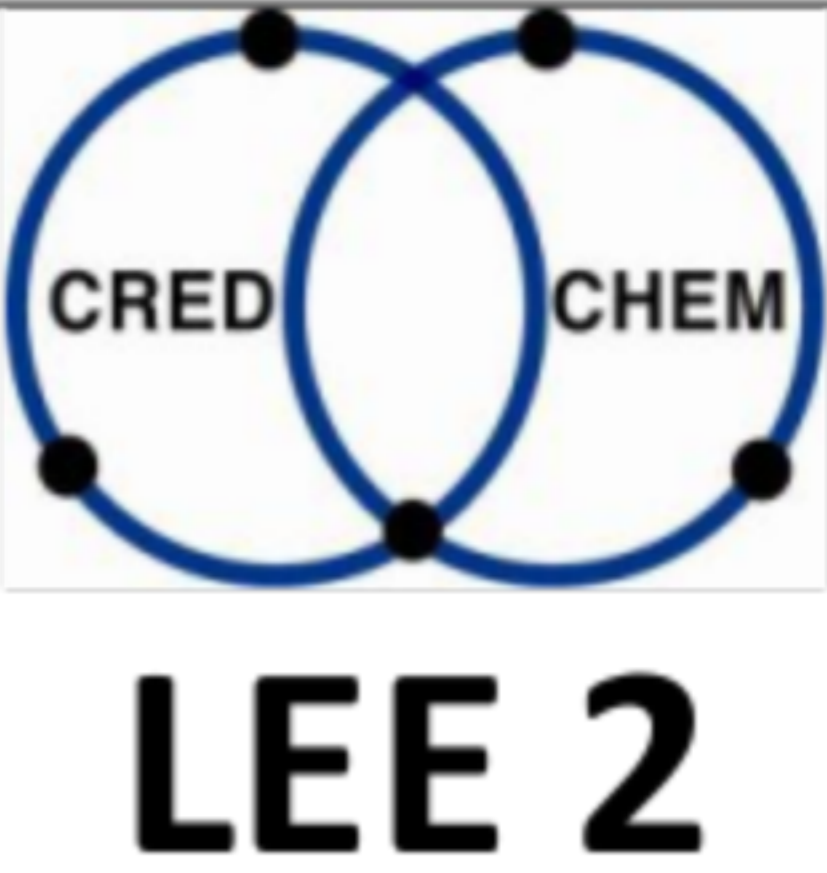
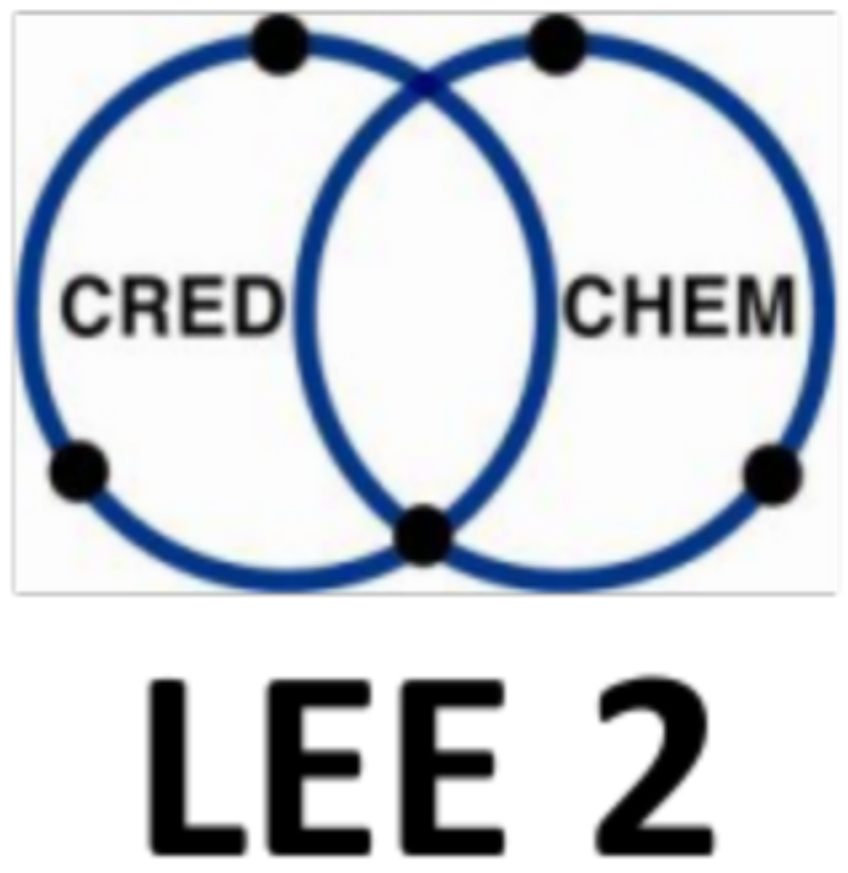


Field of action	Working in the laboratory				
Learning outcome unit	2 - Determination of material constants and/or material properties				
EQF level	Competence level A: EQF level 3 Competence level B: EQF level 4				
Relations to national qualifications	BG	CZ	DE	IT	SK
	Laboratory technician (third qualification level)	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	
Competence level A (EQF level 3) - determines material constants and/or material properties by using the standard methods and adapts these methods to the given conditions (selects methods depending on the property/ structure of the substances)		- accepts orders for determining material constants and/or material properties 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 evaluates results and calculates respective values		- knows materials (properties, structure, R/S statements) - knows relationship between measurand and determinant and respective methods (knows steps of action) - knows respective equipment/ apparatuses and their functioning/ operation	
Competence level B: (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 dependence of values to be measured on environment conditions (temperature, pressure...) - knows reactions which the methods are based on knows structural characteristics of a material which are responsible for its properties	

¹ The competence levels build upon each other.

Field of action	Working in the laboratory					
Learning outcome unit	2 - Determination of material constants and/or material properties					
Countries	BG	CZ	DE	IT	SK	
Which CREDCHEM learning place offers the learning outcome unit?	Technical School for Chemical and Biotechnology Sofia	Technical College Prague, Technical College Kralupy nad Vitavou, Technical College Pardubice	Saxon Education Company for Environmental Protection and Chemical Occupations Dresden Ltd.	ITAS Scalcerle	Secondary Technical School Novaky, Secondary Technical School Bratislava	
How many learners can be admitted?	10-12	3	3-4	12	10	
At which competence level is the learning outcome unit offered?	A, B	A, B	A	A, B	A, B	
In which language is the mobility taught?	Bulgarian/ English	English	English/German	English	English/German	
Which methods are used?	Melting and boiling point Density Refractive index Viscosity Surface tension					
The following occupational tasks² (which can also be used for imparting the learning outcomes) have been exemplarily analysed in preparing the LEE:						
Quality control of sunflower seeds						
Melting and boiling points, density and viscosity determinations						
Melting point determination and flash point determination						
Determination of density of trichloromethane						
Density determination (hydrometer)						
Determination of dissociation constant						
Determination of thermal conductivity coefficient and thermal expansion coefficient						
Determination of refractive index and molar refraction						
Refractometric determination of saccharides						
The following examination tasks were designed for the competence levels indicated:					Competence level	

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

Quality control of sunflower seeds	A, B
Refractometric determination of saccharides	A, B, C
Determination of dissociation constant	A, B, C