8.4. Concevoir des solutions dans le domaine de la gestion des ressources et de l'aménagement du territoire.
8.5 Tester les solutions et évaluer les impacts suivant des objectifs de développement durable.

9. Mobiliser les compétences nécessaires pour réaliser un travail de recherche en climatologie.

9.1. Comprendre la dynamique de l'atmosphère, de l'océan, et du système climatologique dans son ensemble.
9.2. Appréhender les techniques de modélisation du climat, en couvrant les aspects théoriques et techniques.
9.3. Savoir analyser et interpréter des données climatiques.
9.4. Mener une analyse critique sur des questions liées aux changements climatiques (passés et futurs) et en comprendre et anticiper les impacts sur la société et l'environnement de façon à devenir un acteur responsable dans le monde d'aujourd'hui.

Programme structure

The programme comprises core subjects of 60 credits, 30 credits for the focus and 30 credits for optional subjects.

CLIM2M Programme

Detailed programme by subject

CORE COURSES [60.0]

- Mandatory
- Optional
- Not offered in 2024-2025
- Not offered in 2024-2025 but offered the following year
- Offered in 2024-2025 but not the following year
- Not offered in 2024-2025 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

				Year 1	Year 2
Module 1 : Methods for geographical and spatial analyses (10 credits)					
LGEO2211	Advanced statistical methods in geography	Christian Hafner	[FR] [q1] [30h+30h] [5 Credits]	x	

RESEARCH FOCUS [30.0]

- Mandatory
- Optional
- Not offered in 2024-2025
- Not offered in 2024-2025 but offered the following year
- Offered in 2024-2025 but not the following year
- Not offered in 2024-2025 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Content:

				Year 1	Year 2
LGEO2997	Séminaire d'encadrement du mémoire	Michel Crucifix	FR [q1] [15h] [5 Credits]	x	
LGEO2998	Thesis tutorial	Ahmed Adrioueche Qiuzhen Yin	EN [q2] [15h] [3 Credits]		x

OPTIONS

> List of elective courses *[en-prog-2024-clim2m-lclim920o]*
> Optional courses *[en-prog-2024-clim2m-lsc100o]*

LIST OF ELECTIVE COURSES

- Mandatory
- Optional
- Not offered in 2024-2025
- Not offered in 2024-2025 but offered the following year
- Offered in 2024-2025 but not the following year
- Not offered in 2024-2025 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Content:

Elective courses specific to climatology orientation

Students choose a minimum of 22 credits from this list:

				Year 1	Year 2
LPHYS2264	Oscillations and instabilities in the climate system	Michel Crucifix	EN [q2] [30h] [5 Credits] ⊘ > *French-friendly*	x	x
LPHYS2265	Sea ice-ocean-atmosphere interactions in polar regions	Thierry Fichefet	EN [q2] [30h] [5 Credits] ⊕ > *French-friendly*	x	x
LPHYS2267	Paleoclimate dynamics and modelling	Qiuzhen Yin	EN [q2] [22.5h+7.5h] [5 Credits] > *French-friendly*	x	x
LPHYS2268	Forecast, prediction and projection in climate science	François Massonnet	EN [q2] [22.5h+7.5h] [5 Credits] > *French-friendly*	x	x
LPHYS2269	Remote sensing of climate change	Emmanuel Dekemper	EN [q2] [30h] [5 Credits] ⊕ > *French-friendly*	x	x
LCLIM2170	Field in climatology 1	Veerle Vanacker	FR [q2] [60h+30h] [5 Credits] ⊘ > *English-friendly*	x	x
LCLIM2270	Field in climatology 2	Sylvain Trigalet	FR [q2] [60h+30h] [5 Credits] ⊕	x	x
LCLIM2280	Operational meteorology	Michel Crucifix (coord.)	EN [q2] [] [8 Credits]	x	x

Other elective courses

Students complete their program by choosing teaching units from this list or from the list of elective courses specific to climatology. With the approval of the jury, students may integrate into their program 2nd or 3rd bachelor's degree courses not taken during the bachelor's degree, as well as courses taken at other universities.

				Year 1	Year 2
LPHYS2161	Internal geophysics of the Earth and planets		EN [q1] [22.5h+7.5h] [5 Credits] △ > *French-friendly*	x	x
LPHYS2260	Geodesy and GNSS (Global Navigation Satellite System)		EN [q2] [30h] [5 Credits] ⊘ > *French-friendly*	x	x
LPHYS2266	Physics of the upper atmosphere and space	Viviane Pierrard	EN [q2] [22.5h+7.5h] [5 Credits] > *French-friendly*	x	x
LGEO2400	Internship in a professional setting	Sophie Vanwambeke (coord.)	FR [q1 or q2] [15h] [4 Credits]	x	x
LENVI2005	Climate change: impacts and solutions		FR [q2] [30h] [3 Credits]	x	x

OPTIONAL COURSES

Course prerequisites

There are no prerequisites between course units (CUs) for this programme, i.e. the programme activity (course unit, CU) whose learning outcomes are to be certified and the corresponding credits awarded by the jury before registration in another CU.

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

Teaching method

The teaching strategy takes its inspiration from the idea of â€˜taking responsibility for oneâ€™s own learningâ€™ and offers a wide range of learning situations. The climatologist is at the centre of different scientific fields: physical modeling, teledetection, hydrology and the management of natural resources. The integration between human and physical geography is emphasized. The courses are focused on problems in society: environmental changes, mobility, urbanization, globalization and developing countries. Activities such as seminars and integrated exercises are carried out in advanced areas of geographical research. Ability to use advanced methods of geographical analysis is an important objective of the training: geographical modeling, geographical information systems and satellite teledetection.

Practical work gives students the opportunity of dealing with concrete problems and finding solutions to them, often in small groups. The

Website https://uclouvain.be/fr/facultes/sc/geo

Academic supervisor: Sophie Vanwambeke

Jury

- President: Thierry Fichefet
- Secretary: Veerle Vanacker