

BIO 332 Cell Biology Syllabus Spring 2022

Instructor: Cavit Agca

This course is an introduction to fundamental cellular structures and processes at molecular and systems levels. Topics include: structural organization of cellular components and properties of cell membranes; universality of fundamental cellular mechanisms; compartmentalization and division of labor within cells; mechanisms of cell-environment and cell-cell communication, regulation of cell growth, division and death. Upon completing this course students will be able to identify basic molecular components of cellular structures, analyze intracellular processes at molecular level and integrate this information to predict cellular behavior at the level of the whole organism.

Course Book:

Molecular Biology of the Cell (6th Ed)

Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K. and Walter, P.
Garland Publishing Inc. (2015) ISBN 978-0-8153-4464-3
www.homerbooks.com

Additional reading

-Essential Cell Biology

Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K. and Walter, P.
Garland Publishing Inc. (2014)

-Physical Biology of the Cell

Phillips, R., Kondev, J. and Theriot, J. (2009)
Garland Science ISBN 978-0-8153-4163-5.

PLEASE NOTE THAT THE SYLLABUS MAY HAVE UPDATES DEPENDING ON UPCOMING COVID19 MEASURES AND TIME CONSTRAINTS!!!

Important notes about the class:

This is one of the most important class in our curriculum and needs special attention. Several universities perform their qualification examinations according to the content that is covered in this class.

VIDEO LECTURES FROM PREVIOUS SEMESTERS WILL BE AVAILABLE IN SUCOURSE

I KINDLY ASK TO WATCH THE VIDEOS BEFORE CLASS, AS I WILL ENCOURAGE DISCUSSIONS IN CLASS WHICH MAY LIMIT THE TIME SPENT FOR REGULAR LECTURES BUT ENHANCES QUESTIONS AND FACILITATES LEARNING

STILL, YOU WILL BE RESPONSIBLE FROM ALL THE CONTENTS OF THE CORRESPONDING CHAPTERS.

I. MEMBRANE STRUCTURE, ORGANIZATION AND FUNCTION MODULE

- Week 1: Visualizing cells (Chap. 9)
Week 2: Membranes: structure, transport and electrical properties (Chap. 10-11)
Week 3: Membranes: structure, transport and electrical properties (Chap. 11)
Week 4: Intracellular compartments and protein sorting (Chap. 11-12)

Miniterm I:

- Week 5: Intracellular compartments and protein sorting (Chap. 12)

II. THE DYNAMIC CELL MODULE

- Week 6: Membrane traffic and vesicular transport, (Chap. 13)
Week 7: Membrane traffic and vesicular transport, (Chap. 13)

- Week 8: Cytoskeleton (Chap. 16)

Miniterm II:

- Week 9: Cytoskeleton and Cell signaling (Chap. 15 , 16)
Week 10: Cell Signaling and Cell cycle (Chap. 15 , 17),
Week 11: Cell cycle, junctions and extracellular matrix (Chap. 15 , 19),

Miniterm III :

- Week 12: Cell Junctions and extracellular matrix (Chap. 19)

SPECIAL LECTURES

- Week 13: Mitochondria and Apoptosis (Ch.14, 18)
Week 13: Plant cell wall, cytokinesis, chloroplast and signaling
Lecturer: Dr. Stuart James Lucas

FINAL (Miniterm IV, including Lab practices)

Date: TBA

Grading:

**15% Miniterm I + 15% Miniterm II + 15% Miniterm III +
25% FINAL (Miniterm IV & Lab practices) + 30% Lab**

Make up will be performed at the end of the semester (after FINAL) and will cover all contents of the course. In order to be able to accept you into a make up exam, we will request official documents.

IMPORTANT NOTES ABOUT LABS:

- Attendance to all lab sessions and delivery of lab reports are mandatory at all cases, so please attend lab sessions and deliver your lab reports to be able to pass the whole class as they are tightly connected.
- Not attending to lab session with health report or other official documents more than 2 weeks needs to be discussed with the dean`s office.
- Not attending to lab session without health report or other official documents more than 2 weeks will result in failure of the class. This does not mean that you have a right for absence. At all cases a total of 3 weeks of absence may result in failure and needs to be discussed with the dean`s office.
- Lab reports have to be delivered timely. Every single day will result in 5 point reduction. If the report is not received by next lab session that week will be counted as: Not attended to the lab session.

Contact:

Instructor:

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TAs:

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LAs:

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Lectures: Thursday 13:40-15:30, Friday 15:40-16:30,

Zoom Meeting

<https://sabanciuniv.zoom.us/j/7556177895?pwd=cTViMFhwWk9tZGN1MFJ4WDIzUi94Zz09>

Meeting ID: 755 617 7895

Passcode: Bio332

Labs: Tuesday **A:** 12:40-15:30 **B:** 15:40 18:30 FENS 2053