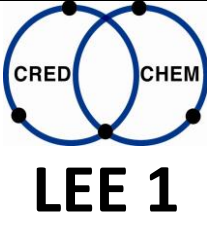
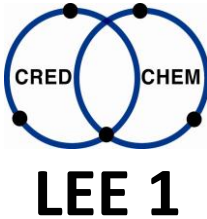


Field of action	Working in the laboratory					
Learning outcome unit	1 - Separating and mixing substances					
EQF level	Competence level A: EQF level 3 Competence level B: EQF level 4					
Relations to national qualifications	BG	CZ	DE	IT	SK	
		Chemical technician, chemical laboratory technician	Chemical laboratory technician, chemical technician, physics laboratory technician	Biochemical technician	Chemical technician / chemical laboratory technician, chemical technology modeller, chemical laboratory assistant	
Learning outcomes						
Competence¹		Skills		Knowledge		
<u>Competence level A</u> (EQF level 3) - separates and mixes substances by using the standard methods and adapts these methods to the given conditions (selects methods depending on the properties of the substances)		- accepts orders for separating and mixing substances and plans all further processing steps until supplying the result - selects methods, respective laboratory equipment and necessary chemicals (solvents...) and handles them accurately, carefully and expertly		- knows chemicals (properties, structure, R/S statements) - knows principles of separating/mixing and respective methods (knows steps of action) - knows respective equipment and its functioning/ operation		
<u>Competence level B:</u> (EQF level 4) - 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 processes which the methods are based on - knows structural characteristics which are responsible for behaviour/ properties of a substance - knows solubilities of substances at different temperatures		

¹ The competence levels build upon each other.

Field of action	Working in the laboratory					
Learning outcome unit	1 - Separating and mixing substances					
Countries	BG	CZ	DE	IT	SK	
Which CREDCHEM learning place offers the learning outcome unit?	-	Chemical College Pardubice	Saxon Education Company for Environmental Protection and Chemical Occupations Dresden ltd.	ITAS Scalcerle	Secondary Technical School Bratislava, Secondary Technical School Novaky	
How many learners can be admitted?		3	3-4	12	10	
At which competence level is the learning outcome unit offered?		A, B	A	A, B	A, B	
In which language is the mobility taught?		English	English/German	English	English/German	
Which methods are used?	Extraction Distillation Filtration Recrystallisation Preparation of solutions of solid and solvent					
The following occupational tasks² (which can also be used for imparting the learning outcomes) have been exemplarily analysed in preparing the LEE:						
Extraction of copper sulphate						
Extraction of caffeine						
Rectification of trichloromethane						
Sedimentation						
Alcoholic fermentation and distillation						
Filtration of calcium carbonate						
Preparation of a sodium hydroxide titrant						
Recrystallisation of sulphanilic acid						
Recrystallisation of copper sulphate						

² Occupational and examination tasks can be downloaded at www.credchem.eu.

Steam distillation of toluene	
Grinding and sieve analysis	
Mixing	
The following examination tasks were designed for the competence levels indicated:	<i>Competence level</i>
Extraction of copper sulphate	A, B
Extraction of caffeine	A, B, C
Alcoholic fermentation and distillation	A, B, C
Rectification of trichloromethane	A, B, C
Filtration of calcium carbonate	A, B
Preparation of a sodium hydroxide titrant	A, B
Recrystallisation of copper sulphate	A, B
Steam distillation of toluene	A, B