

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In frenchDissertation/Graduation Project : **YES** - Internship : **optional**Activities in English: **YES** - Activities in other languages : **NO**Activities on other sites : **YES**Main study domain : **Sciences**Organized by: **Faculté des sciences (SC)**Programme acronym: **clim2m** - Francophone Certification Framework: 7**Table of contents**

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CLIM2M - Introduction

Introduction

CLIM2M - Teaching profile

Learning outcomes

The objective of the training is partly an introduction to the three fundamental aspects of the work of a geographer:

- to observe and describe the environment, especially with computerized databases and advanced satellite observation technology ;
- to understand and explain the processes that have been observed, especially by applying models which enable them to be simulated;
- to learn certain concepts in resource management through land development ;

and partly an introduction to the fundamental concepts of physical climatology:

- to understand the dynamics of the atmosphere, the ocean and the overall climatological system;
- to grasp the techniques for modelling the climate, covering both theoretical and technical aspects;
- to be able to analyse and interpret climatic data.

This twin focus enables students to make a critical analysis of issues related to climate change (past and future and to understand and anticipate their impact on the environment and society so they can become responsible players in the current situation. The Master in Geography : Climatology is also suitable preparation for a doctoral thesis.

On successful completion of this programme, each student is able to :

Se préparer à la vie professionnelle

1. Intervenir dans la gestion des ressources
- 2 Evaluer des projets
- 3 Développer des outils d'aide à la décision

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Modéliser les processus observés dans la réalité

Identifier les caractéristiques/composantes du système et la manière dont elles interagissent

Formuler des hypothèses/tests de travail

Développer des modèles (statistiques, numériques, conceptuels)

Tester par l'application, calibration et validation

Interpréter les résultats en lien avec la problématique

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-

Porter un regard critique sur les méthodes utilisées

Evaluer la pertinence et la fiabilité des sources générales d'information

Identifier les limites des modèles, méthodes

Contextualiser les résultats, et coupler avec d'autres résultats

Intégrer les concepts de différentes disciplines dans une vision cohérente des ressources

Faire des liens entre différents aspects de la géographie

Analyser les interactions entre l'homme et l'environnement

Prendre en compte les apports des autres disciplines pour résoudre une problématique dans son ensemble

Synthétiser et communiquer

Communiquer oralement et par écrit en français et anglais

Communiquer à des acteurs scientifique (collègues) et acteurs de terrain

Communiquer la démarche, méthodes et résultats, discussion

Communiquer par la réalisation de schémas, de cartographie, graphiques

Se préparer à la vie professionnelle

Intervenir dans la gestion des ressources

Evaluer des projets

Développer des outils d'aide à la décision

7. Communiquer efficacement des résultats, des méthodes à différents types d'acteurs

7.1. Communiquer oralement et par écrit en français et en anglais (niveau C1).

7.2. Communiquer les résultats d'un travail à des acteurs scientifiques et des acteurs de terrain, en s'adaptant au contexte.

7.3. Communiquer de manière synthétique et critique l'état des connaissances dans un domaine donné.

7.4. Communiquer et discuter des données, des méthodes et des résultats.

7.5. Communiquer des résultats par la réalisation de cartes, de schémas et de graphiques.

- 7.6. Maîtriser les outils informatiques indispensables à la communication.
8. Intervenir dans la gestion des ressources et aborder la vie professionnelle
 - 8.1. Construire un diagnostic sur un territoire et sur la gestion des ressources de ce territoire.
 - 8.2. Evaluer des projets de développement territorial.
 - 8.3. Développer des outils d'aide à la décision.
 - 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.

For a programme-type, and regardless of the focus, options/or elective courses selected, this master will carry a minimum of 120 credits divided over two annual units, corresponding to 60 credits each.

[> Tronc commun](#) [en-prog-2018-clim2m-lclim100t.html]

[> Research focus](#) [en-prog-2018-clim2m-lclim200a]

[> Cours facultatif : Ingénieurs Sud](#) [en-prog-2018-clim2m-lsst100o.html]

CLIM2M Detailed programme

Programme by subject

CORE COURSES [90.0]

○ Mandatory

△ Courses not taught during 2018-2019

⊕ Periodic courses taught during 2018-2019

⊗ Optional

⊖ Periodic courses not taught during 2018-2019

■ Activity with requisites

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

						Year	
						1	2
○ LGEO2110	Mondialisation, développement et environnement	Eric Lambin	30h+30h	5 Credits	1q	x	x
○ LGEO2210	Shaping sustainable urban spaces	Marie-Laurence De Keersmaecker Yves Hanin	30h	3 Credits	1q	x	x
○ LGEO2120	Applied geomorphology	Bas van Wesemael	30h+30h	5 Credits	1q	x	x
○ LGEO2240	Tectonic geomorphology	Veerle Vanacker	30h+30h	5 Credits	1q	x	x
○ LGEO2230	Géographie médicale et de la santé	Sophie Vanwambeke	30h+30h	5 Credits	1q △	x	x
○ LGEO2140	Advanced physical geography	Kristof Van Oost (coord.) Veerle Vanacker	30h+30h	5 Credits	2q	x	x

○ Philosophie (2 credits)

⊗ LSC2001	Introduction to contemporary philosophy	François Kammerer (compensates Peter Verdée) Peter Verdée	30h	2 Credits	2q	x	x
⊗ LSC2220	Philosophy of science	Alexandre Guay Johannes Martens (compensates Alexandre Guay)	30h	2 Credits	2q	x	x
⊗ LFILO2003E	Ethics in the Sciences and technics (sem)	Hervé Jeanmart René Rezsohazy	15h+15h	2 Credits	2q	x	x
⊗ LTHEO2840	Science and Christian faith	Benoît Bourguine (coord.) Dominique Lambert	30h	3 Credits	1q	x	x

○ Mémoire (30 credits)

○ LCLIM2999	Mémoire			22 Credits	2q		x
○ LGEO2997	Séminaire d'encadrement du mémoire	Isabelle Thomas Bas van Wesemael	15h	5 Credits	1q	x	
○ LGEO2998	Thesis tutorial	Ahmed Adriouèche Isabelle Thomas Bas van Wesemael	15h	3 Credits	2q		x

○ Cours au choix (30 credits)

○ Choix parmi les cours de géographie

⊗ LCLIM2270	Terrain II en climatologie	Bas van Wesemael	60h+30h	3 Credits	2q ⊕	x	x
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						Year	
						1	2
⊗ LECON2314	Economic Geography	Olivier Finance	30h	5 Credits	2q	x	x
⊗ LGEO1242	Mathematical Geography	Jean-Pascal van Ypersele de Strihou	30h+15h	4 Credits	2q	x	x
⊗ LGEO1321	Human and Economic geography 1	Patrick Meyfroidt Patrick Meyfroidt (compensates Sophie Vanwambeke) Sophie Vanwambeke	25h+25h	4 Credits	2q	x	x
⊗ LGEO1322	Human and economic geography 2	Marie-Laurence De Keersmaecker Isabelle Thomas	25h+25h	4 Credits	2q	x	x
⊗ LGEO1323	Human and economic geography (3)	Marie-Laurence De Keersmaecker Isabelle Thomas	25h+25h	4 Credits	2q	x	x
⊗ LGEO1331	Geomorphology	Bas van Wesemael	30h+30h	5 Credits	2q	x	x
⊗ LGEO1332	Biogeography	Caroline Nieberding Renate Wesselingh	45h+24h	5 Credits	2q	x	x
⊗ LGEO2185	Advanced geo-processing	Kristof Van Oost	30h+30h	5 Credits	2q	x	x
⊗ LGEO2211	Advanced statistical methods in geography	Christian Hafner	30h+30h	5 Credits	1q Δ	x	x
⊗ LGEO2250	Mesures de terrain en géographie	Kristof Van Oost	30h+30h	5 Credits	2q	x	x
⊗ LGEO2400	Stage d'insertion professionnelle	Michel Crucifix Sophie Vanwambeke	15h	4 Credits	1 ou 2q	x	x
⊗ LPHY1365	Meteorology	Michel Crucifix Thierry Fichet	37.5h +22.5h	5 Credits	2q	x	x

o Climatologie et sciences de la terre (10 credits)

⊗ LENVI2005	Changements climatiques: impacts et solutions	Pierre Delmelle Philippe Marbaix Jean-Pascal van Ypersele de Strihou (coord.)	30h	3 Credits	2q	x	x
⊗ LPHY2160	Internal Geophysics of the Earth and planets	Nicolas Bergeot Véronique Dehant (coord.)	30h	5 Credits	1q	x	x
⊗ LPHY2161	Geodesy and GNSS (Global Navigation Satellite System)	Nicolas Bergeot Véronique Dehant	30h	5 Credits	2q	x	x
⊗ LPHY2162	Physics of the upper atmosphere and space	Viviane Pierrard	22.5h	4 Credits	1q	x	x
⊗ LPHY2253	Remote sensing of climate change	Didier Fussen	22.5h +15h	5 Credits	2q	x	x
⊗ LULBG2400	Le système Terre et ses interactions (ULB)			4 Credits		x	x
⊗ LULBG2408	Modélisation en géographie physique (ULB)			2 Credits		x	x
⊗ LULBG2410	Les changements climatiques des derniers 100000 ans (ULB)			6 Credits		x	x
⊗ LCLIM2280	Forecasting techniques	Michel Crucifix (coord.)		8 Credits	2q	x	x

RESEARCH FOCUS [30.0]

○ Mandatory

△ Courses not taught during 2018-2019

⊕ Periodic courses taught during 2018-2019

⊗ Optional

⊖ Periodic courses not taught during 2018-2019

■ Activity with requisites

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

						Year	
						1	2
○ LCLIM2170	Terrain I en climatologie	Veerle Vanacker	60h+30h	3 Credits	⊖	x	x

Year

1 2

○ LPHY2150	Physique et dynamique de l'atmosphère et de l'océan I	Michel Crucifix Thierry Fichet	45h+9h	6 Credits	1q	x	
○ LPHY2151	Physique et dynamique de l'atmosphère et de l'océan II	Michel Crucifix Thierry Fichet	30h	5 Credits	2q	x	x
○ LGEO2290	Travaux dirigés de modélisation climatique	Pierre-Yves Barriat Hugues Goosse	15h	2 Credits	1q	x	
○ LPHY2153	Introduction to the physics of the climate system and its modeling	Hugues Goosse Jean-Pascal van Ypersele de Strihou	22.5h +22.5h	5 Credits	1q	x	
○ LPHY2252	Supplements in climate system modeling	Michel Crucifix Thierry Fichet Qiuzhen Yin	45h+7.5h	6 Credits	2q	x	x

○ **Un cours à choisir parmi les suivants: (3 crédits)**

⊗ LCLIM2270	Terrain II en climatologie	Bas van Wesemael	60h+30h	3 Credits	2q ⊕	x	x
⊗ LENVI2005	Changements climatiques: impacts et solutions	Pierre Delmelle Philippe Marbaix Jean-Pascal van Ypersele de Strihou (coord.)	30h	3 Credits	2q	x	x
⊗ LCLIM2010	Modélisation du climat: Atmosphère (modèle MAR) (ULG - CLIM0017-2 - Partim 1) 🟡		10h+20h	3 Credits	1q	x	x
⊗ LCLIM2011	Modélisation du climat: Végétation et cycle du carbone (modèle CARAIB) (ULG - CLIM0017-2 - Partim 2) 🟡		15h+25h	3 Credits	1q	x	x
⊗ LCLIM2020	Gaz à effet de serre et lutte contre les changements climatiques (ULG-CLIM0007-2)		30h	3 Credits	1q	x	x

Cours facultatif : Ingénieurs Sud

● Mandatory

△ Courses not taught during 2018-2019

⊕ Periodic courses taught during 2018-2019

⊗ Optional

⊖ Periodic courses not taught during 2018-2019

■ Activity with requisites

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

						Year	
						1	2
⊗ LSST1001	IngénieursSud	Jean-Pierre Raskin	15h+45h	5 Credits	1 + 2q	x	x

Course prerequisites

A document entitled (nb: [not available](#) for this programme clim2m) specifies the activities (course units - CU) with one or more pre-requisite(s) within the study programme, that is the CU whose learning outcomes must have been certified and for which the credits must have been granted by the jury before the student is authorised to sign up for that activity.

These activities are identified in the study programme: their title is followed by a yellow square.

As the prerequisites are a requirement of enrolment, there are none within a year of a course.

The prerequisites are defined for the CUs for different years and therefore influence the order in which the student can enrol in the programme's CUs.

In addition, when the panel validates a student's individual programme at the beginning of the year, it ensures the consistency of the individual programme:

- It can change a prerequisite into a corequisite within a single year (to allow studies to be continued with an adequate annual load);
- It can require the student to combine enrolment in two separate CUs it considers necessary for educational purposes.

For more information, please consult [regulation of studies and exams](#).

The programme's courses and learning outcomes

For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies the competences expected of every graduate on completion of the programme. You can see the contribution of each teaching unit to the programme's reference framework of learning outcomes in the document "*In which teaching units are the competences and learning outcomes in the programme's reference framework developed and mastered by the student?*"

CLIM2M - Information

Admission

General (<https://uclouvain.be/en/study/inscriptions/admission-requirements-master-s-degree.html>) and specific admission requirements for this program must be satisfied at the time of enrolling at the university.

SUMMARY

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University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
		Direct Access	
		Direct Access	
		Direct Access	
Others Bachelors of the French speaking Community of Belgium			
Tous les bacheliers de la CfB		Direct Access	
Bachelors of the Dutch speaking Community of Belgium			
		Direct Access	
Foreign Bachelors			
		Based on application: accepted, conditional on further training, or refusal	

Non university Bachelors

> Find out more about [links](https://uclouvain.be/fr/etudier/passerelles) (<https://uclouvain.be/fr/etudier/passerelles>) to the university

Diploma	Access	Remarks
BA en agronomie (techniques et gestion agricoles) - EPS - crédits supplémentaires entre 45 et 60 BA en agronomie (toutes orientations) - HE - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire .	Type court

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			
Licence en sciences géographiques		Direct Access	Ces étudiants ont directement accès à la deuxième année de master avec éventuellement un programme adapté.
Masters			
Tous les masters		Access with additional training	

Holders of a non-University 2nd cycle degree

Adults taking up their university training

> See the website [Valorisation des acquis de l'expérience](https://uclouvain.be/fr/etudier/vae) (<https://uclouvain.be/fr/etudier/vae>)

It is possible to gain admission to all masters courses via the validation of professional experience procedure.

Accès selon la procédure de validation des acquis de l'expérience

Consultez le site www.uclouvain.be/vae

Access on the file

Reminder : all Masters (apart from Advanced Masters) are also accessible on file.

Admission and Enrolment Procedures for general registration

Supplementary classes

To enrol for this Masters, the student must have a good command of certain subjects. If this is not the case, they must add preparatory modules to their Master's programme.

○ Mandatory

△ Courses not taught during 2018-2019

⊕ Periodic courses taught during 2018-2019

⊗ Optional

⊖ Periodic courses not taught during 2018-2019

■ Activity with requisites

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

○ LGEO2130	Fundamentals of geographic and environmental modelling	Eric Deleersnijder Sophie Vanwambeke	30h+30h	5 Credits	2q △
○ LGEO2160	Integrated exercise in geography I	Isabelle Thomas Bas van Wesemael	30h+30h	4 Credits	1q
○ LGEO2185	Advanced geo-processing	Kristof Van Oost	30h+30h	5 Credits	2q
○ LGEO2211	Advanced statistical methods in geography	Christian Hafner	30h+30h	5 Credits	1q △
○ LGEO2220	History of geography	Eric Lambin	22.5h	3 Credits	1q
○ LGEO2250	Mesures de terrain en géographie	Kristof Van Oost	30h+30h	5 Credits	2q
○	Supplementary classes			Credits	

Teaching method

The teaching strategy takes its inspiration from the idea of "taking responsibility for one's own learning" 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 Master in Climatology is notable for the multidisciplinary background of the teaching staff. Studies will study with lecturers in geography and physics. Activities such as seminars and integrated exercises are designed so that students progressively encounter the complexity of the climatic system. Students in the last year of the Master should therefore be able to use and understand professional climatic modelling systems.

The computer rooms with special software for geographical analysis are always open to students. In the first year of the Master, the field work consists of a week of supervised exercises in the Alps or Spain.

Evaluation

The evaluation methods comply with the regulations concerning studies and exams (<https://uclouvain.be/fr/decouvrir/rgee.html>). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

Students will mainly be assessed on the basis of individual work (e.g. reading, consultation of databases and bibliographic references, writing monographs and reports, presentation of seminars, dissertation and work placement). Where necessary, students will also be assessed on how much they have learned from lectures. As far as possible, there will be continuous assessment, including regular 'open book examinations'. Certain activities will not be given a precise mark but will be officially certified. Assessment of the dissertation is in two stages : a 'progress report' at the end of the first year of the Master and the final presentation.

Mobility and/or Internationalisation outlook

La mobilité des étudiants est fortement encouragée, soit par un échange Erasmus ou Mercator hors Belgique, soit à la KULeuven. Ce séjour se fera durant le 2ème quadrimestre du premier master.

La possibilité sera donnée de suivre des cours en anglais. Ceci permettra non seulement aux étudiants de l'UCL de se familiariser mieux encore avec cette langue, mais aussi aux étudiants Erasmus venant de l'étranger de suivre un semestre de cours en anglais.

Des cours approfondis sont donnés par des professeurs visiteurs venant de diverses Institutions belges mais surtout étrangères. Ces enseignements sont parfois dispensés en anglais.

Possible trainings at the end of the programme

The Master in Geography : Climatology gives direct access to a doctorate in science.

Contacts

Attention, you are currently reading an archived page: below contact informations were for program study 2018-2019 only. To get current contact informations please go to [current program study site](#).

Curriculum Management

Entity

Structure entity

Denomination

Faculty

SST/SC/GEOG

(GEOG) (<https://uclouvain.be/repertoires/entites/geog>)

Faculty of Science (SC) (<https://uclouvain.be/repertoires/entites/sc>)

Sector	Sciences and Technology (<u>SST</u>) (https://uclouvain.be/repertoires/entites/sst)
Acronym	GEOG
Postal address	Place Louis Pasteur 3 - bte L4.03.07 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 28 73 - Fax: +32 (0) 10 47 28 77
Web site	https://uclouvain.be/fr/facultes/sc/geo (https://uclouvain.be/fr/facultes/sc/geo)
Academic supervisor: Marie-Laurence De Keersmaecker	
Jury	
	<ul style="list-style-type: none">• Marie-Laurence De Keersmaecker• Bas van Wesemael
Useful Contact(s)	
	<ul style="list-style-type: none">• Viviane Libois• Livia Lai

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