



Ciudad Universitaria	School of Forest Engineering and Natural Resources
Program	13IG – Degree in Forest Engineering

Course number and name	
Number	135004105
Name	Zoology and Forest Entomology
Semester	S2 [(February-June)]

Credits and contact hours	
ECTS Credits	6
Contact hours	60

Coordinator's name	Carlos Alonso carlos.alonso@upm.es
---------------------------	------------------------------------

Specific course information	
Description of course content	
Principles of systematics and taxonomy. Invertebrates: morphology, taxonomy and biology of the main groups related to forestry. Vertebrates: natural history, morphology, taxonomy and biology of fish, amphibians, reptiles, birds and mammals. Recognition of species related to forestry. related to forestry. Morphology and biology of the different orders of insects. Morphology, biology and recognition of the main insect species related to forestry.	
List of topics to be covered	
Unit 1. Introduction to Zoology: general principles and zoogeography Unit 2. Systematics: Phyla and fundamentals Unit 3. Morphology, anatomy, physiology of insects Unit 4. Taxonomy of insects Unit 5. Apterygota and Palaeoptera Unit 6. Orthopteroidea Unit 7. Hemipteroidea Unit 8. Endopterygota I: Neuroptera, Coleoptera, Mecoptera and Lepidoptera Unit 9. Endopterygota II: Diptera, Trichoptera, Siphonaptera and Hymenoptera Unit 10. Forest entomology: forest pests and insect decline Unit 11. Non-insect invertebrates Unit 12. Vertebrate taxonomy and evolution Unit 13. Morphology, anatomy, physiology of vertebrates Unit 14. Agnatha, elasmobranchs and teleostei	



POLITÉCNICA

Unit 15. Amphibians
 Unit 16. Reptiles
 Unit 17. Birds
 Unit 18. Mammals

Lab. 1. Insect sampling techniques
 Lab. 2. Morphology of an insect
 Lab. 3. Apterygota and Palaeoptera
 Lab. 4 Orthopteroidea
 Lab. 5. Hemipteroidea
 Lab. 6. Endopterigota I
 Lab. 7. Endopterigota II
 Lab. 8. Fish I
 Lab. 9. Fish II
 Lab. 10. Amphibians
 Lab. 11. Reptiles
 Lab. 12. Birds I
 Lab. 13. Birds II
 Lab. 14. Birds III
 Lab. 15. Mammals

Prerequisites or co-requisites

Fundamentals of Biology, Geography, Ecology and Climatology.

Course category in the program

 X **R (required)**

 E (elective)

(elective courses may not be offered every year)

Specific for course objectives

Specific learning outcomes

LO5 - LO1 - LO249 – To be able to convey information, ideas, problems and solutions to both specialist and non-specialist audiences. specialist and non-specialist audiences
 LO339 – To acquire knowledge for the formation and conservation of zoological collections.
 LO340 - - To know the main groups of micro-organisms that can be found in the natural environment and their characteristics.
 LO341 - - To know specific applications of micro-organisms in environmental issues.
 LO342 - - To acquire basic skills in the use of instruments and laboratory techniques for microorganisms.

Further reading and supplementary materials

– Hickman, C. P., Roberts, L. S., Larson, A., Anson, H. I., & Eisenhour, D. J. (2006). Integrated principles of zoology (Vol. 15). New York, NY: McGraw-Hill.



POLITÉCNICA

- Miller, S. A., Harley, J. P., Aloï, J., & Erickson, G. (2002). Zoology. New York: McGraw-Hill.
- Davies, N. B. (2012). An introduction to behavioural ecology. Wiley Blackwell Scientific.
- Freeman, S., & Herron, J. C. (2007). Evolutionary analysis (p. 401). Upper Saddle River, NJ: Pearson Prentice Hall.
- Begon, M., & Townsend, C. R. (2021). Ecology: from individuals to ecosystems. John Wiley & Sons.
- Kardong, K. V. (2006). Vertebrates: comparative anatomy, function, evolution (pp. 365-383). New York: McGraw-Hill.
- Ciesla, W. (2011). Forest entomology: a global perspective. John Wiley & Sons.
- Gullan, P. J., & Cranston, P. S. (2014). The insects: an outline of entomology. John Wiley & Sons.

Teaching methodology

<u> X </u> lectures	<u> </u> <u> </u> problem solving sessions	<u> X </u> collaborative actions	<u> X </u> laboratory sessions
Other:			