The Hebrew University of Jerusalem

Syllabus

CELL BIOLOGY - 71078

Last update 21-01-2024

HU Credits: 3.5

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: Assaf Mosquna

Coordinator Email: assaf.mosquna@mail.huji.ac.il

Coordinator Office Hours: call to set an appointment

Teaching Staff:

Prof Menachem Moshelion,
Dr. Assaf Mosquna,
Ms. eyal erez,
Ms. noa keren,
Mr. ariel joseph,
Ms. amit adiri,
Ms. naomi nevo,
Ms. Rotem Matosevich,
Ms. mia stern,
Mr. Gil Zimran

Course/Module description:
Study of the chemical, structural and functional components of the eukaryotic cell

Course/Module aims:
Introduction and understanding of The Prokaryotic and eukaryotic cells. Cell structure and function: The cell membrane (plasmalemma). The waterMillie. The internal membranes (nuclear envelope; endoplasmic reticulum; Golgi bodies; Golgi vesicles; lysosomes; vacuoles). The mitochondrion. The cytoskeleton (microtubules and actin and myosin filaments). Karyokinesis. Cytokinesis. Protein synthesis. Characteristics of plant cells (optional)- 1. The cell wall. 2. The apoplast and the symplast. 3. Chloroplasts and photosynthesis. 4. Large vacuoles and water movement. . Characteristics of animal cells (optional)- 1. Cell junctions. 2. Cells absorption and secretion. 3. Differentiation. 4. Signal transduction

Learning outcomes - On successful completion of this module, students should be able to:
independent learning of unfamiliar material in biology

Attendance requirements(%):
100

Teaching arrangement and method of instruction: Frontal lectures

Course/Module Content:
1. prokaryotic and eukaryotic cells. Structure of the cell and its organelles - General Introduction.
2. Sugars

3. Proteins, Enzymes and Coenzymes
4. Nucleic acids and the genetic code
5. Protein synthesis.
6. Lipids and cell membrane - Structure and Function. Transport through membranes .
7 . Intracellular membrane system - nuclear envelope ,ER, ER protein synthesis , Golg'i and vesicles. endocytosis and exocytosis.
8 . Lysosomes and Vacuoles .
9. Membrane structure and function in the process of energy production.
10. Cell skeleton.
11. Cell cycle - chromosome structure and function and cell division.
12. Biotic diversity and significance in evolution.
13. Photosynthesis - the chloroplast structure and function.
14. Cell wall - structure , molecular and microscopic organization.
15. Water balance of the cell.
16. Apoplast and symplast water movement.

Required Reading:

1. Buchanan B.B., Gruissem W. and Jones R., 2000 Biochemistry & Molecular Biology of Plants.
נושאים מיוחדים לתא הצמחי
2. Alberts(a.o). 1997/2004.Essential Cell Biology. 1st. / 2n dEdition

3. Alberts(a.o).1994/2002. Molecular Biology of the Cell. 3rd. / 4th Edition

4. Raven P.H., Evert R.F., Einhorn S.E., 1999. Biology of Plants. 6th /7th Edition

5. Taiz, L. and Zeiger, E. 1998 / 2002/2006. Plant Physiology. 2nd. / 3rd/4th Edition.

6. Zamsky.E. 1997/2002. התא של ביולוגיה

Additional Reading Material:

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Grading Scheme:

Written / Oral / Practical Exam 100 %

Additional information:

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