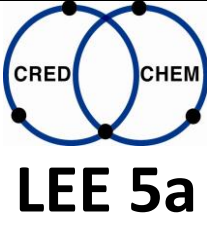
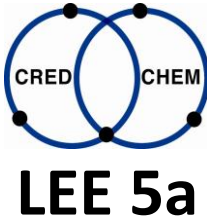


<b>Field of action</b>	<b>Working in the laboratory</b>				
<b>Learning outcome unit</b>	<b>5a - Chromatographically separating and analysing substances (thin layer, paper, column (/ion) chromatography)</b>				
<b>EQF level</b>	<b>Competence level A:</b> EQF level 3 <b>Competence level B:</b> EQF level 4 <b>Competence level C:</b> EQF level 5				
<b>Relations to national qualifications</b>	<b>BG</b>	<b>CZ</b>	<b>DE</b>	<b>IT</b>	<b>SK</b>
			Chemical laboratory technician	Biochemical technician	Chemical technician, chemical laboratory technician, chemical technology modeller
<b>Learning outcomes</b>					
<b>Competence<sup>1</sup></b>		<b>Skills</b>		<b>Knowledge</b>	
<b><u>Competence level A</u></b> <b>(EQF level 3)</b> <ul style="list-style-type: none"> <li>- analyses substances in mixtures chromatographically by using the standard methods (thin layer, paper and column chromatography) and adapts these methods to the given conditions</li> </ul>		<ul style="list-style-type: none"> <li>- accepts orders for chromatographically separating and analysing substances and plans all further processing steps until supplying the result</li> <li>- selects methods, respective laboratory equipment and necessary chemicals (solvents...) depending on the property/structure of the substances and handles them accurately, carefully and expertly</li> <li>- evaluates results and calculates respective values</li> <li>- prepares and evaluates the analysis expertly (corresponds to competence of learning outcome 1 and 2)</li> </ul>		<ul style="list-style-type: none"> <li>- knows substances (properties, structure, R/S statements)</li> <li>- knows respective methods (knows steps of action)</li> <li>- knows respective equipment/ apparatuses and their functioning/ operation</li> </ul>	
<b><u>Competence level B:</u></b> <b>(EQF level 4)</b> <ul style="list-style-type: none"> <li>- deals with problems typical for the methods</li> </ul>		<ul style="list-style-type: none"> <li>- analyses the problem, develops solution approaches by applying specialist knowledge and decides how to solve the problem</li> <li>- reflects on whether the problem was actually solved</li> </ul>		<ul style="list-style-type: none"> <li>- knows dependence of values to be measured on environment conditions (temperature, pressure...)</li> <li>- knows reactions which the methods are based on</li> </ul>	
<b><u>Competence level C:</u></b> <b>(EQF level 5)</b> <ul style="list-style-type: none"> <li>- optimises methods according to context in cooperation with the team</li> </ul>		<ul style="list-style-type: none"> <li>- works as part of the team, is actively involved in the work process and thus brings the work process forward</li> <li>- communicates with others about scientific and technological content (application of specialist knowledge) and about the work process</li> </ul>		<ul style="list-style-type: none"> <li>- knows structural characteristics of a material which are responsible for its properties</li> <li>- knows relationship between measurand (retention time, peak height/area) and determinant (substance identification, substance concentration)</li> <li>- knows relationship between the fundamental analytical principle and the substance identification</li> </ul>	

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

<b>Field of action</b>	<b>Working in the laboratory</b>					
<b>Learning outcome unit</b>	<b>5a - Chromatographically separating and analysing substances (thin layer, paper, column (/ion) chromatography)</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>			Saxon Education Company for Environmental Protection and Chemical Occupations Dresden ltd.	ITAS Scalcerle	Secondary Technical School Novaky	
<b>How many learners can be admitted?</b>			3-4	12	5	
<b>At which competence level is the learning outcome unit offered?</b>			A, B	A, B	A	
<b>In which language is the mobility taught?</b>			English/German	English	English/German	
<b>Which methods are used?</b>	Thin layer chromatography Paper chromatography Column chromatography					
<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>						
Determination of chloride						
Thin layer chromatography with p-aminophenol						
<b>The following examination tasks were designed for the competence levels indicated:</b>					<b>Competence level</b>	
Thin layer chromatography with p-aminophenol					A, B, C	

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