

## *The Hebrew University of Jerusalem*

### *Syllabus*

## **FUNDAMENTAL GENETICS - 71012**

*Last update 12-09-2024*

HU Credits: 5

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Plant Science in Agriculture

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Rehovot

Course/Module Coordinator: Idan Efroni, Naomi Ori

Coordinator Email: [itay.cohen5@mail.huji.ac.il](mailto:itay.cohen5@mail.huji.ac.il)

Coordinator Office Hours: by appointment

Teaching Staff:

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Dr. Idan Efroni,  
Prof. Naomi Ori,  
Ms. neta gershon,  
Mr. gilad benisrael,  
Mr. adir kadosh,  
Ms. mika dellazuana,  
Mr. Nave Man,  
Ms. Shani Doron,  
Mr. yotam cohen,  
Ms. adar sulema

Course/Module description:

*transfer of genetic material, cell divisions, Mendelian genetics, sex determination and sex linkage, linkage and recombination, DNA markers, quantitative inheritance, bacterial genetics, chromosomal mutations, population genetics, evolution.*

Course/Module aims:

*understanding the basic principles of genetics, and their application to the solution of genetic problems and dissection of genetic situations.*

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

*Solve basic problems in the course topics,  
Recognize basic genetic principles  
analyze genetic situations*

Attendance requirements(%):

*Teaching arrangement and method of instruction: Frontal teaching, online lectures, discussion meetings, online questionnaires, reading, weekly exercise*

Course/Module Content:

- 1.Introduction*
- 2.Cell life cycle- Meiosis and Mitosis*
- 3.Mendelism: Mendels laws*
- 4.Mendelism: Sex linkage*
- 5.Genetic interactions*
- 6.Linkage and mapping*
- 7.Bacterial genetics and Ames test*

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8. chromosomal mutations
  9. Polymorphism and its use in mapping
  10. Quantitative genetics
  11. Population genetics
  12. Introduction to Plant Breeding
  13. Evolution

Required Reading:

1. open university-mendelism and genetic heredity
2. Griffith, Gelbart, Lewontin, Miller – Modern Genetic Analysis. W.H. Freeman & Company, N.Y.  
<http://bcs.whfreeman.com/mga2e/>

3. Griffith, Miller, Suzuki, Lewontin – Introduction to Genetic Analysis  
<http://www.whfreeman.com/iga/>

Additional Reading Material:

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Grading Scheme:

Written / Oral / Practical Exam 75 %  
Mid-terms exams 25 %

Additional information:

none