

Southeast Missouri State University

Department of Biology

BI 404/604

Cell Biology

New Fall 2001

I. Catalog Description and Credit Hours of Course:

Dynamics of eukaryotic cellular function, molecule targeting, vesicular trafficking, signal transduction and molecular aspects of cell interactions. Fall. Two hours of lecture, one two-hour lab. (3)

II. Prerequisites: BI 381, CH 340 (or CH341 and CH 342) or consent of instructors.

III. Purposes or objectives of the course:

- A. To provide in-depth coverage of the functions and interrelationships of various membrane systems in cells.
- B. To provide an integrated approach to understanding cell communication and signaling mechanisms.
- C. To provide an understanding of basic mechanisms of cell motility, cell cycle regulation, development and cancer
- D. To provide an opportunity for active learning using by testing hypothetical models, working problems and analyzing research data.

IV. Expectations of students:

- A. To demonstrate comprehension of the course material on written examinations.
- B. To demonstrate an ability to critically analyze data and concepts related to cell biology.
- C. To participate actively in all lecture and laboratory sections.
- D. Graduate students will write a research paper and conduct a portion of lecture time on a topic selected from the course content.

V. Course Content or Outline

Topic	Lecture hours	Labs
A. Protein Structure and Function	2	1
B. Biomembranes and the Subcellular Organization of Eukaryotic cells	2	1
C. Transport Across Cell Membranes	2	1
D. Cellular energetics: Glycolysis, Aerobic Oxidation, and Photosynthesis	2	1
E. Protein Sorting: Organelle Biogenesis and Protein Secretion	3	2
F. Methods in Cell Biology	2	1
F. Cell Motility and Shape: Microfilaments	2	1
G. Cell Motility and Shape: Microtubules and Intermediate Filaments	2	1
H. Cell Adhesion and Communication	2	1
I. Cell-to-Cell Signaling: Hormones and Responses	2	1
J. Nerve Cells	2	1
K. Regulation of the Eukaryotic Cell Cycle	2	1
L. Cancer	2	1
Exams	3	

VI. Textbooks:

Lodish, H., A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. 2000. *Molecular Cell Biology*. W.H. Freeman and Company, New York, New York.

VII. Basis for student evaluation:

Grades will be assigned on the basis of four major examinations, problem sets and laboratory assignments as determined by the instructors.

Point Distribution – Undergraduate Students	Graduate Students
4 exams	40%
Problems	25%
Assignments	25%
Grad Paper/lecture	10%
Total	100%

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