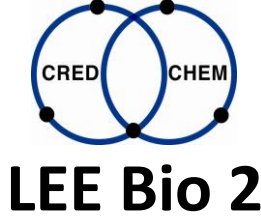
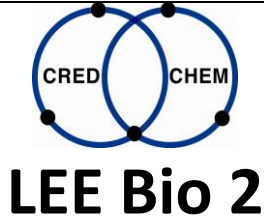


Field of action	Working in the laboratory	
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Field of action	Working in the laboratory				
Learning outcome unit	Bio 2 - Isolating and identifying substances in biological material				
EQF level	Competence level A: EQF level 3 Competence level B: EQF level 4 Competence level C: EQF level 5				
Relations to national qualifications	BG	CZ	DE	IT	SK
	Chemist-technologist		Chemical laboratory technician, biological laboratory technician, physics laboratory technician		Chemical technician/chemical laboratory technician, chemical technician for special organic analyses, chemical technician for special inorganic analyses, chemical laboratory assistant
<b>Learning outcomes</b>					
<b>Competence<sup>1</sup></b>		<b>Skills</b>		<b>Knowledge</b>	
<b>Competence level A (EQF level 3)</b> - isolates substances from biological material and identifies them with the aid of simple methods, adapts these methods to the given conditions (selects methods)		- accepts orders for isolating and identifying substances in biological material and plans all further processing steps until supplying the result - selects methods and respective laboratory equipment depending on the property of the microorganisms and cells and handles them accurately, carefully and expertly - evaluates results		- knows methods for examining and handling natural substances (immobilising, isolating...) - knows respective methods (knows steps of action) - knows respective equipment/ apparatuses and their functioning/ operation	
<b>Competence level B: (EQF level 4)</b> - deals with problems typical for the methods		- analyses the problem, develops solution approaches by applying specialist knowledge and decides how to solve the problem - reflects on whether the problem was actually solved		- knows reactions which the methods are based on - knows structure-property relationships - knows structure and nature of natural substances, factors responsible for their properties	
<b>Competence level C: (EQF level 5)</b> - optimises methods according to context in cooperation with the team		- works as part of the team, is actively involved in the work process and thus brings the work process forward - communicates with others about scientific and technological content (application of specialist knowledge) and about the work process		- knows biochemical processes and influencing factors	

<sup>1</sup> The competence levels build upon each other.

<b>Learning outcome unit</b>	<b>Bio 2 - Isolating and identifying substances in biological material</b>				
<b>Countries</b>	<b>BG</b>	<b>CZ</b>	<b>DE</b>	<b>IT</b>	<b>SK</b>
<b>Which CREDCHEM learning place offers the learning outcome unit?</b>	Technical School for Ecology and Biotechnology Sofia		Saxon Education Company for Environmental Protection and Chemical Occupations Dresden Ltd.		Secondary Technical School Novaky, Secondary Technical School Bratislava
<b>How many learners can be admitted?</b>	8		3-4		8
<b>At which competence level is the learning outcome unit offered?</b>	A, B		A		A, B, C
<b>In which language is the mobility taught?</b>	Bulgarian/ German		English/German		English/German
<b>Which methods are used?</b>	Biochemical processes and analysis methods				
<b>The following occupational tasks<sup>2</sup> (which can also be used for imparting the learning outcomes) have been exemplarily analysed in preparing the LEE:</b>					
Immobilising of enzymes					
Isolation and identification of natural substances					
Quantitative determination of proteins					
ELISA of enzymes					
Gel electrophoresis of proteins					
Microbiological determination of water					
Purification of lipids from egg yolk					
<b>The following examination tasks were designed for the competence levels indicated:</b>					<b>Competence level</b>
Immobilising of enzymes					A, B, C
Isolation and identification of natural substances					A, B, C
Quantitative determination of proteins					A, B, C

<sup>2</sup> Occupational and examination tasks can be downloaded at [www.credchem.eu](http://www.credchem.eu).

ELISA of enzymes	A, B, C
Gel electrophoresis of proteins	A, B, C
Microbiological determination of water	A, B, C
Purification of lipids from egg yolk	A, B, C