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General Genetics (80208)

Prof. Shay Ben-Aroya, Prof. Haim Cohen, Prof. Galit Shohat-Ophir

benaroyashay@gmail.com, Haim.Cohen@biu.ac.il, galit.ophir@biu.ac.il

Academic year: 2021-2022 Semester: 1st Hours/credits: 4h/2 credits

Mandatory

Prerequisites: Biochemistry

Year in program & how often given: 2nd or 3rd year in undergraduates programs, given yearly

Course Overview – Short abstract: Genetics is a form of information science. Geneticists seek to understand the rules that govern the transmission of genetic information at three levels: from parent to offspring within families, from DNA to gene action within and between cells, and over many generations within populations of organisms. The course provides introduction to these three avenues of research.

Learning outcomes: Students will acquire training in basic genetics, principles, approaches and will know how to design genetic crosses, interpret their results and map genes on chromosomes.

Assessment: final exam – 85%, quizzes and exercises – 15%

Week-by-Week content

Lesson #	Subject
1	Inheritance, Mendel
2	Meiosis, Mitosis
3	Sex linkage
4	Extensions of Mendelism
5	Linkage, recombination
6	Genetic mapping
7	More eukaryotic mapping tools
8-9	Tetrad mapping

10-11	Bacterial genetics, conjugation
12	Transformation, transduction
13	DNA, Gene to phenotype
14	Gene mutations
15-16	mutations, screening
17-18	physical maps, haplotypes, molecular markers
19	Transposition, mechanism
20	Rearranged chromosomes
21	Abnormal ploidy
22	Non-nuclear inheritance
23	Population genetics
24-25	DNA repair
26	Epigenetics

Required text:

Griffiths, A.J.F. et al.

An Introduction to Genetic Analysis