UCLouvain

lbir1328

2026

Climatology and hydrology applied to agronomy and the environment

6.00 credits	45.0 h + 22.5 h	Q1

Teacher(s)	Bielders Charles (coordinator) ;Goosse Hugues ;Vanclooster Marnik ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Learning outcomes	
Evaluation methods	· The examination is organized during the examination session. It is a closed-book written examination. · The timetable of the examination is scheduled by the AGRO Faculty secretariat. · The examination is organized, by default, in French. Students who wish to do so may take the examination in English. In the latter case, the student requests permission to conduct the exam in English from the course coordinator by email (charles.bielders@uclouvain.be) at least 1 week before the start of the exam. · For LBIR1328 (6 ECTS): The examination mark counts for 85% and the 'entry tickets' for practical work count for 15% in the final mark. For the theoretical part, the 'Climatology' part counts for 35% and the 'Hydrology' part for 65%. For the 'Hydrology' part, the part of each teacher counts proportionally to the number of sessions taught by each teacher (M. Vanclooster : 40%; C. Bielders : 25%). · For LBIR1328A (2 ECTS): For the theoretical part, the 'Climatology' part counts for 50% and the 'Hydrology' part for 50%. For the 'Hydrology' part, the part of each teacher counts proportionally to the number of sessions taught by each teacher (M. Vanclooster : 35%; C. Bielders : 15%). · In a second session, the mark from the successful parts of the first session can be considered when the student has obtained at least 14/20 for those successful parts. In the latter case, the student requests reconduction of the mark by writing to the course coordinator by email (charles.bielders@uclouvain.be) at least 48 hours before the start of the exam.
Teaching methods	Theoretical course : Lectures in audience. Exercises : · Exercices in computer room · Supervised exercise sessions · Field excursion
Content	The course introduces the student to the understanding and quantification of climatological and hydrological processes, and thus establishes the basis for designing sustainable water resources management methods. Bio-climatology · Exchange of heat and mass in the boundary layer of the atmosphere, inside plant communities and in the top layer of the soil. · Mechanisms of climate formation: atmospheric structure, vertical profiles in the lower layers, lateral movement, atmospheric circulation, clouds and precipitation, greenhouse effect, effects of landscape elements, dynamic and thermal action of relief and vegetation. · Influence of human activities on climate and impacts of global climate change. Hydrology · Water management issues at the plot and watershed scale. · The different components of the hydrological cycle (rain, infiltration, runoff, drainage, hypodermic flow, evapotranspiration): process, mathematical description, methods of measurement and interpretation. · Hydrological modelling at the plot and watershed scale. · Control structures for surface runoff
Inline resources	· The slides and course comments are available on the MOODLE website of the course. · Practical work assignments are available on the MOODLE website of the course. · Example exam questions will be made available on the MOODLE site of the course.
Bibliography	· Syllabus : Notes du cours LBIR1328 Climatologie et hydrologie appliquée à l'agronomie et l'environnement Partie I. Climatologie, Hugues Goosse " In, 158. Louvain-la-Neuve, Belgique: Université catholique de Louvain. · Ouvrage de référence : Musy, A. 2004. « Hydrologie. Une science de la nature. » Presses polytechniques et universitaires romandes. ISBN : 2-88074-546-2.

Other infos	This course is taught in English, but the support of the course (syllabus, slights) is in French or English. Examination can be organised in French or English (see 'Evaluation')
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Minor in Scientific Culture	MINCULTS	6		🔍
Master [120] in Biology of Organisms and Ecology	BOE2M	6		🔍
Interdisciplinary Advanced Master in Science and Management of the Environment and Sustainable Development	ENVI2MC	6		🔍
Additionnal module in Geography	APPGEOG	6		🔍
Minor in Geography	MINGEOG	6		🔍
Master [120] in Agriculture and Bio-industries	SAIV2M	6		🔍
Bachelor in Bioengineering	BIR1BA	6	LBIR1221	🔍