UCLouvain

lbio1310

2026

Biological evolution

3.00 credits	30.0 h + 10.0 h	Q2

Teacher(s)	Baeckens Simon ;Renoz François ;Rezsohazy René ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	General training in biochemistry, molecular biology, biology of organisms, ecology, documentary research. Skills and knowledge developed in the courses LBIO1110 and LBIO1223
Main themes	This course aims to provide a current overview of evolutionary biology, and to show the diversity of approaches to characterize and understand what underlies biological evolution at its different levels of organization: from molecules to ecosystems. This course will specifically address evolutionary biology themes in complementarity and integration with other related courses: - Special Evolutionary Issues (LBIO1350) - Speciation: origins of biodiversity (LBIO1355) - Biogeography (LGEO1332), - Molecular biology (LBIO1223), - Functional Ecology (LBIO1317), - Animal Behavior (L1254).
Learning outcomes	**At the end of this learning unit, the student is able to :** • Master the concepts and vocabulary used in evolutionary biology; • Understand the methods, and their limitations, used in evolutionary biology, both laboratory and field methods; • List and relate experimental and correlative evidence of biological evolution from a range of distinct scientific disciplines; • Formulate testable hypotheses on the adaptive value and evolutionary dimension of the phenotypic (morphology, physiology, behaviour) and genotypic traits of living organisms in their natural environment.
Evaluation methods	Assessment consists of a written examination covering all material presented by the three professors, as well as a report on the practical component of the course. The written exam evaluates students' knowledge of evolutionary biology terminology and principles, as well as their ability to apply evolutionary reasoning and methodology to specific problems. A portion of the exam will be available in both English and French, and students may choose to respond in either language. The practical component will be assessed through a group report, typically prepared by 2 to 4 students.
Teaching methods	Teaching is primarily delivered through *ex cathedra* lectures, supported by an online reference textbook and lecture slides provided on Moodle. Practical work consists of laboratory sessions designed to familiarize students with molecular barcoding, sequence alignment, and phylogenetic tree construction.
Content	The course begins with an introduction to the development of evolutionary thought, tracing the key ideas that have shaped the field. It then examines the fundamental principles of microevolution, introducing core concepts and exploring both historical and contemporary debates on natural selection. Broader patterns are considered through the study of macroevolutionary events and their rates of occurrence. Further topics include the evolution of sex, the dynamics of biological interactions, and perspectives on replicators and cultural evolution inspired by Dawkins' work. The course also integrates molecular genetics, with a focus on the origins of genetic variation and the mechanisms driving its change over time.
Inline resources	The reference book "Evolutionary analysis" by Herron and Freeman (2014), is made available free of charge in an annotated electronic version for students with a UCLouvain matricule (and therefore registered at UCLouvain). See practical information on the Moodle platform.
Bibliography	Livre de référence : Evolutionary Analysis, book by Freeman and Herron (2014)
Other infos	The course is taught partly in French and partly in English, with most written materials provided in English. Students are welcome to ask questions in French.
Faculty or entity in charge	BIOL

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Biology	BIOL1BA	3		🔍
Bachelor in Biology, Anthropology and Archaeology	BABA1BA	3		🔍
Master [120] of Education, Section 4 : chemistry	CHIM2M4	3		🔍