university teacher aimed at effective teaching management, pedagogical diagnostics, and assessment of learning outcomes. Recognize different approaches to pedagogical evaluation and their impact on improving the quality of the educational process at the university level. Skills Implement effective educational methods and techniques into the teaching of professional subjects, tailored to the needs of university students. Conduct pedagogical diagnostics, assess students' progress, and apply appropriate evaluation methods to improve learning outcomes. Analyze and reflect on one's own teaching process, identify areas for improvement, and enhance the teaching of professional subjects, including the rationalization of the time and content structure of teaching. Present specific proposals for improving the teaching process, including the use of new technologies and innovative pedagogical approaches. Competencies Confidently and effectively manage the teaching of university subjects, applying educational competencies that consider the specifics of higher education. Critically reflect on one's own pedagogical practice and the learning outcomes of students to improve teaching methods and achieve a higher quality of the educational process. Apply innovative solutions to streamline and optimize the teaching process, aiming to increase the engagement and success of university students. | |
| Brief outline of the course: The personality of a university teacher. Teaching styles. Student in university education. Student learning styles. Possibilities of adapting teaching styles and student learning styles. University teacher–student interaction and communication in the teaching process. Pedagogical competencies | |

of a university teacher. Didactic analysis of the curriculum; teaching materials and textbooks. Forms of university teaching. Methods of university teaching. Verification methods and student assessment. Creation of a didactic test. Designing university teaching process. University teacher self-reflection.

Recommended literature:

Beránek, J. (2023). Moderní pedagogické metody a přístupy. Praha: Portál.
 Fiala, M. (2023). Didaktika a metodika v současné škole. Praha: Grada Publishing.
 Kováč, M. (2023). Vzdelávanie v 21. storočí: Inovatívne prístupy a metódy. Nitra: Vydavateľstvo UKF v Nitre.
 Koudelka, J. (2023). Moderní didaktika a její aplikace. Praha: Karolinum.
 Křížová, M., & Šebová, P. (2023). Vzdělávání učitelů: Teoretické a praktické přístupy. Praha: Triton.
 Kučerová, M. (2023). Vzdělávání učitelů a profesionální rozvoj. Praha: Triton.
 Mocová, M., & Lázňovská, M. (2023). Pedagogika a jej aplikácie v praxi. Bratislava: Vydavateľstvo Spolku slovenských pedagogických pracovníkov.
 Novák, J., & Pol, M. (2024). Pedagogické výzkumy a inovace ve vzdělávání. Praha: Portál.
 Sikora, J. (2022). Didaktika a metodika vzdelávania: Nové výzvy a trendy. Bratislava: Vydavateľstvo Univerzity Komenského v Bratislave.
 Škoda, J. (2022). Efektivní výuka: Praktické strategie a metody. Praha: Grada Publishing.
 Švec, J. (2023). Didaktika a školní politika: Teorie a praxe. Praha: Grada Publishing.
 Vojtová, K. (2024). Diferenciace a inkluze ve vzdělávání. Praha: Wolters Kluwer.

Course language:

slovak

Notes:

Course assessment

Total number of assessed students: 152

| abs | n | neabs |
|-------|------|-------|
| 98.03 | 0.66 | 1.32 |

Provides: doc. PaedDr. Renáta Orosová, PhD.

Date of last modification: 14.09.2024

Approved: prof. RNDr. Renáta Oriňáková, DrSc.

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ FSCH/22 | Course name: Physical supramolecular chemistry |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Active participation in lectures, seminars and elaboration of assignments. The overall evaluation of the course consists of two parts: submission of assignments (30 points), written test at the end of the semester (70 points). The rating scale is determined as follows: A (100-91%), B (90-81%), C (80-71%), D (70-61%), E (60-51%), Fx (50- 0%). | |
| Learning outcomes: To provide students of doctoral studies in the field of Physical Chemistry information about basic concepts, types of interactions and various types of supramolecular systems and their practical applications. | |
| Brief outline of the course: 1. Historical development and basic concepts in supramolecular chemistry. 2. Chemical bonds, intermolecular interactions and physical phenomena in supramolecular systems. 3. Molecular and chiral recognition, self-organization, self-assembly and preorganization of molecules as basic building blocks of host-guest systems. 4. Design, thermodynamics and kinetics of molecular motors. 5. Supramolecular chemistry and the life sciences: supramolecular enzyme mimetics, synthetic transmembrane channels, diagnostic application and therapeutics. 6. Nanotechnology and industrial applications of supramolecular systems. | |
| Recommended literature: a) Paul Beer, Supramolecular chemistry: Fundamentals and applications, Oxford University Press, 2021. b) Catherine Housecroft, Supramolecular chemistry in the 3rd millennium, MDPI AG, 2021. c) Peter J. Cragg, Supramolecular chemistry: From biological inspiration to biomedical applications, Springer-Verlag GmbH, 2010. | |
| Course language: SK - slovak | |
| Notes: | |

The subject is carried out in person or, if necessary, remotely using the online platform Big Blue Button (BBB). The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

Course assessment

Total number of assessed students: 2

| N | P |
|-----|-------|
| 0.0 | 100.0 |

Provides: doc. RNDr. Miroslav Almáši, PhD.

Date of last modification: 25.11.2021

Approved: prof. RNDr. Renáta Oriňáková, DrSc.

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ POPV/22 | Course name: Popularisation of science |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Active involvement in the popularization of science. | |
| Learning outcomes: Demonstrated ability to present science to the lay public, use interactive methods of scientific communication, identify the target group and adapt the communication language to the level of professional knowledge. A PhD student is able to arouse interest and motivate specific target groups in the field of his scientific work, but also in the wider context of science | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 37 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ VYS/22 | Course name: Presentation in Seminar |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Presentation at the seminar | |
| Learning outcomes: By actively participating in the seminar, the PhD student demonstrates the ability to identify, evaluate, and apply correct scientific methods or research methodology in his field of study. He demonstrates the ability to reflect on a specific scientific problem by using the latest approaches and applying them critically. Demonstrates competence in using existing theories and concepts in an innovative way, as well as generating new original scientific knowledge and communicating research results by adequate means and through Slovak or a foreign language | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 9 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ ZRIG/22 | Course name: Principal investigator of an internal grant (VVGS) |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Principal investigator of an internal grant (VVGS) | |
| Learning outcomes: The PhD student demonstrates the ability to process a successful application for his own research problem within the internal grant system at UPJŠ. Acquires skills with the design of research stages, their time schedule, measurable outputs and adequate distribution of funds. The very solution of the internal VVGS grant acquires the ability to implement the project intention according to the established procedure, to be responsible for achieving the set outputs. As a responsible researcher, the PhD student acquires competencies in project management, its administration, and presentation of results. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 18 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: KPPaPZ/PsVU/17 | Course name: Psychology for University Lecturers |
| Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: Per study period: 28s Course method: distance, present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Case study, micro-output, its analysis Current modifications of the course are listed in the electronic bulletin board of the course. | |
| Learning outcomes: After completing the course, students will gain knowledge that allows them to understand, summarize and explain selected psychological knowledge from cognitive psychology, emotion and motivation psychology, personality psychology, developmental, social, educational psychology and health psychology. They will acquire skills to apply the above psychological knowledge necessary for the professional, competent performance of university teaching practice of doctoral students to create and implement the teaching of a professional topic with applied psychological knowledge and develop the competences to create and implement teaching of a professional topic with the application of psychological knowledge, as well as to evaluate their performance and the performance of their classmates in the form of constructive feedback. | |
| Brief outline of the course: The content of the course is based on selected psychological knowledge of cognitive psychology, psychology of emotions and motivation, personality psychology, developmental, social, educational psychology and health psychology. Teaching is realized by a combination of lectures with interactive, experiential methods, discussion, open communication with mutual respect, support of independence, activity and motivation of students. Syllabus: University teacher and his work in the teaching process with a focus on: teachers in relation to themselves (cognitive, personal, social and competencies in the use of methods), in relation to students and as part of the teacher-student relationship on the basis of selected areas of cognitive psychology, psychology of emotions and motivation, developmental psychology, social psychology, educational psychology and health psychology with application to the university environment | |
| Recommended literature: Alexitch, L. R. (2005). Applying social psychology to education. Social Psychology.–Ed.: Schneider F., Gruman J., Coutts L.–Sage Publications, Inc, 205-228. Fry, H., Ketteridge, S., & Marshall, S. (2008). A handbook for teaching and learning in higher education: Enhancing academic practice. Routledge. Mareš, J.: Pedagogická psychologie. Portál, 2013. | |

Kniha psychologie. Universum, 2014
 Čáp, J., Mareš, J.: Psychologie pro učitele. Praha: Portál 2007.
 Vágnerová, M.: Školní poradenská psychologie pro pedagogy. Praha: Karolínium 2005.
 Cuevas, J. A., Childers, G., & Dawson, B. L. (2023). A rationale for promoting cognitive science in teacher education: Deconstructing prevailing learning myths and advancing research-based practices. Trends in neuroscience and education, 100209.

Course language:

slovak

Notes:

Course assessment

Total number of assessed students: 87

| abs | n | neabs |
|-------|-----|-------|
| 98.85 | 0.0 | 1.15 |

Provides: PhDr. Anna Janovská, PhD.

Date of last modification: 09.12.2024

Approved: prof. RNDr. Renáta Oriňáková, DrSc.

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q1SA/22 | Course name: Q1 journal as co-author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 30 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q1 as co-author. | |
| Learning outcomes: By publishing in a journal of category Q1 as a co-author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 10 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q11A/22 | Course name: Q1 journal as first or corresponding author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 40 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q1 as first or corresponding author. | |
| Learning outcomes: By publishing in a journal of category Q1 as the first or corresponding author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 11 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q2SA/22 | Course name: Q2 journal as co-author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 20 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q2 as co-author. | |
| Learning outcomes: By publishing in a journal of category Q2 as a co-author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 7 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q21A/22 | Course name: Q2 journal as first or corresponding author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 30 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q2 as first or corresponding author. | |
| Learning outcomes: By publishing in a journal of category Q2 as the first or corresponding author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 17 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q3SA/22 | Course name: Q3 journal as co-author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 15 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q3 as co-author. | |
| Learning outcomes: By publishing in a journal of category Q3 as a co-author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 5 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q31A/22 | Course name: Q3 journal as first or corresponding author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 25 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q3 as first or corresponding author | |
| Learning outcomes: By publishing in a journal of category Q3 as the first or corresponding author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 4 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q4SA/22 | Course name: Q4 journal as co-author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 10 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q4 as co-author. | |
| Learning outcomes: By publishing in a journal of category Q4 as a co-author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 1 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ Q41A/22 | Course name: Q4 journal as first or corresponding author |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 20 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Publication accepted in a journal of category Q4 as first or corresponding author. | |
| Learning outcomes: By publishing in a journal of category Q4 as the first or corresponding author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 0 | |
| abs | n |
| 0.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ RZ/22 | Course name: Reviewed International or Local Proceedings |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: A publication published in a peer-reviewed foreign or national proceedings as an author/co-author. | |
| Learning outcomes: By publishing in a peer-reviewed foreign or national journal as an author/co-author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to critically evaluate and respond to reviewers' suggestions, to finalize his own ideas | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 87 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|----------------------------------|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ SCI/22 | Course name: SCI Citation |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 8 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Obtained citation registered in SCI or Scopus. | |
| Learning outcomes: Obtaining a citation demonstrates broad and very well-founded scientific knowledge in the researched field, based on the ability to formulate research questions, to reflect on a scientific problem in such a way that generates new knowledge. At the same time, a citation in an indexed source demonstrates the competence to communicate new knowledge, which is a significant contribution to scientific knowledge, at the highest expert level. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 31 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ VPZ/22 | Course name: Scientific work after sending to the editorial office |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Scientific work after being sent to the editorial office as an author/co-author. | |
| Learning outcomes: By sending a manuscript to the editors of a scientific journal as an author/co-author, the PhD student demonstrates a high degree of ability to identify, evaluate, and apply correct scientific methods or research methodology. He demonstrates the ability to reflect on a scientific problem by using the latest approaches and applying them critically. He demonstrates the competence to use existing theories and concepts in an innovative way, as well as to generate new original scientific knowledge, which he can publish according to the highest qualitative and ethical standards of the field. The PhD student demonstrates the ability to formulate his own ideas in a structured form. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 4 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňáková, DrSc. | |

COURSE INFORMATION LETTER

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|---|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: Dek. PF UPJŠ/JSD/14 | Course name: Spring School for PhD Students |
| Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: Per study period: 4d Course method: distance, present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Active participation in the Spring School of PhD students of UPJŠ. | |
| Learning outcomes: By actively participating in the Spring School of PhD Students of UPJŠ, the PhD student demonstrates a high level of ability to process the issues of his dissertation for a multidisciplinary audience with an emphasis on clarifying the motivation, scientific problem, processing methodology and own contribution to the solution of the selected topic. The PhD student demonstrates the ability to professionally discuss various research topics, present his own positions and accept a plurality of opinions. Demonstrates the ability to communicate research results to a wider professional audience with adequate means and through the Slovak language. | |
| Brief outline of the course: 1. Interdisciplinary lectures from the fields of medicine, natural sciences, law, public affairs, humanities. Lecturers - top foreign or national experts from the mentioned fields. 2. Scientific lectures in sections created within related disciplines. Lecturers - top experts from UPJŠ from the mentioned fields. 3. Scientific contributions of PhD students in sections of related fields. 4. Panel discussions on the issue of PhD studies and current trends in the development of scientific disciplines at UPJŠ. | |
| Recommended literature: Proceedings of the Spring School of Doctoral Students. | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 203 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: doc. RNDr. Marián Kireš, PhD. | |

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| Date of last modification: 08.11.2022 |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. |

COURSE INFORMATION LETTER

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|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ VPSV/22 | Course name: Supervision of a Students Scientific Work |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 8 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Supervision of Student's Scientific Activity | |
| Learning outcomes: By guiding a student within the SOČ or ŠVOČ, the PhD student demonstrates broad and scientifically based knowledge in the field of study, as well as knowledge of a wide range of methods and approaches. Demonstrates the ability to critically assess a professional problem and its proposed solution, as well as to evaluate it and possibly propose another solution. He applies knowledge and skills from the field of pedagogical sciences to his own field. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 6 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PPC1/22 | Course name: Teaching activities 1 h/s |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 2 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Direct teaching activity 1 semester hour | |
| Learning outcomes: Through pedagogical activity, the PhD student demonstrates the ability to transfer and integrate knowledge from his own field of study into education. He is able to select and apply the right techniques and strategies of study group management, higher education and evaluation of learning outcomes. He is capable of designing and implementing part of the educational process in accordance with current trends in higher education and the requirements placed on the level of communication and digital competencies. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 12 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PPC2/22 | Course name: Teaching activities 2 h/s |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 4 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Direct teaching activity 2 semester hours | |
| Learning outcomes: Through pedagogical activity, the PhD student demonstrates the ability to transfer and integrate knowledge from his own field of study into education. He is able to select and apply the right techniques and strategies of study group management, higher education and evaluation of learning outcomes. He is capable of designing and implementing part of the educational process in accordance with current trends in higher education and the requirements placed on the level of communication and digital competencies. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 17 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

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|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PPC3/22 | Course name: Teaching activities 3 h/s |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 6 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Direct teaching activity 3 semester hours | |
| Learning outcomes: Through pedagogical activity, the PhD student demonstrates the ability to transfer and integrate knowledge from his own field of study into education. He is able to select and apply the right techniques and strategies of study group management, higher education and evaluation of learning outcomes. He is capable of designing and implementing part of the educational process in accordance with current trends in higher education and the requirements placed on the level of communication and digital competencies. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 5 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

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|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PPC4/22 | Course name: Teaching activities 4 h/s |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 8 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Direct teaching activity 4 semester hours | |
| Learning outcomes: Through pedagogical activity, the PhD student demonstrates the ability to transfer and integrate knowledge from his own field of study into education. He is able to select and apply the right techniques and strategies of study group management, higher education and evaluation of learning outcomes. He is capable of designing and implementing part of the educational process in accordance with current trends in higher education and the requirements placed on the level of communication and digital competencies | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 12 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|---|---------------------------------------|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ KZP/22 | Course name: Thesis consultant |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 4 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Final thesis consultant. | |
| Learning outcomes: By consulting the final thesis, the PhD student demonstrates broad and scientifically based knowledge in the field of study, as well as knowledge of a wide range of methods and approaches. Demonstrates the ability to critically assess a professional problem and its proposed solution, as well as to evaluate it and possibly propose another solution. He applies knowledge and skills from the field of pedagogical sciences to his own field. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 46 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ VZP/22 | Course name: Thesis supervising |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 8 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Supervisor of the final thesis. | |
| Learning outcomes: By supervising the final thesis, the PhD student demonstrates broad and scientifically based knowledge in the field of study, as well as knowledge of a wide range of methods and approaches. Demonstrates the ability to critically assess a professional problem and its proposed solution, as well as to evaluate it and possibly propose another solution. He applies knowledge and skills from the field of pedagogical sciences to his own field. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 2 | |
| abs | n |
| 100.0 | 0.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |

COURSE INFORMATION LETTER

| | |
|--|--|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ TRFCHa/22 | Course name: Trends in physical chemistry I |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar/exercise will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. The exam is observed in a regular oral form, resp. in case of restrictions of contact forms of the pedagogical process, the exam is performed by a suitable distance - electronic form. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. | |
| Learning outcomes: Students will gain knowledge and skills on recent trends in physical chemistry. | |
| Brief outline of the course: - Li-ion batteries and their electrochemical properties - methods of analysis and characterization - Redox-flow batteries and their electrochemical properties - methods of analysis and characterization - Solar cells and their electrochemical properties - methods of analysis and characterization - Advanced spectroscopic and imaging methods. - Combination of electrochemical and spectroscopic methods. - Photoelectric phenomenon and its use in the modern world. - Physical chemistry of nanomaterials. - Applications of nanodevices, nanoelectronics, and nanosensors in physical chemistry. | |
| Recommended literature: 1. Theoretical Models and Experimental Approaches in Physical Chemistry Research Methodology and Practical Methods, 1st Edition. Edited By A. K. Haghi, Sabu Thomas, Praveen | |

K.M., Avinash R. Pai, Copyright Year 2017, ISBN 9781774630723, Published March 31, 2021 by Apple Academic Press

2. Advanced Series in Physical Chemistry: Volume 14. Modern Trends in Chemical Reaction Dynamics, Part I: Experiment and Theory. <https://doi.org/10.1142/5363>
March 2004. Edited By: Xueming Yang (Academia Sinica, Taiwan & Chinese Academy of Sciences, PRC) and Kopin Liu (Academia Sinica, Taiwan)

3. Amperometric and Impedance Monitoring Systems for Biomedical Applications, J. Punter-Villagrasa, 2017, Published by Springer

Course language:

Slovak language.

Notes:

Based on the current pandemic situation in Slovakia and in accordance with the conditions of the Faculty of Natural Sciences of UPJŠ in Košice, the education and examination can also be carried out in a distance form. The tutorial will be carried out in the form of online lectures and consultings in the BigBlueButton system. The written form of the exam takes place through the Google Forms app. Students prepare responses to the final written test. Test questions are randomly generated each time. The final oral exam is conducted through a webinar in BigBlueButton <https://bbb.science.upjs.sk/b>) system with online generation of random question numbers.

Course assessment

Total number of assessed students: 6

| N | P |
|-----|-------|
| 0.0 | 100.0 |

Provides: doc. RNDr. Miroslav Almáši, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Ivana Šišoláková, PhD., univerzitná docentka, prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc.

Date of last modification: 25.11.2021

Approved: prof. RNDr. Renáta Oriňaková, DrSc.

COURSE INFORMATION LETTER

| | |
|--|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ TRFCHb/22 | Course name: Trends in physical chemistry II |
| Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present | |
| Number of ECTS credits: 5 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: 1. Participation in seminars (also applies to the online form of teaching) and laboratory practical exercises. Students are required to attend seminars and laboratory exercises. The relevant teacher who leads the seminar/exercise will justify the reasoned absence of the student (incapacity for work, family reasons, etc.) in a maximum of two seminars or laboratory exercises during the semester without the need for replacement. In the event of a longer-term reasoned absence (for example due to incapacity for work), the relevant teacher will provide the student with an alternative form of mastering the missed material; 2. Activity at seminars and laboratory practical exercises. The preparation of students and their regular monitoring is always assessed by the relevant teacher who conducts the seminar or laboratory exercise, within his/her competence. 3. The exam is observed in a regular oral form, resp. in case of restrictions of contact forms of the pedagogical process, the exam is performed by a suitable distance - electronic form. 4. To successfully master the subject, it is necessary to prove mastery of the required curriculum at least 51%. | |
| Learning outcomes: Students will gain knowledge and skills on recent trends in physical chemistry. | |
| Brief outline of the course: - Post-lithium ion batteries and their electrochemical properties - methods of analysis and characterization. - Organic solar cells and their electrochemical properties - methods of analysis and characterization. - Hybrid battery systems and the use of second life Li-ion batteries for various applications. - Molecular aspects of hydrophobicity. - Surface tension of polymers. - Porous coordination polymers and their applications. - Biophysical chemistry, detection and analysis of biomolecules. - Contrast agents and modern diagnostic methods in medicine. - High performance and smart materials. | |
| Recommended literature: 1. "Atkins' Physical Chemistry" by Atkins, de Paula and Keeler, Oxford University Press. | |

2. Advanced Series in Physical Chemistry: Volume 14. Modern Trends in Chemical Reaction Dynamics, Part I: Experiment and Theory. <https://doi.org/10.1142/5363>
 March 2004. Edited By: Xueming Yang (Academia Sinica, Taiwan & Chinese Academy of Sciences, PRC) and Kopin Liu (Academia Sinica, Taiwan)
 3. Z Xueji, Electrochemical Sensors, Biosensors and their Biomedical Applications, ISBN 9780123737380, 2008, Published by Elsevier Science Publishing Co Inc

Course language:

Slovak language.

Notes:

Based on the current pandemic situation in Slovakia and in accordance with the conditions of the Faculty of Natural Sciences of UPJŠ in Košice, the education and examination can also be carried out in a distance form. The tutorial will be carried out in the form of online lectures and consultings in the BigBlueButton system. The written form of the exam takes place through the Google Forms app. Students prepare responses to the final written test. Test questions are randomly generated each time. The final oral exam is conducted through a webinar in BigBlueButton <https://bbb.science.upjs.sk/b>) system with online generation of random question numbers.

Course assessment

Total number of assessed students: 4

| N | P |
|-----|-------|
| 0.0 | 100.0 |

Provides: doc. RNDr. Miroslav Almáši, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Ivana Šišoláková, PhD., univerzitná docentka, prof. RNDr. Andrej Oriňák, PhD., prof. RNDr. Renáta Oriňáková, DrSc.

Date of last modification: 25.11.2021

Approved: prof. RNDr. Renáta Oriňáková, DrSc.

COURSE INFORMATION LETTER

| | |
|---|---|
| University: P. J. Šafárik University in Košice | |
| Faculty: Faculty of Science | |
| Course ID: ÚCHV/ PDS/22 | Course name: Writing Dissertation Work |
| Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present | |
| Number of ECTS credits: 20 | |
| Recommended semester/trimester of the course: | |
| Course level: III. | |
| Prerequisites: | |
| Conditions for course completion: Obtaining the required number of credits in the prescribed composition according to the UPJŠ study regulations, preparation and defense of the thesis, successfully completed dissertation examination. | |
| Learning outcomes: The PhD student demonstrated the prerequisites for successful continuation of the study by fulfilling the conditions prescribed by the study regulations for the study and scientific part of the doctoral study related to the topic of the dissertation. | |
| Brief outline of the course: | |
| Recommended literature: | |
| Course language: | |
| Notes: | |
| Course assessment Total number of assessed students: 12 | |
| N | P |
| 0.0 | 100.0 |
| Provides: | |
| Date of last modification: 08.11.2022 | |
| Approved: prof. RNDr. Renáta Oriňaková, DrSc. | |