Course Title	Management of Terrestrial Ecosystems in the Context of Climate Change				
Course Code	DLCLIMA513				
Course Type	Compulsory				
Level	MSc				
Year / Semester	2nd year/3rd semester				
Teacher's Name	Dr. Nicolas George Eliades				
ECTS	7.5	**Lectures / week**		**Laboratories/week**	
Course Purpose	This course purposes to convey the students to the participants the guiding principles regarding the need and value of managing natural ecosystems, while also emphasizing on the design of actions and strategies for managing terrestrial ecosystems. The course also aims to explain the structure and functioning of terrestrial ecosystems, highlighting the need for their protection and conservation. The course will provide knowledge of basic tools and techniques through which goals and management strategies for terrestrial ecosystems are determined, optimal management practices are developed, and the sustainability of terrestrial ecosystems is ensured.				
Learning Outcomes	Upon completion of this course, students will be able to: • Define basic concepts of ecosystem ecology and landscape ecology. • Identify different types of terrestrial ecosystems. • Recognize the distribution of terrestrial ecosystems in space. • Identify the causes of the distribution of ecosystems in space. • Understand the dynamic evolution of terrestrial ecosystems. • Recognize the main ecological components of an ecosystem. • Apply concepts of ecosystem ecology to practical examples. • Describe landscape evolution in space. • Define the concept of threat and pressure on ecosystems. • Identify the causes and consequences of threats and pressures faced by terrestrial ecosystems. • Evaluate the impacts of climate change on the functioning and development of terrestrial ecosystems. • Analyse the principles of terrestrial ecosystem management. • Define the content of Management Plans, Monitoring Plans, and Action Plans for terrestrial ecosystems. • Develop critical thinking and synthesis skills in the subject of sustainability, conservation, and management of terrestrial ecosystems. • Propose applied measures and suggestions for integrated management of terrestrial ecosystems.				
Prerequisites	None		**Corequisites**	None	
Course Content	This course specializes the students to the management and protection of natural ecosystems requires integrated design approaches with rational practices of applied solutions aimed at the conservation and sustainability of				

	natural ecosystems. In the 21st century, with the impacts of climate change negatively affecting the vitality and resilience of natural ecosystems and the wild populations of the environment, there is an urgent need to deepen knowledge and understanding of the ecological principles and forces that operate towards the development of terrestrial ecosystems. The significance of the above formulation is further strengthened by the 15th Sustainable Development Goal of the United Nations, which is defined as to "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss." This course aims to provide specialized knowledge in the management of terrestrial ecosystems and develop skills in understanding pressures and threats, with an emphasis on the direct and indirect impacts of climate change on the resilience and vitality of the components constituting an ecosystem. Through the lectures of the course, the students will enhance autonomy in developing strategies for managing the complex network of ecological relationships that are shaped in terrestrial ecosystems, successfully undertaking roles through their scientific capacity to formulate, implement, and evaluate measures for rational ecosystem management. The focus of the course is to better connect the theoretical scientific background of students with the practical application of management solutions, developing new abilities through the synthesis of knowledge, skills, and critical thinking.
Teaching Methodology	This course is delivered entirely online, using a variety of digital tools, including teleconferences, discussion forums, wikis, and interactive presentations. The learning platform facilitates student interaction with peers and the instructor, fostering a collaborative online learning community.
Bibliography	<u>Mandatory Bibliography</u> ▪ Sher A.A., Molles, M.C. (2022) Ecology: Concepts and applications (9th ed.). McGraw Hill. ▪ Cunningham W.P., Cunningham M.A (2021) Environmental science: A global concern (15th ed.). McGraw Hill. ▪ Intergovernmental Panel on Climate Change (2023) Climate change 2022: Impacts, adaptation and vulnerability*. Cambridge University Press. ▪ Cunningham W.P., Cunningham M.A. (2021) Environmental science: A global concern (15th ed.). McGraw Hill. ▪ Intergovernmental Panel on Climate Change (2023) Climate change 2022: Impacts, adaptation and vulnerability. Cambridge University Press. ▪ Withgott J.H., Laposata M. (2024) Essential environment: The science behind the stories (7th ed.). Pearson. ▪ Cunningham W.P., Cunningham M.A. (2021) Environmental science: A global concern (15th ed.). McGraw Hill. ▪ Food and Agriculture Organization of the United Nations. (2025). Sustainable forest management toolbox. FAO. ▪ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2024) Thematic assessment report on the interlinkages among biodiversity, water, food and health*. IPBES secretariat. <u>Additional Study Bibliography</u> ▪ Bubb, P., Soesbergen, A.V., Bisht, N., Singh, G., Joshi, S., Aryal, K., Danks, F.S., Rawat, G.S., Bhuchar, S., Wu, N., Kotru, R., Yi, S. (2017).

	Planning management for ecosystem services – An operations manual. ICIMOD Manual 2017/5. Kathmandu: ICIMOD [Website] ▪ Chapin F.S., Mathson P.A., Vitousek P.M. (2018) Principles of Terrestrial Ecology (2nd Edition). Sprinker ▪ Creutzig F., Niamir L., Bai X., Callaghan M., Cullen J., Díaz-José J., ..., Ürge-Vorsatz D. (2022) Demand-side solutions to climate change mitigation consistent with high levels of well-being. Nature Climate Change, 12(1): 36-46. [https://doi.org/10.1038/s41558-021-01219-y] ▪ Department of Agriculture (2022). Healthy woods start with a plan – Manage what you value, with assistance from NRCS. U.S. [Website] ▪ European Commission Website: Climate Action - Consequences of Climate Change [https://climate.ec.europa.eu/climate-change/consequences-climate-change_en] ▪ FAO (2024) Sustainable Forest Management (SFM) Toolbox [Website]
Assessment	Weekly Activities (10%) Assignment 1 (20%) Assignment 2 (20%) Final Examination (50%)
Language	Greek / English