UCL Université catholique de Louvain

LBRAL2106

2015-2016

Brewing biochemistry

5.0 credits	30.0 h + 22.5 h	1q

Teacher(s) :	Collin Sonia ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Icampus
Prerequisites :	Organic chemistry, analytical chemistry, organic analysis, food chemistry
Main themes :	The course develops the chemical aspects of the brewing process : the aromas of special malts, dimethylsulfide and other sulfur aromas, the hop chemistry (bitter substances and aromas), the foam structure, malt and hop polyphenols, beer stability through ageing. Through practical classes, the student will be familiar with the main official brewing analyses.
Aims :	The course contributes to the following learning outcomes : 1.1, 1.3, 1.4, 1.5 + 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9 + 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9 (BIRC21 Master) At the end of this course, the student will be able to - describe the chemical composition of the main raw materials of the beer, - assess the impact of brewing processes on this composition, - develop new products presenting a greater stability and well defined aromas, - reproduce a protocol of analysis (malt, hop, beer) and to discuss the obtained results. *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods :	Written examination for assessing how the student integrates all the chemical structures present in this complex system. Reports on practical classes, requiring the integration of different experiments.
Teaching methods :	Magistral lectures for the theoretical part of the course. In practical classes, the student is brought to produce a beer and to implement a series of protocols aiming at the analysis of raw materials and the final beer.
Content :	The course describes the chemical structure of the main beer constituents and their reactivity through the brewing process. Special focus on color and reducing power of special malts, synthesis pathways of dimethylsulfide and other sulfurous aromas, humulones and hop aromas, foam structure, fate of polyphenols through the brewing process, off-flavors in aged beers. Practical experiments for the analyses of malt, hop and beer.
Bibliography :	Polyphenols et procédés. Collin and Crouzet. 2011. Ed Tec et Doc. Lavoisier. ISBN: 978-2-7430-1338-7
Faculty or entity in charge:	AGRO

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Chemistry and Bioindustries	BIRC2M	5	-	
Advanced Master in Bio-engineering : Brewery	BRAS2MC	5	-	
Master [120] in Agricultural Bioengineering	BIRA2M	5	-	