

4.00 credits

30.0 h + 15.0 h

Q1

Teacher(s)	Alvarez Costales Pablo ;Collin Sonia (coordinator) ;Nouwen Charles ;
Language :	French
Place of the course	Louvain-la-Neuve
Learning outcomes	
Evaluation methods	The evaluation methods are based on : <ol style="list-style-type: none"> <li>1. A written examination containing the main theoretical notions taught</li> <li>2. An evaluation of the practical work reports (structuring of the report, clarity and rigor of the reported and commented results, critical analysis of the results, conclusions)</li> </ol>
Teaching methods	The teaching is divided into four phases: <ol style="list-style-type: none"> <li>1. Theoretical courses (lectures) during which the main concepts related to barley and raw grains (anatomy and chemical composition), malting, mashing and filtration steps (biochemistry and technology) are taught.</li> <li>2. Practical courses through which the student will be familiarized with the main manipulations related to the characterization of a malt.</li> </ol> These two courses are complementary and allow the student to put into practice the main theoretical notions. <ol style="list-style-type: none"> <li>1. A teaching based on the writing of reports in relation with the practical part of the course allowing the student to report analytical results and to comment them in a brewing process context.</li> <li>2. A teaching based on the realization of a practical work at home (malting of barley) and on the oral communication of the result of this work.</li> </ol>
Content	<p><b>Theoretical notions:</b></p> <ul style="list-style-type: none"> <li>- Anatomy and chemical composition of barley (structure of starch, beta-glucans, arabinoxylans, ...)</li> <li>- Enzymology during the malting step: cell wall degradation, starch degradation, protein hydrolysis, lipid hydrolysis, ...</li> <li>- Description of the technologies associated with malting process: distinction of the steps of steeping, germination, kilning, the production of special malts</li> <li>- Enzymology during the mashing step: starch degradation, alpha,beta-amylases paradox, , notion of liquefaction and saccharification</li> <li>- Description of the technologies associated with the mashing process: infusion or decoction mashing, mash tun, raw grain tun, type of heating, agitation, modern tanks</li> <li>- Theory of cake filtration: influence of cake thickness, beta-glucans, ...</li> <li>- Technologies associated with mash filtration: filter tank, filter press, 2001 filter</li> <li>- Use of raw grains: type of grains, uses, implication on the brewing process</li> </ul> <p><b>Practical work:</b></p> <ul style="list-style-type: none"> <li>- Malt moisture content</li> <li>- Conventional mash: liquefaction test, mash color, total and soluble nitrogen, free amino acids, extract, modification, pH</li> <li>- Diastatic power</li> </ul>
Inline resources	Moodle
Faculty or entity in charge	AGRO

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Advanced Master in Brewing Engineering	BRAS2MC	4		