האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Chemical Ecology in Plant Protection - 71126

Last update 07-11-2024

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Agroecology & Plant Health

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: Rehovot

Course/Module Coordinator: Dr. Victoria Soroker

Coordinator Email: sorokerv@agri.gov.il

Coordinator Office Hours: By Appointment

Teaching Staff:

Dr. Victoria Soroker

Course/Module description:

Course will show the chemical ecology of a wide range variety of aspects affecting the ecosystem. The course will focus on chemical communication of insects and other arthropods and their interactions in natural and agricultural ecosystems.

Course/Module aims:

Learning basic concepts of chemical ecology. Knowledge of methods for isolating, identifying and testing of chemical cues. Familiarity with a variety of chemical signals. The biological significance of the signal and its effect on behavior changes either in/or the development of the receptive insect . Learning interactions with sexuality and sexual recognition of the importance of chemical signals in multitropical system. Application of chemical ecology ׀knowledge in integtrated pest managment

Learning outcomes - On successful completion of this module, students should be able to:

1. Be familiar with specific terminology
2. Be Familiar with physiology behind chemosensing
3. Be familiar with specific methodology in research of chemical ecology

4. Applying of chemical ecology knowledge in integrated pest management

Attendance requirements(%):

80

Teaching arrangement and method of instruction: Lecturesvisit to the laboratory

Course/Module Content:

1 24/3 Introduction course concepts What is the definition of chemical ecology, what is the chemical communication advantages and disadvantages.
2 31/3 chemistry of chemical signals, the relationship between molecular structure and dispersion characteristics of transmission. Methods and identification of chemical aspects of the identification process alochemicals: Principles, Equipment

3 7/4 exocrine glands and their structure in insects and ways of releasing pheromones
4 21/4 control of the biosynthesis of pheromones

6 28/4 visit to the lab
5 5/5 process of chemical signal sensing structure absorption organs, how to function at a molecular level in the receiving, processing and response-
7 12/5 Chemical communication at the individual level: Promo sex, warning, marking, chemical communication aggregation sexual interactions

8 19/5 populations chemical communication / insect companies - locusts

9 26/5 populations chemical communication / companies insects -on lack of social organization recognition
10 9/6 Social-insect chemical communication
11. 16/6 Breaking codes
12. 23/6 plants / vegetarian and fresh-tropical interactions
13. 30/6 significance of chemical ecology and its application in agriculture

Required Reading:

Whyatt, T. D. (2014). Pheromones and Animal Behavior: Chemical Signals and Signatures. Cambridge University Press.

Additional Reading Material:
will be provided during the course

Grading Scheme:
Home Exam % 70
Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 30 %

Additional information:
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