

## Information sheet for the course Laboratory techniques II.

<b>University:</b> Alexander Dubček University of Trenčín	
<b>Faculty:</b> Faculty of Health Care	
<b>Course unit code:</b> LabTech2/d	<b>Course unit title:</b> Laboratory techniques II.
<b>Type of course unit:</b> compulsory	
<b>Planned types, learning activities and teaching methods:</b>	
<i>Lecture: 1 hour weekly/13 hours per semester of study; full-time</i>	
<i>Seminar: 6 hours weekly/78 hours per semester of study; full-time</i>	
<i>Supervised practical output: 3 hour weekly/39 hours per semester of study; full-time</i>	
<b>Number of credits:</b> 3	
<b>Recommended semester:</b> 2 <sup>nd</sup> semester in the 1 <sup>st</sup> year (full-time)	
<b>Degree of study:</b> I (bachelor)	
<b>Course prerequisites:</b> Laboratory techniques I.	
<b>Assessment methods:</b>	
- student obtains credits after the full time participation in the laboratory exercises and the written elaboration of protocols from laboratory exercises. The final evaluation shall take into account the complex individual approach of the student, the quality of the protocols (maximum score: 40) and active approach to laboratory tasks quantified verifiable indicators of acquired laboratory skills (max. 10 points). Student obtains from the part of laboratory exercises together a maximum of 50 points.	
- for obtaining the particular grades it is necessary to achieve:	
at least 45 score points for the grade A	
at least 40 score points for the grade B	
at least 35 score points for the grade C	
at least 30 score points for the grade D	
at least 25 score points for the grade E	
<b>Learning outcomes of the course unit:</b>	
The student will deepen the self-mastery of basic operations in the laboratory, basic laboratory skills and will be eligible to use laboratory equipment. Student will acquire knowledge by studying of the physicochemical principles of laboratory procedures. Student will acquire knowledge of the basic design of instrumentation of analyzers, their functions and also mastering their basic maintenance. Student will be able to use the theoretical knowledge in the praxis and will have the ability to evaluate and interpret the obtained experimental results.	
<b>Course contents:</b>	
<b>Lecture:</b>	
1. Basic principles of instrumental analysis	
2. Basic principles of determination of mass concentration of solutes in mineral water	
3. Basic principles of HPLC laboratory analyses	
4. Basic principles of potentiometry	
5. Calibration of volumetric containers by weighing	
6. Pretreatment of samples of biological material	
7. The method of calibration curve, standard addition method	
8. Basic principles of optical methods	
9. Basic principles spectrophotometry	
10. Basic principles of AAS	
11. Kinetic methods I	
12. Kinetic methods II	

**Seminar:**

1. Weight, volume, molar mass
2. Determination of the mass concentration of solutes in mineral water (gravimetric method)
3. Preparation of the sample (sample of salad), precipitation and filtration - determination of the conservatives (HPLC method)
4. Potentiometry (sample of soil)
5. Calibration of volumetric containers by weighing
6. Pretreatment of samples of biological material (extraction, centrifugation)
7. Optical methods - VIS spectrophotometry
8. The preparation of a calibration curve for the determination of creatinine in urine (method of the calibration curve)
9. Determination of creatinine concentration in the unknown sample of urine (spectrophotometry)
10. Determination of Mn in drinking water by AAS (atomic absorption spectrometry)
11. Kinetic methods
12. Determination of cholinesterase activity in blood

**Supervised practical output:**

Contents of supervised practical output is under natural conditions to deepen the theoretical knowledge and practical skills acquired by realization of procedures learned in lectures and seminars.

**Recommended of required reading:**

1. ČAKRT, KRUPČÍK, MOCÁK, POLONSKÝ, SILEŠ: *Praktikum z analytickej chémie* (Alfa), 1989
2. KOHOUT J., MELNÍK M. : *Anorganická chémia I.* CHTF STU Bratislava 1997
3. GARAJ A KOL. : *Analytická chémia* CHTF STU Bratislava , Alfa 1987

**Language:** Slovak**Remarks:** -**Evaluation history:** Number of evaluated students -

a	b	c	d	e	f
-	-	-	-	-	-

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