

Content

1. Active participation at a conference I.....	2
2. Active participation at a conference II.....	4
3. Defence of the dissertation.....	6
4. Dissertation exam.....	8
5. Dissertation project.....	10
6. English language 1.....	12
7. English language 2.....	15
8. Experimental work I.....	18
9. Experimental work II.....	20
10. Experimental work III.....	22
11. Experimental work IV.....	24
12. Experimental work IX.....	26
13. Experimental work V.....	28
14. Experimental work VI.....	30
15. Experimental work VII.....	32
16. Experimental work VIII.....	34
17. Inorganic technologies and materials I.....	36
18. Inorganic technologies and materials II.....	39
19. Publishing activity I.....	43
20. Publishing activity II.....	45

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atK1e/24	Course unit title: Active participation at a conference I
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 132s Study method: combined	
Number of credits: 5	
Recommended semester/trimester of study: 6.	
Degree of study: III.	
Prerequisites: CPV/atAnJe 1/22 and CPV/atExP5e/22	
Conditions for the accomplishment of the course unit: Presentation of the results of the student's experimental work at minimally national conference in the form of a lecture, or poster in English language.	
Learning outcomes: - The student is able to summarize the results of his / her experimental work, to formulate conclusions with the help of the supervisor, and to process them into a form that can be used for presentation at a professional event. - The student is able to present these results to the audience, and can respond promptly to questions posed relevant to the presentation.	
Brief course unit content: - study of professional literature according to the supervisor's recommendation and according to student's own choice, - processing the results and preparing the presentation or poster, - presentation of results at an international conference at minimally national level, - consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation according to student's own choice and according to the supervisor's recommendation.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes: In the case of an active participation in several conferences, the number of credits will multiply accordingly. Active participation at a conference does not replace the presentation of results at the training workplace seminar. Credits obtained for the subject Active participation at a conference I do not replace the credits that the student must obtain for the study part.	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., Ing. Dagmar Galusková, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., doc. Ing. Róbert Klement, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., RNDr. Zuzana Neščáková, PhD., MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Michálková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atK2e/24	Course unit title: Active participation at a conference II
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 132s Study method: combined	
Number of credits: 5	
Recommended semester/trimester of study: 8.	
Degree of study: III.	
Prerequisites: CPV/atAnJe 1/22 and CPV/atExP7e/22	
Conditions for the accomplishment of the course unit: Presentation of the results of the student's experimental work at minimally national conference in the form of a lecture, or post, in English language.	
Learning outcomes: - The student is able to summarize the results of his/her experimental work, formulate conclusions independently, and process them into a form that can be used for presentation at a professional event. - The student is able to present these results in front of a professional audience, and can respond promptly to questions posed for presentation.	
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to student's own choice, - Processing the results and preparing the presentation or poster, - Presentation of results at minimally national conference, - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation according to student's own choice and according to the supervisor's recommendation.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes: A presentation in the form of a lecture is preferred. The poster is only acceptable if the student's contribution is not accepted as a lecture by the conference organizers. In case of active participation in several conferences, the number of credits will multiply accordingly. Active participation at a conference does not replace the presentation of results at the training workplace seminar. Credits obtained for the subject Active participation at a conference II do not replace the credits that the student must obtain for the study part.	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Martin Michálek, PhD., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atODPe/24	Course unit title: Defence of the dissertation
Type, scope and method of educational activities: Types of education: Recommended duration of education (in hours): Per week: For the whole period of study: Study method: combined	
Number of credits: 8	
Recommended semester/trimester of study: 9., 10..	
Degree of study: III.	
Prerequisites: CPV/atPDPe/22 and CPV/atPČ2e/22	
Conditions for the accomplishment of the course unit: Submission of dissertation work. - Assessment of the originality of the dissertation. - Assessment of the dissertation by at least 2 evaluators in accordance with the Directive 3-U-046 on the Organisation of doctoral studies at Alexander Dubček University of Trenčín, - Fulfilment of the minimum requirements for publishing activities defined in the Directive 3-U-046 on the Organisation of doctoral studies at the Alexander Dubček University of Trenčín. - Successful completion of the dissertation thesis defence before the Commission for the dissertation defence at the training workplace, answering the questions of the opponents, as well as answering the questions asked in the public debate by the members of the commission and the professional public.	
Learning outcomes: - The student is able to analyse and interpret the results of his/her experimental work, statistically evaluate them and on the basis of such an analysis can synthesize new and original conclusions from his/her research. - He/she is able to present the obtained results in a suitable way on a professional forum, he/she can clearly and competently argue and discuss the obtained results in the light of the latest knowledge published in the professional literature, he/she can respond promptly and adequately to questions posed by the professional public. - He/she orients in the issue and understands the broader context of solving his/her dissertation thesis. - He/ she has the necessary knowledge, practical and methodological skills to enable him/her to be employed as a researcher or researcher in academic institutions and in the research and development divisions of industrial enterprises.	
Brief course unit content: Brief course unit content: - Preparation of a presentation for the defence of the dissertation, - Individual consultations with the supervisor / specialist supervisor as appropriate,	

- Presentation of the dissertation thesis before the Commission for the defence of dissertations in the training workplace, answering the questions of the opponents, as well as answering the questions asked in the public debate by the members of the commission and the professional public.		
Recommended Literature: - Book and magazine literature related to the topic of the dissertation thesis.		
Language which is necessary for accomplishment of the course unit: Slovak, English		
Notes:		
Course evaluation passed/failed Number of evaluated students: 1		
Fn	NPR	PR
0.0	0.0	100.0
Teachers:		
Last modification date: 02.09.2025		
Approved by: prof. Ing. Dušan Galusek, DrSc.		

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/DSe/24	Course unit title: Dissertation exam
Type, scope and method of educational activities: Types of education: Recommended duration of education (in hours): Per week: For the whole period of study: Study method: combined	
Number of credits: 20	
Recommended semester/trimester of study: 3., 4..	
Degree of study: III.	
Prerequisites: CPV/atAMaTV2e/23	
Conditions for the accomplishment of the course unit: - Passing all the compulsory and compulsory optional subjects, - Writing and submission of the Thesis of the dissertation in the range of 40-60 pages focused on the search of literary sources related to the topic of the dissertation thesis and a summary of preliminary results of the dissertation thesis (not a condition), - Recommendation of Thesis for defence by reviewers, - Successful completion of the dissertation exam.	
Learning outcomes: The student is familiar with current professional literature related to the topic of the dissertation. He/she can work with it, extract relevant information from it, analyse it and synthesize it into the design of goals and methods for solving his/her dissertation thesis. He/she orients himself/herself in the issue and understands the broader context of solving his/her dissertation thesis. Can present this knowledge in a professional forum and defend his/her views in a critical discussion and respond promptly to questions asked by the professional public.	
Brief course unit content: - Study of professional literature related to the topic of the dissertation thesis, - Analysis of studied knowledge, - Preparation and writing of dissertation thesis, - On the basis of the latest knowledge gained from the study and in consultation with the supervisor / supervisor specialist, specification of the objectives of the dissertation thesis, - Preparation of a presentation for the dissertation exam, including preparation of answers to the opponent's questions.	
Recommended Literature: - Magazine and book literature related to the solution of the dissertation project according to the recommendation of the supervisor and according to the student's own choice.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 1						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers:						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atPDPe/24	Course unit title: Dissertation project
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 264s Study method: combined	
Number of credits: 10	
Recommended semester/trimester of study: 10.	
Degree of study: III.	
Prerequisites: CPV/atPČ2e/22	
Conditions for the accomplishment of the course unit: submission of dissertation thesis, - assessment of the originality of the dissertation thesis, - assessment of the dissertation by at least 2 evaluators in accordance with the Directive-Organisation of doctoral studies at the Alexander Dubček University of Trenčín.	
Learning outcomes: The student is able to analyse and interpret the results of his experimental work, statistically evaluate them and on the basis of such an analysis can synthesize new and original conclusions from his research. - He/she is able to present the obtained results in a suitable way in written form, he/she can clearly and competently argue and discuss the obtained results in the light of the latest knowledge published in the literature.	
Brief course unit content: - analysis and statistical analysis of the results obtained, - interpretation of results obtained and synthesis of conclusions, - where appropriate, individual consultations with a specialist trainer / trainer, - writing a dissertation in the form of a scientific dissertation on a topic defined in the individual study plan, - presentation of the dissertation (so-called discharge) in front of the members of the academic community of the training workplace.	
Recommended Literature: - Book and magazine literature related to the topic of the dissertation thesis.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 1						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atAnJe 1/24	Course unit title: English language 1
Type, scope and method of educational activities: Types of education: Lecture / Practical Recommended duration of education (in hours): Per week: 2 / 2 For the whole period of study: 24 / 24 Study method: combined	
Number of credits: 2	
Recommended semester/trimester of study: 1.	
Degree of study: III.	
Prerequisites:	
Conditions for the accomplishment of the course unit: Evaluation of the partial results (outcomes): Summary evaluation of work results within the semester = 40 points; Creative work as well as approach to solving the given tasks, preparation of presentations related to the topic of the dissertation thesis (explanation of any basic technical concepts, principles, approaches). The other prerequisites necessary for the successful completion of the course unit include the controlling, presenting and interpretation of basic English grammar constructions, using a professional text which is related to the topic of the dissertation thesis. It is also necessary to complete successfully the interview with a focus on the information provided in the professional CV, while the student uses the knowledge of spoken English. Final evaluation: Oral exam result evaluation = 60 points After completing the lectures and exercises (min. 80% attendance), which are in the form of a discussion between the teacher and students, the doctoral students have to pass an exam with focus on the dissertation thesis solved. Total (overall) resulting evaluation of the course unit: A: 91 - 100 points, B: 81 - 90 points, C: 71 - 80 points, D: 61 - 70 points, E: 55 - 60 points, FX: less than 55 points.	
Learning outcomes: On the basis of continuously deepened language and professional knowledge and communication skills in the field of general, professional language as well as language used in the academic environment, the student is able to monitor and analyse the latest scientific knowledge, about which he can provide clear and understandable information, which means that is able to adequately respond and provide coherent and systematic information in terms of coherent expression in professional communication. The student is able to inform in detail about the ways, principles, laws, professional approaches that are characteristic of his dissertation. The student is able to respond coherently and promptly to comments and questions that directly relate to his / her research and educational activities, not only with a focus on the topic of the dissertation. The student also has acquired and deepened knowledge in terms of the peculiarities of academic language and also has improved skills and knowledge in the use of language resources, conversation, terminological expressions, vocabulary, reading, writing and listening. Based on analytical thinking, the student	

is able to find connections in terms of professional text and also can professionally summarize the background information into complex topics, while obtaining the information from a variety of credible sources.

Brief course unit content:

1. Multiculturalism in the scientific community, specific aspects of international communication, respecting different cultural diversity, ethnicity + norms of social behaviour for different situations.
2. Specific features of informal and formal language and its use in professional communication (characteristic features and phenomena in colloquial and professional language), distinctive specific features of academic/technical English.
3. Grammar patterns and rules – morphological and syntactic analysis, recognition of English language as an interactive source for communication, including nonverbal communication and polysemy for expressions in colloquial and professional (academic) style.
4. Spoken production and interaction (speaking) – public, formal spoken production and interpretation in the academic context, relating to English language (primary role of spoken production - interpretation vs. conversation), audio-visual aids...
5. Fundamental constituent units in academic writing style ("Informed texts", stylistic principles, organization of the text, including structure, abstracts, annotations, academic integrity ...).
6. Latin and foreign language words in professional language (loan translation = calque, interlingua homonyms, paronyms...); compound expressions in professional English, simplification of technical text and technical terms (creation of own technical monolingual dictionary) with a focus on the topic of the dissertation thesis.
7. Different academic reading methods and techniques from the aspect of obtaining and searching for the relevant, accurate information and key terms processing (skimming vs. scanning).
8. Training with selected formal/informal text – selective information retrieval, "reading between lines", interpretation using integrated interactive means or sources ("tools").
9. Selection of communication stylistic and linguistic language sources for preparation of some professional presentation (types, characteristics, useful expressions, structure of the presentation + interpretation, dissemination of the presented knowledge).
10. Training with specified professional, technical terminology with a focus on research activities in relation to the topic of the dissertation thesis – new, progressive approaches, methods, measuring instruments and equipment (description of measuring equipment, measurement procedure ...).
11. Listening characteristics – basic principles and rules for understanding and interpretation of the decoded content (main idea understanding, detailed information) with regard to multicultural diversity, note taking – mutual comparison.
12. Evaluation of the overall work activity and all prerequisites from the student's and teacher's point of view. Interpretation and presenting (summarizing) the knowledge within the solved dissertation thesis in order to accomplish the course – presentation.

Recommended Literature:

Wallwork, A. 2011. English for Writing Research Papers. Springer.
Wallwork, A. 2010. English for Presentations and International Conferences. Springer.
Wallwork, A. 2012. English for Research: Usage, Style, and Grammar. Springer.
Relevantná monografia vlastného odboru nie staršia ako 5 rokov v rozsahu 150 – 200 strán.
Štěpánek, L. a kol.: Akademická Angličtina. Grada Publishing, Praha. 2018. ISBN 978-80-271-0842-8
Hyland, K.: English for Academic Purposes: An Advanced Resource Book. Routledge, London. 2006. ISBN 978-04-153-5870-5
Murphy, M.: English Grammar in Use. University Press, Cambridge. 2004. ISBN 978-0-521-53289-1

Hashemi, L., Murphy M.: English Grammar in Use, Supplementary Exercises. University Press, Cambridge. 1995. ISBN 978-0-521-44954-5 Bailey, S.: Academic Writing: A Handbook for International Students. Routledge, London. 2011. ISBN 978-0-203-83165-6 Materiály z legálne dostupných, dôveryhodných internetových zdrojov Vedecké články z časopisov a vedeckých konferencií podľa zamerania doktoranda, nie staršie ako 2 – 3 roky.						
Language which is necessary for accomplishment of the course unit: English						
Notes:						
Course evaluation passed/failed Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: Mgr. Silvia Koišová						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atAnJe 2/24	Course unit title: English language 2
Type, scope and method of educational activities: Types of education: Lecture / Practical Recommended duration of education (in hours): Per week: 2 / 5 For the whole period of study: 24 / 60 Study method: combined	
Number of credits: 3	
Recommended semester/trimester of study: 2.	
Degree of study: III.	
Prerequisites: CPV/atAnJe 1/22	
Conditions for the accomplishment of the course unit: Evaluation of the partial results (outcomes): Summary evaluation of work results within the semester = 40 points; Creative work as well as approach to solving the given tasks, preparation of presentations related to the topic of the dissertation thesis (explanation of any basic technical concepts, principles, approaches). The other prerequisites necessary for the successful completion of the course unit include the controlling, presenting and interpretation of basic English grammar constructions, using a professional text which is related to the topic of the dissertation thesis. It is also necessary to complete successfully the interview with a focus on the information provided in the professional CV, while the student uses the knowledge of spoken English. Final evaluation: Oral exam result evaluation = 60 points After completing the lectures and exercises (min. 80% attendance), which are in the form of a discussion between the teacher and students, the doctoral students have to pass an exam with focus on the dissertation thesis solved. Total (overall) resulting evaluation of the course unit: A: 91 - 100 points, B: 81 - 90 points, C: 71 - 80 points, D: 61 - 70 points, E: 55 - 60 points, FX: less than 55 points.	
Learning outcomes: On the basis of continuously deepened language and professional knowledge and communication skills in the field of general, professional language as well as language used in the academic environment, the student is able to monitor and analyse the latest scientific knowledge, about which he can provide clear and understandable information, which means that is able to adequately respond and provide coherent and systematic information in terms of coherent expression in professional communication. The student is able to inform in detail about the ways, principles, laws, professional approaches that are characteristic of his dissertation. The student is able to respond coherently and promptly to comments and questions that directly relate to his / her research and educational activities, not only with a focus on the topic of the dissertation. The student also has acquired and deepened knowledge in terms of the peculiarities of academic language and also has improved skills and knowledge in the use of language resources, conversation, terminological expressions, vocabulary, reading, writing and listening. Based on analytical thinking, the student	

is able to find connections in terms of professional text and also can professionally summarize the background information into complex topics, while obtaining the information from a variety of credible sources.

Brief course unit content:

1. Multiculturalism in the scientific community, specific aspects of international communication, respecting different cultural diversity, ethnicity + norms of social behaviour for different situations.
2. Specific features of informal and formal language and its use in professional communication (characteristic features and phenomena in colloquial and professional language), distinctive specific features of academic/technical English.
3. Grammar patterns and rules – morphological and syntactic analysis, recognition of English language as an interactive source for communication, including nonverbal communication and polysemy for expressions in colloquial and professional (academic) style.
4. Spoken production and interaction (speaking) – public, formal spoken production and interpretation in the academic context, relating to English language (primary role of spoken production - interpretation vs. conversation), audio-visual aids...
5. Fundamental constituent units in academic writing style ("Informed texts", stylistic principles, organization of the text, including structure, abstracts, annotations, academic integrity ...).
6. Latin and foreign language words in professional language (loan translation = calque, interlingua homonyms, paronyms...); compound expressions in professional English, simplification of technical text and technical terms (creation of own technical monolingual dictionary) with a focus on the topic of the dissertation thesis.
7. Different academic reading methods and techniques from the aspect of obtaining and searching for the relevant, accurate information and key terms processing (skimming vs. scanning).
8. Training with selected formal/informal text – selective information retrieval, "reading between lines", interpretation using integrated interactive means or sources ("tools").
9. Selection of communication stylistic and linguistic language sources for preparation of some professional presentation (types, characteristics, useful expressions, structure of the presentation + interpretation, dissemination of the presented knowledge).
10. Training with specified professional, technical terminology with a focus on research activities in relation to the topic of the dissertation thesis – new, progressive approaches, methods, measuring instruments and equipment (description of measuring equipment, measurement procedure ...).
11. Listening characteristics – basic principles and rules for understanding and interpretation of the decoded content (main idea understanding, detailed information) with regard to multicultural diversity, note taking – mutual comparison.
12. Evaluation of the overall work activity and all prerequisites from the student's and teacher's point of view. Interpretation and presenting (summarizing) the knowledge within the solved dissertation thesis in order to accomplish the course – presentation.

Recommended Literature:

Wallwork, A. 2011. English for Writing Research Papers. Springer.
Wallwork, A. 2010. English for Presentations and International Conferences. Springer.
Wallwork, A. 2012. English for Research: Usage, Style, and Grammar. Springer.
Relevant monograph of own field not older than 5 years in scop 150 – 200 strán.
Štěpánek, L. a kol.: Akademická Angličtina. Grada Publishing, Praha. 2018. ISBN 978-80-271-0842-8
Hyland, K.: English for Academic Purposes: An Advanced Resource Book. Routledge, London. 2006. ISBN 978-04-153-5870-5
Murphy, M.: English Grammar in Use. University Press, Cambridge. 2004. ISBN 978-0-521-53289-1

Hashemi, L., Murphy M.: English Grammar in Use, Supplementary Exercises. University Press, Cambridge. 1995. ISBN 978-0-521-44954-5
 Bailey, S.: Academic Writing: A Handbook for International Students. Routledge, London. 2011. ISBN 978-0-203-83165-6
 Materials from legally available, trusted Internet sources
 Scientific articles from journals and scientific conferences according to the doctoral student's focus, not older than 2-3 years.

Language which is necessary for accomplishment of the course unit:

English

Notes:

Course evaluation passed/failed

Number of evaluated students: 2

A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0

Teachers: Mgr. Silvia Koišová

Last modification date: 02.09.2025

Approved by: prof. Ing. Dušan Galusek, DrSc.

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExP1e/24	Course unit title: Experimental work I
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 242s Study method: combined	
Number of credits: 9	
Recommended semester/trimester of study: 1.	
Degree of study: III.	
Prerequisites:	
Conditions for the accomplishment of the course unit: - Completion of health and safety training. - Completion of training on the ethics of scientific work and the basics of good laboratory practice. - Completion of training for work with experimental equipment needed for the dissertation project according to the supervisor's recommendation. - Execution of laboratory experiments according to the schedule defined in the Individual study plan of the doctoral student. - Study of professional literature and obtaining a basic overview of issues related to the topic of the dissertation thesis.	
Learning outcomes: - The student masters the basics of occupational safety in the chemical and physical laboratory, is familiar with the principles of good laboratory practice and can actively use them in their work. - The student is able to work with professional literature and extract the necessary facts from it. - The student will gain a basic overview of issues related to the topic of their dissertation thesis. - The student can actively use the laboratory equipment necessary for the project of his dissertation and can use it to obtain accurate and correct results.	
Brief course unit content: - health and safety training, - training in the ethics of scientific work, - training in the basics of good laboratory practice, - study of professional literature as recommended by the supervisor, - training to work with experimental equipment needed for the dissertation project as recommended by the supervisor, - experimental work in the laboratory, - consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit:	

Slovak, English						
Notes:						
Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExP2e/24	Course unit title: Experimental work II
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 110s Study method: combined	
Number of credits: 4	
Recommended semester/trimester of study: 2.	
Degree of study: III.	
Prerequisites: CPV/atExP1e/22	
Conditions for the accomplishment of the course unit: completion of training for work with experimental equipment needed for the dissertation project according to the supervisor's recommendation. - execution of laboratory experiments according to the schedule defined in the Individual study plan of the doctoral student. - study of professional literature and extension of the overview in issues related to the topic of the dissertation thesis. - presentation of results at the internal seminar of the training workplace.	
Learning outcomes: - the student will improve and develop the ability to work with professional literature and extract the necessary facts from it. - the student will expand the overview of issues related to the topic of his dissertation. - the student can actively use the laboratory equipment necessary for the project of his dissertation and can use it to obtain accurate and correct results. - the student is able to independently plan experiments and process their results.	
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to one's own choice. - Training to work with the experimental equipment needed for the dissertation project according to the supervisor's recommendation and according to one's own choice. - Experimental work in the laboratory. - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Monika Michálková						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp3e/24	Course unit title: Experimental work III
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 616s Study method: combined	
Number of credits: 24	
Recommended semester/trimester of study: 3.	
Degree of study: III.	
Prerequisites: CPV/atExp2e/22	
Conditions for the accomplishment of the course unit: - Completion of training for work with experimental equipment needed for the dissertation project according to the supervisor's recommendation. - Execution of laboratory experiments according to the schedule defined in the Individual study plan of the doctoral student. - Study of professional literature and extension of the overview in issues related to the topic of the dissertation thesis.	
Learning outcomes: - The student will further improve and develop the ability to work with professional literature and extract the necessary facts from it. - The student will significantly expand the overview of issues related to the topic of his dissertation, and is able to use the acquired knowledge in the processing of dissertation thesis, as well as in the planning of experiments and evaluation of results. - The student can actively use the laboratory equipment necessary for the project of his dissertation and can use it to obtain accurate and correct results. - The student is able to independently plan experiments and process their results.	
Brief course unit content: - Study of professional literature according to the trainer's recommendation and according to one's own choice. - Training to work with the experimental equipment needed for the dissertation project according to the supervisor's recommendation and according to one's own choice. - Experimental work in the laboratory. - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	

Notes:						
Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp4e/24	Course unit title: Experimental work IV
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 110s Study method: combined	
Number of credits: 4	
Recommended semester/trimester of study: 4.	
Degree of study: III.	
Prerequisites: CPV/atExp3e/22	
Conditions for the accomplishment of the course unit: - Execution of laboratory experiments according to the schedule defined in the Individual study plan of the doctoral student. - Study of professional literature and obtaining a comprehensive overview of issues related to the topic of the dissertation thesis, which the student will use in the dissertation exam. - Presentation of results at the internal seminar of the training workplace.	
Learning outcomes: - The student has the ability to work independently with professional literature, from its selection, evaluation of its contribution to the dissertation project, through excerpting the necessary facts, their analysis, synthesis of new conclusions, and the use of studied information in planning experiments and their evaluation. - The student is able to independently formulate a scientific problem on the basis of the study of literature and to propose a procedure for its solution. - The student has a comprehensive overview of issues related to the topic of the dissertation thesis, which he uses in the dissertation exam, as well as in the planning of experiments and evaluation of results. - The student can actively use the laboratory equipment necessary for his/her dissertation project and can use it to obtain accurate and correct results.	
Brief course unit content: Study of professional literature according to the supervisor's recommendation and according to one's own choice. - Training to work with the experimental equipment needed for the dissertation project according to the supervisor's recommendation and according to one's own choice. - Experimental work in the laboratory. - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Knižná a časopisecká literatúra súvisiaca s témou dizertačnej práce podľa vlastného výberu a podľa odporúčania školiteľa.	

Language which is necessary for accomplishment of the course unit: Slovak, English						
Notes:						
Course evaluation passed/failed Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Michálková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp9e/24	Course unit title: Experimental work IX
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 616s Study method: combined	
Number of credits: 24	
Recommended semester/trimester of study: 9.	
Degree of study: III.	
Prerequisites: CPV/atExp8e/22	
Conditions for the accomplishment of the course unit: - Execution of laboratory experiments according to the schedule defined in the individual study plan of the doctoral student. - Final evaluation, analysis, drawing conclusions and preparation of documents for writing the dissertation thesis. - Presentation of results at the internal seminar of the training workplace.	
Learning outcomes: - The student is able to work with professional literature to the extent that allows him/her to independently prepare publications in international professional periodicals. - The student is able to independently formulate a scientific problem on the basis of the study of literature and to propose a procedure for its solution, to plan an experiment and to carry it out independently. - The student is able to independently evaluate the performed experiments, draw valid conclusions from them and present the results of their experimental work in the form of a scientific dissertation (dissertation thesis).	
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to one's own choice. - Processing of results and preparation of materials for publishing results at an international scientific event and in a professional periodical. - Processing of results and preparation of materials for writing the dissertation thesis. - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 1						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp5e/24	Course unit title: Experimental work V
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 616s Study method: combined	
Number of credits: 24	
Recommended semester/trimester of study: 5.	
Degree of study: III.	
Prerequisites: CPV/atExp4e/23	
Conditions for the accomplishment of the course unit: - Execution of laboratory experiments according to the schedule defined in the Individual study plan of the doctoral student. - Study of professional literature and further expansion of the overview of issues related to the topic of the dissertation thesis.	
Learning outcomes: - The student will further expand the ability to work independently with professional literature, from its selection, evaluation of its contribution to the dissertation project, through excerpting the necessary facts, their analysis, synthesis of new conclusions, and the use of studied information in planning experiments and their evaluation. - The student is able to independently formulate a scientific problem on the basis of the study of literature and to propose a procedure for its solution. - The student has a comprehensive overview of issues related to the topic of the dissertation, which he/she uses in planning experiments and evaluating results. - The student can actively use the laboratory equipment necessary for the project of his/her dissertation thesis and can use it to obtain accurate and correct results.	
Brief course unit content: - study of professional literature according to the supervisor's recommendation and according to one's own choice, - training to work with the experimental equipment needed for the dissertation project according to the supervisor's recommendation and according to one's own choice, - experimental work in the laboratory, - consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Rajesh Dagupati, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp6e/24	Course unit title: Experimental work VI
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 484s Study method: combined	
Number of credits: 19	
Recommended semester/trimester of study: 6.	
Degree of study: III.	
Prerequisites: CPV/atExp5e/22	
Conditions for the accomplishment of the course unit: - Execution of laboratory experiments according to the schedule defined in the Individual study plan of the doctoral student. - Study of professional literature and further expansion of the overview of issues related to the topic of the dissertation thesis. - Presentation of results at the internal seminar of the training workplace	
Learning outcomes: - The student will further expand the ability to work independently with professional literature, from its selection, evaluation of its contribution to the dissertation project, through excerpting the necessary facts, their analysis, synthesis of new conclusions, and the use of studied information in planning experiments and their evaluation. - The student has a comprehensive overview of issues related to the topic of the dissertation, which he/she actively uses in planning experiments and evaluating results. - The student can actively use the laboratory equipment necessary for the project of his/her dissertation and can use it to obtain accurate and correct results.	
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to one's own choice. - Processing of results and preparation of materials for publishing results at an international scientific event and in a professional periodical. - Processing of results and preparation of materials for writing the dissertation thesis. - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp7e/24	Course unit title: Experimental work VII
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 616s Study method: combined	
Number of credits: 24	
Recommended semester/trimester of study: 7.	
Degree of study: III.	
Prerequisites: CPV/atExp6e/22	
Conditions for the accomplishment of the course unit: - Execution of laboratory experiments according to the schedule defined in the individual study plan of the doctoral student. - Final evaluation, analysis, drawing conclusions and preparation of documents for writing the dissertation theses	
Learning outcomes: - The student is able to work with professional literature to the extent that allows him/her to independently prepare publications in international professional periodicals. - The student is able to independently formulate a scientific problem on the basis of the study of literature and to propose a procedure for its solution, to plan an experiment and to carry it out independently. - The student is able to independently evaluate the performed experiments, draw valid conclusions from them and present the results of their experimental work in the form of a scientific dissertation (dissertation thesis).	
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to one's own choice. - Processing of results and preparation of materials for publishing results at an international scientific event and in a professional periodical. - Processing of results and preparation of materials for writing the dissertation thesis, - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
50.0	50.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atExp8e/24	Course unit title: Experimental work VIII
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 242s Study method: combined	
Number of credits: 9	
Recommended semester/trimester of study: 8.	
Degree of study: III.	
Prerequisites: CPV/atExp7e/22	
Conditions for the accomplishment of the course unit: - Execution of laboratory experiments according to the schedule defined in the individual study plan of the doctoral student. - Study of professional literature and further expansion of the overview of issues related to the topic of the dissertation. - Presentation of the results at the internal seminar of the training workplace	
Learning outcomes: - The student will further expand the ability to work independently with professional literature, from its selection, evaluation of its contribution to the dissertation project, through excerpting the necessary facts, their analysis, synthesis of new conclusions, and the use of studied information in planning experiments and their evaluation. - The student has a comprehensive overview of issues related to the topic of the dissertation exam, which he/she actively uses in planning experiments and evaluating results. - The student can actively use the laboratory equipment necessary for of his/her dissertation project and can use it to obtain accurate and correct results.	
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to one's own choice. - Processing of results and preparation of materials for publishing results at an international scientific event and in a professional periodical. - Processing of results and preparation of materials for writing the dissertation thesis. - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis as recommended by the supervisor.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes:	

Course evaluation passed/failed						
Number of evaluated students: 1						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atAMaTV1e/24	Course unit title: Inorganic technologies and materials I
Type, scope and method of educational activities: Types of education: Lecture / Practical Recommended duration of education (in hours): Per week: 10 / 23 For the whole period of study: 120 / 276 Study method: combined	
Number of credits: 15	
Recommended semester/trimester of study: 1.	
Degree of study: III.	
Prerequisites:	
Conditions for the accomplishment of the course unit: The condition for passing the course and obtaining credits is: - completion of all mandatory and selected compulsory optional modules, - the conditions for granting credits for the completion of individual modules, as well as the number of credits awarded for the completion of individual modules are defined in the description of the relevant modules. The final evaluation of the subject The final evaluation of the subject is calculated as the weighted arithmetic average W of the evaluation of individual modules, using the following formula: $W = \frac{\sum_{i=1}^n w_i X_i}{\sum_{i=1}^n w_i}$ Where X_i represents the evaluation of the modulus i and w_i represents its weight. The following numerical values are assigned to the module ratings: rating A = 1, B = 1.5, C = 2, D = 2.5, E = 3, FX = 4. The parameter w_i is assigned a value that is equal to the number of credits obtained for completing the relevant module. According to the value of W after rounding to 2 decimal places, the final mark is determined, whereby the mark A corresponds to the value of W in the closed interval #1; 1.49#, mark B to the value of W in a closed interval #1.50; 1.99#, mark C to the value of W in a closed interval #2.00; 2.49#, mark D to the W value in closed interval #2.50; 2.99#, mark E to the value of W in closed interval #3.00; 3.49#, and mark FX to the value $W \geq 3.50$.	
Learning outcomes: Student: • knows the basic principles of scientific ethics and research integrity and can apply them in their scientific work. • Gains advanced knowledge on the field of: - o physical chemistry with a specific focus on thermodynamics of glasses, glass-forming systems and ceramic materials, - o atom structures and chemical bonding theories, - o chemistry, thermochemistry and chemical kinetics, - o types of chemical reactions and chemistry of selected chemical compounds,	

o technology of inorganic materials.

- Has complex information and an overview of the most important inorganic non-metallic materials used in common technical practice and technologies of their production and preparation.
- Knows about the latest trends in research and development of advanced inorganic non-metallic materials, the method, scope and limits of their use, the latest trends in their development and methods and methods of their characterization.
- Within the optional modules, they will gain in-depth knowledge of specific aspects of the development, use and characterization of non-metallic inorganic materials directly related to the topic of the student's dissertation.

Brief course unit content:

Compulsory modules:

- Ethics of scientific work and research integrity
- Physical chemistry
- Atom structure and chemical bond theory
- Chemistry, thermochemistry and chemical kinetics
- Types of chemical reactions and chemistry of selected chemical compounds
- Fundamentals of the technology of inorganic materials

Compulsory optional modules:

- Engineering ceramics: classification and properties
- Mechanical properties of materials
- Experimental mechanics
- Functional properties of materials and methods of their measurement
- Biomaterials: introduction
- Biomaterials: Preparation, characterization and use
- Coating and thin films: Preparation of characterization

Detailed descriptions of the content of individual modules are given in the descriptions of the respective modules.

Recommended Literature:

W.D. Kingery, H.K. Bowen, D.R. Uhlmann: Introduction to Ceramics, 2nd edition, John Wiley & Sons, 1976, ISBN 9812-53-141-6.

Materials Science and Technology. A Comprehensive Treatment, Vol. 11, Structure and Properties of Ceramics: M. Swain (Editor). Verlags-gesellschaft mbH, 1994.

Materials Science and Technology. A Comprehensive Treatment, Vol. 17A, Processing of Ceramics, Part I.

Kohout J., Melník M., Anorganická chémia 1, STU v Bratislave 1997 ISBN 80-227-0972-7.

Ondrejovič, G., Boča R., Jóna E., Langfelderová H., Valigura D.: Anorganická chémia 2, STU v Bratislave 1995.

Büchner W., Schliebs R., Winter G., Büchel K.H.: Průmyslová anorganická chemie, SNTL, Praha, ISBN 80-03-00638-4.

Koman M., Jamnický M.: Anorganické materiály. STU BRATISLAVA 2008. ISBN: 978-80-227-2798-3.

A. Malijevský: Physical chemistry in brief. VŠChT Praha, 2005.

V. Kellö, A. Tkáč: Fyzikálna chémia, Alfa, Bratislava 1977.

P.W. Atkins: Fyzikálna chémia. STU Bratislava 1999.

P.W. Atkins, C.A. Trapp, M.P. Cady, C. Guinta: Student's Solution Manual for Physical Chemistry. STU Bratislava 2002.

A. K. Varshneya: Inorganic Glasses. Soc. Glass. Technol. Sheffield 2006.

V. Šatava: Úvod do fyzikální chemia silikátů. SNTL Praha 1965.

Language which is necessary for accomplishment of the course unit: Slovak, English						
Notes: profile subject						
Course evaluation passed/failed Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
50.0	50.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Mária Chromčíková, PhD., doc. Ing. Róbert Klement, PhD., doc. Dr. Amirhossein Pakseresht, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., MSc. Ali Talimian, PhD., RNDr. Zuzana Neščáková, PhD., Ing. Anna Prnová, PhD., Ing. Branislav Hruška, PhD., Ing. Monika Micháľková, PhD., Ing. Martin Micháľek, PhD., MSc. Omid Sharifahmadian, PhD., Ing. Milan Parchovianský, PhD., Dr. Kamalan Kirubaharan Amirtharaj Mosas, Dr. Ashokraja Chandrasekar, RNDr. Soňa Ftáčniková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atAMaTV2e/24	Course unit title: Inorganic technologies and materials II
Type, scope and method of educational activities: Types of education: Lecture / Practical Recommended duration of education (in hours): Per week: 10 / 23 For the whole period of study: 120 / 276 Study method: combined	
Number of credits: 15	
Recommended semester/trimester of study: 2.	
Degree of study: III.	
Prerequisites: CPV/atAMaTV1e/22	
Conditions for the accomplishment of the course unit: The condition for passing the course and obtaining credits is: - Completion of all mandatory and selected compulsory optional modules. - The conditions for granting credits for the completion of individual modules, as well as the number of credits awarded for the completion of individual modules are defined in the description of the relevant modules. The final evaluation of the subject The final evaluation of the subject is calculated as the weighted arithmetic average W of the evaluation of individual modules, using the following formula: $W = \frac{\sum_{i=1}^n w_i X_i}{\sum_{i=1}^n w_i}$ Where X_i represents the evaluation of the modulus i and w_i represents its weight. The following numerical values are assigned to the module ratings: rating A = 1, B = 1.5, C = 2, D = 2.5, E = 3, FX = 4. The parameter w_i is assigned a value that is equal to the number of credits obtained for completing the relevant module. According to the value of W after rounding to 2 decimal places, the final mark is determined, whereby the mark A corresponds to the value of W in the closed interval #1; 1.49#, mark B to the value of W in a closed interval #1.50; 1.99#, mark C to the value of W in a closed interval #2.00; 2.49#, mark D to the W value in closed interval #2.50; 2.99#, mark E to the value of W in closed interval #3.00; 3.49#, and mark FX to the value $W \geq 3.50$.	
Learning outcomes: Student: • Gains advanced knowledge on the field of: - o glass production technology, - o colloid chemistry, - o molecular spectroscopy, - o advanced methods of instrumental chemical, phase and structural analysis. • Understands the structure of non-metallic inorganic materials, especially glass, and knows the basic principles defining the relationships between the chemical composition, structure and properties of these materials.	

- Knows the principles of analytical and characterization methods that are related to the topic of the student's dissertation thesis and knows how to use them in selecting a method suitable for its solution.
- For selected methods, can independently prepare samples, perform measurements, obtain accurate and correct results and adequately evaluate and interpret them.
- He knows about the latest trends in research and development of advanced inorganic non-metallic nanomaterials, the method, scope and limits of their use, the latest trends in their development and methods and methods of their characterization, as well as their possible impacts on human health and the environment.
- In the optional modules, they will gain in-depth knowledge of specific aspects of chemical, phase and structural analysis and characterization of non-metallic inorganic materials and nanomaterials, which are related to the topic of the student's dissertation.

Brief course unit content:

Compulsory modules:

- History of glass production, properties of glass and glass-forming melts
- Introduction to analytical methods
- Fundamentals of mathematical statistics
- Theoretical principles of molecular spectroscopy

Compulsory optional modules:

- Glass production technology
- Sintering
- Nanomaterials for anti-corrosion coatings
- Nanomaterials for biomedical applications
- Nanomaterials for optical applications
- Sol-gel and surface modification of nanoparticles
- Methods of chemical analysis: ICP, OES
- Methods of chemical analysis: X-ray fluorescence
- Electron microscopy
- X-ray powder diffraction
- Thermal analysis I
- Thermal analysis II
- Thermodynamics of electrochemical systems
- UV-vis-NIR spectroscopy
- Photoluminescence spectroscopy
- Infrared and Raman spectroscopy
- Solid state NMR spectroscopy
- XPS-X-ray photoelectron spectroscopy
- Fundamentals of colloidal chemistry
- Colloidal systems: Characterization and utilization
- Mathematical statistics: Practical application
- Mathematical statistics: Case studies
- Basics of computational chemistry
- Excursion

Detailed descriptions of the content of individual modules are given in the descriptions of the respective modules.

Recommended Literature:

Rao a kol., Chémia nanomateriálov, Wiley-VCH Germany, Volume I, ISBN 3-527-30686-2.

Rao a kol., Chémia nanomateriálov, Wiley-VCH Germany, Volume II, ISBN 3-527-30686-2. Rao a kol., Nanoštruktúry a nanomateriály, Syntézy, vlastnosti a aplikácie, Imperial College Press, ISBN 1-86094-415-9.

Wolf, E.L., Nanofyzika a nanotechnológia, Wiley - VCH Germany, ISBN : 3-527-40651-4.

Sample preparation techniques in analytical chemistry edited by S.Mitra, ISBN 0-471-32845-6 by John Wiley & Sons, Inc, 2003

Handbook of Sample preparation for SEM and X-ray microanalysis, P. Echlin, ISBN 978-0-387-85730-5, Springer Science+Business media, LLC 2009

Analytical chemistry : a modern approach to analytical science. Edited by Jean-Michel Mermet - Matthias Otto - M. Valcárcel Cases. 2nd ed. Weinheim: Wiley-VCH, 2004. xxviii, 11. ISBN 3527305904

Klouda, P.: Moderní analytické metody. 2. dopl. vyd. Ostrava : Nakladatelství P. Klouda, 2003.

P.W. Atkins, J. de Paula: Physical Chemistry, 9th Ed. Oxford university press, Oxford, 2010.

P.C. Hiemenz, R. Rajagopalan: Principles of Colloid and Surface Chemistry. 3rd Ed., CRC Press, New York, 1997.

D. Shaw, Introduction to Colloid and Surface Chemistry, 4th Ed., Butterworth-Heinemann/Elsevier, Oxford, 1992.

S. Bucak, D. Rende, Colloid and Surface Chemistry: A Laboratory Guide for Exploration of the Nano World, CRC Press, New York, 2014.

A.W. Adamson, A.P. Gast, Physical Chemistry of Surfaces, 6th Ed., John Wiley and Sons, New York, 1997.

WATKINS J.C., 2016. An introduction to the science of statistics: from theory to implementation. Preliminary Edition. Voľne dostupné na: https://www.academia.edu/31963995/An_Introduction_to_the_Science_of_Statistics_From_Theory_to_Implementation

J.M. Hollas: Basic Atomic and Molecular Spectroscopy, 1st Ed., RSC, Cambridge, 2002.

R. Kakkar: Atomic and Molecular Spectroscopy: Basic Concepts and Applications, Cambridge University Press, 2015.

J. Solé, L. Bausa, D. Jaques: An Introduction to the Optical Spectroscopy of Inorganic Solids, Wiley 2005.

J.R. Lakowicz: Principles of Fluorescence Spectroscopy, 3rd. edition, Springer 2006.

B. Valeur, M.N. Berberan-Santos: Molecular Fluorescence: Principles and Applications, 2nd Edition, Wiley-VCH Verlag 2012.

Z. Gryczynski, I. Gryczynski: Practical Fluorescence Spectroscopy, CRC Press 2020.

B.H. Stuart: Infrared spectroscopy: Fundamentals and Applications, Wiley 2004.

H. Gunther, NMR Spectroscopy: Basic principles, concepts, and applications in chemistry. Chichester: John Wiley & Sons, 1995.

J. Akitt, NMR and Chemistry : An Introduction to Modern NMR Spectroscopy. London: Chapman and Hall, 1992.

M.J. Duer, Solid State NMR Spectroscopy: Principles and Applications, Wiley-Blackwell 2001.

D.C. Koningsberger, R. Prins, X-Ray Absorption: Principles, Applications, Techniques of EXAFS, SEXAFS and XANES, John Wiley & Sons 1987. MELUŠ V, KRAJČOVIČOVÁ Z,

NETRIOVÁ J. Zásady štatistického spracovania dát a interpretácie výsledkov v zdravotníckych odboroch. - 1.vyd . Univerzita Tomáše Bati ve Zlíně a Trenčianska univerzita Alexandra Dubčeka v Trenčíne, tlač ŠEVT, a.s., 2015. – 117 s. ISBN: 978-80-7454-485-9 (Univerzita Tomáše Bati ve Zlíně)

CHAJDIK J., RUBÍKOVÁ E., GUDÁBA M. Štatistické metódy v praxi. Statis, Bratislava, 1997, 309s. ISBN 80-85659-08-5

Magazine literature published in WOS and SCOPUS databases

Language which is necessary for accomplishment of the course unit:

Slovak, English						
Notes: profile subject						
Course evaluation passed/failed Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
50.0	50.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., Ing. Dagmar Galusková, PhD., doc. Ing. Róbert Klement, PhD., doc. Ing. Mária Chromčíková, PhD., doc. Dr. Amirhossein Pakseresht, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Hana Kaňková, PhD., Ing. Lenka Buňová, PhD., Ing. Katarína Faturíková, PhD., Mgr. Michal Žitňan, PhD., doc. MSc. José Joaquín Velázquez García, PhD., Ing. Jozef Kraxner, PhD., Dr. Akansha Mehta, MSc. Arish Dasan, PhD., Mokhtar Abdelmoneim Mahmoud Abdallah, Ing. Branislav Hruška, PhD., Zulema Vargas Osorio, PhD., MSc. Fatih Kurtuldu, PhD., MSc. Si Chen, PhD., RNDr. Vladimír Meluš, PhD., MPH, Mgr. Peter Švančárek, PhD., Ing. Anna Prnová, PhD., Ing. Monika Micháľková, PhD., Ing. Beáta Pecušová, PhD., Dr. Ali Najafzadeh, MSc. Ali Talimian, PhD., Dr. German Andres Clavijo Mejia						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín	
Faculty: FunGlass Centre	
Course unit code: CPV/atPČ1e/24	Course unit title: Publishing activity I
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 250s Study method: combined	
Number of credits: 10	
Recommended semester/trimester of study: 8.	
Degree of study: III.	
Prerequisites: CPV/atAnJe 1/22 and CPV/atExp7e/22	
Conditions for the accomplishment of the course unit: - Presentation of the results of the student's experimental work in the form of a manuscript sent to the press in a professional periodical registered in the Scopus or WoS databases.	
Learning outcomes: - The student masters the basic ethical principles of publishing in scientific periodicals, communication with co-authors and the use of literary and other sources. - The student is able to summarize the results of his/her experimental work, formulate conclusions independently, and process them in the form of a manuscript suitable for sending to a professional periodical registered in the Scopus or WoS databases.	
Brief course unit content: - Ethics of publishing results in the professional press, - Study of professional literature according to the trainer's recommendation and according to one's own choice, - Processing of results and preparation of the manuscript, - Sending the manuscript to the press, - Consultation with a supervisor / specialist supervisor.	
Recommended Literature: Book and magazine literature related to the topic of the dissertation according to student's own choice and according to the supervisor's recommendation.	
Language which is necessary for accomplishment of the course unit: Slovak, English	
Notes: If more manuscripts are sent, the number of credits will be multiplied. Sending the manuscript does not replace active participation in the international conference.	

Course evaluation passed/failed						
Number of evaluated students: 2						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0
Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.						
Last modification date: 02.09.2025						
Approved by: prof. Ing. Dušan Galusek, DrSc.						

Subject information sheet

University: Alexander Dubček University of Trenčín						
Faculty: FunGlass Centre						
Course unit code: CPV/atPČ2e/24		Course unit title: Publishing activity II				
Type, scope and method of educational activities: Types of education: Practical Recommended duration of education (in hours): Per week: For the whole period of study: 156s Study method: combined						
Number of credits: 6						
Recommended semester/trimester of study: 10.						
Degree of study: III.						
Prerequisites: CPV/atPČ1e/22 and CPV/atExp9e/22						
Conditions for the accomplishment of the course unit: - Presentation of the results of the student's experimental work in the form of a manuscript accepted in print or published in a professional periodical registered in the Scopus or WoS databases.						
Learning outcomes: - The student is able to summarize the results of his / her experimental work, to formulate conclusions independently, and to process them in the form of a manuscript suitable for publication in a professional periodical registered in the Scopus or WoS databases. - The student knows, with the help of the supervisor, to respond to the questions and comments of opponents and to revise the manuscript in a form that guarantees its publication.						
Brief course unit content: - Study of professional literature according to the supervisor's recommendation and according to one's own choice, - Processing of results and preparation of the manuscript, - Sending the manuscript to the press, - Consultation with a supervisor / specialist supervisor.						
Recommended Literature: Book and magazine literature related to the topic of the dissertation thesis according to student's own choice and according to the supervisor's recommendation.						
Language which is necessary for accomplishment of the course unit: Slovak, English						
Notes: If more manuscripts are received / published, the number of credits will be multiplied. Manuscripts accepted within the subject Publishing Activity I are not included.						
Course evaluation passed/failed Number of evaluated students: 1						
A	B	C	D	E	FX	Fn
100.0	0.0	0.0	0.0	0.0	0.0	0.0

Teachers: prof. Ing. Dušan Galusek, DrSc., doc. Ing. Róbert Klement, PhD., Dr. h. c. prof. Ing. Marek Liška, DrSc., Ing. Milan Parchovianský, PhD., Ing. Anna Prnová, PhD., Ing. Dagmar Galusková, PhD., doc. Ing. Mária Chromčíková, PhD., Ing. Jozef Kraxner, PhD., Ing. Martin Michálek, PhD., doc. Dr. Amirhossein Pakseresht, PhD., doc. MSc. José Joaquín Velázquez García, PhD., MSc. Akansha Akansha, PhD., MSc. Arish Dasan, PhD., Ing. Branislav Hruška, PhD., MSc. Si Chen, PhD., Ing. Hana Kaňková, PhD., Dr. Zuzana Neščáková, MSc. Surjyakanta Rana, MBA, PhD., MSc. Omid Sharifahmadian, PhD., MSc. Ali Talimian, PhD., Zulema Vargas Osorio, PhD., Mgr. Michal Žitňan, PhD., Ing. Monika Micháľková, PhD.

Last modification date: 02.09.2025

Approved by: prof. Ing. Dušan Galusek, DrSc.