


2.00 credits

24.0 h

Q1

Language :	English
Place of the course	Louvain-la-Neuve
Main themes	<p>The course consists of two major parts, dealing with macroevolution and microevolution, respectively.</p> <p>The first part will deal with the appearance of life, the evolution of reproductive systems, autotrophy/heterotrophy, organel formation, endosymbiosis, the main innovations in plant and animal evolution and the origin of man and cultural evolution. The major scientific theories (catastrophism, Darwinism, Neodarwinism, synthetic theory, neutralism, selfish gene, punctuated equilibrium, complexity and chaos) will be explained and discussed.</p> <p>The second part deals with selection, adaptation and evolution on shorter time scales, and will discuss various subjects, such as genetic variation, heritability, natural and sexual selection, kin selection, evolution of sociality, game theory, life history theory, mating systems, aging and senescence.</p>
Learning outcomes	<p><b>At the end of this learning unit, the student is able to :</b></p> <p>1 Evolution is a constantly changing field due to the variety of sometimes contradictory theories. Students will acquire the basic knowledge needed to understand the main theories. They should be able to discuss these theories, to formulate hypotheses, discuss them and to make a synthesis. During a public seminar they will present and discuss an aspect of evolution from different points of view. Articles on microevolution will be discussed in class, and students will learn how to critically read an article.</p>
Evaluation methods	<p>Preparation and presentation of a report by groups of four students on a line of research in evolutionary theory.</p> <p>The paper work consists of 5 pages (references in appendix) and is based on the reading of at least 15 relevant scientific articles. The examination takes place in the form of a one-day workshop in the January semester where all students groups present their work in public and answer questions.</p> <p>Grading is based on the written report, the oral presentation, the quality of the answers to the questions, and the participation in the discussion during the workshop day.</p>
Teaching methods	<p>Classroom lectures ; reading scientific articles to complete a group assignment on a line of research on biological evolution.</p> <p>Students will also be required to read and discuss scientific articles during the course.</p>
Content	<p>Topics covered (updated for 2021-2022 taking into account the new Biology Baccalaureate program) :</p> <p>The course consists of several parts :</p> <p>on the one hand, a refresher course on the theory of evolution given by C. Nieberding, intended for students who have not taken the course "LBIO1310 Biological evolution" in Bac 3 given at UCLouvain.</p> <p>This part is mainly aimed at students who have completed the Bachelor's degree at UNamur, and will summarize the current panorama of what evolutionary biology is, to show the diversity of methodological approaches and biological themes that this theory addresses, in complementarity and integration with other courses and subjects that are related :</p> <ul style="list-style-type: none"> <li>- Special issues in evolution (course LBIO1350)</li> <li>- Speciation: origins of biodiversity (LBIO1355)</li> <li>- Biogeography (LGEO1332),</li> <li>- Molecular Biology (LBIO1223),</li> <li>- Functional Ecology (LBIO1317),</li> <li>- Animal Behavior (L1254).</li> </ul> <p>The second part of the course, given by K. Van Doninck (UIB), will provide an introduction to evolutionary genomics.</p> <p>The third part of the course, given by K. Van Doninck, will illustrate the notions of evolution through pandemics (HIV and Covid-19).</p> <p><u>Learning outcomes</u> (updated for 2021-2022 taking into account the new Biology Baccalaureate program) : The theory of biological evolution is the central theory of life, and represents a dynamic and rapidly expanding line of research worldwide.</p>

	<p>In terms of skills, students will be expected to acquire the knowledge necessary to apply evolutionary theory to all disciplines of Biology, from molecules to ecosystems.</p> <p>Students should be able to apply evolutionary theory to experimental cases, by presenting the relevant hypotheses, explaining the experimental protocol developed to test these hypotheses, and being able to critique the results obtained and synthesize them.</p> <p>In a public seminar, they will present a line of research on biological evolution addressing these different aspects.</p> <p>Content (updated for 2021-2022 taking into account the new Biology Baccalaureate program) : LBOE2111 immerses students in the central theory of modern Biology : the theory of Evolution, a theory that has also transformed our understanding of the place of humans within the living world.</p>
Faculty or entity in charge	BIOL

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Biology of Organisms and Ecology	BOE2M	2		
Master [60] in Biology	BIOL2M1	5		