Institute for Education, Martin Luther King Road, Pembroke PBK 1990. Tel: +35625982001 | Email: ife@ilearn.edu.mt

BBIO206 Animal and Plant Physiology 2: Excretion and Homeostasis

ECTS Value: 5 ECTS

Module Description

This module is the second of three modules tackling animal (mostly human) and plant (exclusively angiosperm) anatomy and the relationship with physiology, mode of life and habitat. This module will focus on understanding life mechanisms pertaining to digestion, autotrophic nutrition and excretion in plants, the human excretory system and homeostasis in humans. Apart from covering a fundamental, comprehensive and in-depth body of knowledge about the above-mentioned topics, this module will seek to make links with everyday-life biology as well as the context of the Maltese Islands wherever applicable.

The depth of knowledge, concepts, competencies and processes cover and assessed by this module, will be more than adequate so as to ensure that participants are not only ready to plan lessons covering content and processes about these topics with their prospective students at secondary and post-secondary level, but also to be able to answer impromptu higher-order questions about biological phenomena as they may arise in class.

Sub-topics to be tackled will include:

a. Nutritional requirements and health.
b. An introduction to evolutionary adaptations of digestion.
c. Major features and functions of the human digestive system.
d. Comparing digestive systems of herbivorous and carnivorous mammals.
e. Autotrophic nutrition in plants and the need for inorganic nutrients.
f. An introduction to evolutionary adaptations of excretory systems.
g. Major features and functions of the human excretory system.
h. Homeostasis, thermoregulation and regulation of metabolism in humans.
i. Excretory functions of plants.

Overall Objectives and Outcomes

By the end of this module, the learner will be able to:

Competences

a. illustrate in detail the anatomy of the human digestive system, differences between digestive systems of herbivorous and carnivorous mammals, photosynthetic tissues in plants, the anatomy of the human excretory system and the role of various organs in homeostasis in humans;

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b. associate structural adaptations of human and other mammalian digestive systems, photosynthetic tissues in plants, the human excretory system and human organs involved in homeostasis to the respective life form's physiology, mode of life and habitat;
c. confidently convey knowledge, concepts and scientific processes about human and other mammalian digestive systems, photosynthetic tissues in plants, the human excretory system and human organs involved in homeostasis to a group of students at secondary or post-secondary educational level.
d. Engage critically with literature.

Knowledge

a. recall and develop detailed knowledge of the anatomy and physiology of the human and other mammalian digestive systems, photosynthetic tissues in plants, the human excretory system and human organs involved in homeostasis;
b. detail knowledge of biological phenomena related to the human and other mammalian digestive systems, photosynthetic tissues in plants, the human excretory system and human organs involved in homeostasis;
c. consolidate and extend knowledge about the human and other mammalian digestive systems, photosynthetic tissues in plants, the human excretory system and human organs involved in homeostasis, gathered through prior learning.

Skills

a. organise, order and present information drawn from textbooks, journals, videos and online sources while building on prior learning;
b. comment on research and investigative observations and make inferences about biological processes accordingly;
c. draw, label and annotate diagrams depicting biological phenomena;
d. employ simple laboratory techniques during a practical investigation to research and report about one or more aspects of animal and/or plant physiology covered in this module;
e. foster collaboration and contribute effectively within a group, wherever the number of course participants allows for effective group work.

Mode of Delivery

This module adopts a blended approach to teaching and learning. Information related to the structure and delivery of the module may be accessed through the IfE Portal. For further details, kindly refer to the Teaching, Learning and Assessment Policy and Procedures found on the Institute for Education's website.

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Assessment Methods

This module will be assessed through: Research Assignment and Online Tasks/Reflections.

Suggested Readings

Core Reading List

1. Fox S.I., (2016), Human Physiology, 14th Edition, McGraw-Hill.
2. Raven P.H, Evert R.F. & Eichhorn S.E., (2012), Biology of Plants, 8th Edition, W. H. Freeman

Supplementary Reading List

1. Campbell N.A., Reece J.B., (2008) Biology, 8th Edition, Pearson.
2. Audesirk T., Audesirk G., & Byers B.E., (2017), Biology: Life on Earth with Physiology 11th Edition, Pearson.
3. Randall D., Burggren, W. & French, K., (2001), Eckert Animal Physiology - Mechanisms and Adaptations, 5th edition, W.H. Freeman.
4. Taiz L. & Zeiger E., (2010), Plant Physiology, 5th Edition, Sinauer Associates.