

IBS 603: CELL BIOLOGY & SIGNALING I

<i>Faculty</i>	<i>Dept.</i>	<i>Office</i>	<i>Phone</i>	<i>Email</i>
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A. COURSE DESCRIPTION

IBS 603 Cell Biology, a 3-credit hour fall semester course, will consist of lectures relating to cell types and architecture, membrane structure, cytoskeleton I & II, mitochondria, cellular mechanisms of development, cell division, cell cycle, apoptosis, necrosis and cancer as well as other topics. This course involves a series of approximately 4-5 lectures followed by a discussion session/journal club. This class period will entail discussion of 1-2 questions that will be assigned by course faculty prior to the class. Questions will be graded and returned to the students. During the discussion session, students will be asked to present their answers to the questions. Exams will occur after approximately 8-9 lectures.

B. COURSE OBJECTIVES

To provide students with a detailed understanding of cell structure and function, cell cycle, cell transformation and cell death.

C. CLASS ATTENDANCE

It should be noted that class attendance is required! A sign-up sheet will be issued at every class session. **Students must sign their own name, to prove attendance.** Attendance will not be considered for grading (See F).

D. TEXT AND COURSE MATERIALS

Faculty will provide lecture outlines and notes for the lectures. These will be provided in the course CD and on Blackboard (see <https://elearning.uky.edu/>). Students are encouraged to check the IBS Blackboard website on a daily basis for course information.

Molecular Biology of the Cell, 4th Edition, Alberts et al. will be the reference text book for IBS 603. Faculty assign chapters from Alberts et al. for each lecture, but additional literature will be assigned as needed.

E. PREREQUISITES

CHE 105 and 107, General College Chemistry I and II;
 CHE 230 and 232, Organic Chemistry I and II
 BIO 150 and 152, Principles of Biology I and II
 Or equivalents.

F. GRADING

Students will be evaluated on the basis of the four written examinations. Each examination will last approximately two hours and will account for **20%** of the total grade. In addition, questions handed in during the Discussion Session class periods will be graded and will account for **20%** of the total grade.

The grading standards employed are as follows. Students who perform in these ranges will be guaranteed to receive the indicated grades below.

A:	90-100%
B:	80-89%
C:	70-79%
D:	60-69%
E:	below 60%

Depending on the performance of the class as a whole, some adjustments (curving) may take place on the final cumulative semester grade. For example, median score = B, + 1 SD = A, - 1 SD = C) (not a rule).

Examinations can be submitted for a re-evaluation if it is deemed that a mistake has been made in the original grading. Resubmissions must be accompanied by a written explanation of the perceived mistake. Upon resubmission, the entire examination will be subject to re-evaluation and all questions therein will be regraded. Examinations for regrade must be submitted to the course director, only, within one week (7 days).

Graduate students will not receive a grade of "D" but instead will receive a failing mark for an average under 70%. All examinations must be taken at the scheduled time except when legitimate medical or personal reasons make it impossible to do so. Prior notification of your absence to the course director is required. In these cases, either an oral or written make-up examination will be given. An "I" grade will not be assigned to students who simply miss an examination.

G. UNDERGRADUATE ENROLLMENT

Undergraduate students may enroll in the course with the permission of the course director and the Graduate School.

H. OFFICE HOURS

The course director and faculty will be available for consultation. Students are encouraged to consult with all participating faculty.

I. DAY, DATES, TIMES

IBS 603 meets Monday, Wednesday, Friday, 9:00-9:50 a.m. in HSLC115 (Nursing 115), unless otherwise noted. Exam times during the semester are 6:00-8:00 p.m. Please refer to the **Room** listing for the correct classroom for each lecture and each exam.

J. TOPIC

Readings refer to the chapter numbers from *Molecular Biology of the Cell* (Alberts et al., 4th edition) that are suggested reading for the course. Handouts will also be distributed as required reading.

IBS 603 – Cell Biology

Day	Date	Room	Lecture Topic	Readings	Instructor	Dept.
Wed.	24-Aug	HS115	Introduction to IBS 603	Handout of Syllabus/Demo. on Blackboard	Gerhardt	ANA
Fri.	26	HS115	Cell types/Architecture I	No Readings	Steiner	MI
Mon.	29	HS115	Cell types II	Chapter 1	Geddes	ANA
Wed.	31	HS115	Nucleic Acids/DNA Structure	On powerpoint slide	Moncman	BCH
Fri.	2-Sept.	HS115	Ribosomes	On powerpoint slide	Moncman	BCH
Mon.	5		<i>Labor Day</i>			
Wed.	7	HS115	Nucleus I (structure)	On powerpoint slide	Moncman	BCH
Fri.	9	HS115	Nucleus II (transport)	On powerpoint slide	Moncman	BCH
Mon.	12	HS115	Discussion/Journal Club 1		Moncman	BCH
Wed.	14	HS115	Membrane Structure	Ch. 10 (exclude pp. 602-606), only p. 615625 ch.11	Steiner	MI
Fri.	16	HS115	Plasma membrane compartments	Ch. 10 (exclude pp. 602-606), only p. 615625 ch.11	Steiner	MI
Mon.	19	HS115	Discussion/Journal Club 2		Steiner	MI
Wed.	21	HS115	Mitochondria I	Pgs. 678-689 & 767-829	Kilgore	PHAR
Thur.	22	HS115	Exam 1 6-8pm			
Fri.	23	HS115	Mitochondria II	Pgs. 678-689 & 767-829	Kilgore	PHAR
Mon.	26	HS115	Peroxisomes	Pgs. 678-689 & 767-829	Kilgore	PHAR
Wed.	28	HS115	Discussion/Journal Club 3		Kilgore	PHAR
Fri.	30	HS115	Endoplasmic Reticulum I (translation)	Ch.12 pgs. 689-700	Andres	BCH
Mon.	3-Oct.	HS115	ERII (post-translational modifications)	Ch.12 pgs. 689-700	Andres	BCH
Wed.	5	HS115	Golgi complex	Ch. 13 pgs. 711-765	Andres	BCH
Fri.	7	HS115	Transport Vesicles (targeting/formation)	Ch. 13 pgs. 711-765	Andres	BCH
Mon.	10	HS115	Discussion/Journal Club 4		Andres	BCH
Wed.	12	HS115	Pathways of endocytosis	Chapter 13	G.Gerhardt	ANA
Fri.	14	HS115	Mechanisms of endocytosis	Chapter 13	G.Gerhardt	ANA
Mon.	17	HS115	Discussion/Journal Club 5		G.Gerhardt	ANA
Tues.	18	HS115	Exam 2 6-8pm			
Wed.	19	HS115	Necrosis	No assigned readings	Estus	Physiology
Fri.	21	HS115	Apoptosis and capase regulation I	No assigned Readings	Estus	Physiology
Mon.	24	HS115	Apoptosis and capase regulation II	No Assigned Readings	Estus	Physiology
Wed.	26	HS115	Cytoskeleton I: intermediate filaments	Chapter 16	Geddes	ANA

Fri.	28	HS115	Cytoskeleton II:tubulin	Chapter 16	Geddes	ANA
Mon.	31	HS115	Cytoskeleton III: actin	Chapter 16	Geddes	ANA
Wed.	2-Nov	HS115	Contractile function; actin/myosin	Chapter 16	Geddes	ANA
Fri.	4	HS115	Discussion/Journal Club 7		Geddes	ANA
Mon.	7	HS115	Extracellular matrix/adhesion I	Ch. 19 pp. 1065-1078 & 1080-1118	Steiner	MI
Wed.	9	HS115	Extracellular matrix/adhesion II	Ch. 19 pp. 1065-1078 & 1080-1118	Steiner	MI
Fri.	11	HS115	Discussion/Journal Club 8		Steiner	MI
Mon.	14	MN263	Exam 3 6-8pm			
Wed.	16	HS115	Cellular mechanisms of development I	Ch. 21 1157-1158 1161-1170 1177-1196 1227-1242	Hauser	ANA
Fri.	18	HS115	Cellular mechanisms of development II	Ch. 21 1157-1158 1161-1170 1177-1196 1227-1242	Hauser	ANA
Mon.	21	HS115	Discussion/Journal Club 9		Hauser	ANA
Wed.	23	HS115	Cell Cycle I	Pgs. 983-1006	Snow	MI
Thur.	24-25		<i>Thanksgiving Break</i>			
Mon.	28	HS115	Cell Cycle II	Pgs. 983-1006	Snow	MI
Wed.	30	HS115	Cell Division	Pgs. 983-1006	Snow	MI
Fri.	2	HS115	Discussion/Journal Club 10		Snow	MI
Mon.	5	HS115	Cancer – Transformation I	Chapter 23	Kyprianou	Urology
Wed.	7	HS115	Cancer – Transformation II	Chapter 23	Kyprianou	Urology
Fri.	9	HS115	Discussion/Journal Club 6		Kyprianou	Urology
Thur.	15-Dec.	HS115	Exam 4 10:30 AM – 12:30PM			