Syllabus
Cellular Mechanisms and Integrated Systems II
IBGS 512
Winter Quarter 2013

Course: IBGS 512
M-Th 2:00 – 3:50pm
Mortensen Hall Amphitheater

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Textbooks:

Alberts, Johnson, Lewis, Raff, Roberts and Walter. Molecular Biology of the Cell, 5th Edition, 2002. Garland Science, Taylor and Francis Group. ISBN 978-0-8153-4105-5

Kalthoff. Analysis of Biological Development. 2nd Edition, 2001. McGraw-Hill Higher Education. ISBN 0071180788 (out of print; can get used through amazon.com)

Gilbert. Developmental Biology, 8th Edition, 2006. Sinauer Associates, Inc. ISBN: 087893250X (recommended, not required)

Griffin and Ojeda. Textbook of Endocrine Physiology, 5th Edition, 2004. Oxford University Press. ISBN 0-1951-6566-7

Important Dates

January 7 -	First day of class
January 28 -	Examination 1
February 13 -	Examination 2
February 15 -	Family Day/Journal Club **(9-11 am)**
March 7 -	Examination 3
March 21-	Examination 4

Prerequisites

Undergraduate level biology, inorganic chemistry, organic chemistry and general physics. Upper division course work in chemistry and/or biology, such as biochemistry and cell biology, is highly recommended.

Objectives:

This course aims to provide graduate students with an integrated understanding of the experimental foundations and current state of modern biomedical science using lectures, literature-based discussions, and problem-solving approaches. The content during winter quarter will focus on cell biology, general anatomy, developmental biology and endocrinology.

Educational Effectiveness:

Educational success will be assessed by grades earned in examinations, which will measure content mastery as well as problem-solving, data analysis and communication skills.

Recommended Class Preparation:

Readings from the textbooks or other materials will be assigned for each class, and students will be held responsible for the assigned material before attending clas

Tests and Grading:

Four tests are scheduled: **Test 1 (January 28)**, **Test 2 (February 13)**, **Test 3 (March 7) and Test 4 (March 21).** Each examination will contain in-class questions. The in-class examination will be two hours long. Tests will consist of essay/problem solving-type questions.

The grades for each test will be worth **25%** of the final grade. A final weighted average of greater than 70% for the exams will guarantee the student a grade of "B" or better. The course director reserves the right to give higher grades.

Make-up or Missed Exams:

If a test cannot be taken when scheduled due to special circumstances, permission must be obtained from the course director prior to that date. Accommodations for sudden illnesses or other unforeseeable events that precluded obtaining prior permission must be presented to the course director with written documentation such as a doctor's note. **If a test is missed without obtaining prior permission, a grade of "0" will be assigned.**

Lifelong Learning:

This course, a requirement for Ph. D. degrees in Anatomy, Biochemistry, Microbiology, Pharmacology and Physiology and MS degrees in Biochemistry, Microbiology, Pharmacology and Physiology, is intended to serve as a gateway into professions based on basic and applied biomedical sciences. Such professions will require continual learning. Some professional organizations that may be of interest include the American Chemical Society, the American Association for the Advancement of Science, the American Association for Cancer Research, the American Society for Microbiology, The American Physiological Society, the American Society for Biochemistry and Molecular Biology, the American Society for Pharmacology and Experimental Therapeutics, the Society for Developmental Biology, the American Association of Anatomists, and Sigma Xi. A wide variety of scientific publications, most accessible through PubMed (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed), are also important tools for maintaining professional currency.

Academic Integrity:

The scientific enterprise is highly dependent on the integrity and reliability of each of its components. Therefore, understanding and practicing scientific and academic integrity is essential for students at each phase of their education. Acts of dishonesty including theft, plagiarism, giving or obtaining information in examinations or other academic exercises, or knowingly giving false information are unacceptable. With regards to this class, examinations are the responsibility of each individual student, and by turning in such an examination, the student is representing that piece of work as having been completed by

himself or herself. If other sources are used for the take-home questions, they must be clearly identified by accepted referencing practices. **Substantiated violations will generally result in a score of zero for the affected examination, and may also result in a failing grade for the entire course. Violations may also be taken to the dean for further disciplinary action. Such action may include, but is not limited to, academic probation or dismissal from the program.** To view the Standards of Academic Conduct Policy please visit: http://www.llu.edu/llu/handbook/6r.htm.

Attendance Policy:

Attendance is strongly recommended, and is especially critical for those elements of class in which dialog and participation are integral. Students will be responsible for all material covered in the lectures as well as any reading material assigned. It is the responsibility of students to be aware of any announcements that may be made in class as well as to obtain any handouts that are distributed during class.

Student Learning Outcomes

Student learning outcomes have been developed at both the University and Program levels. IBGS 512 addresses several of these outcomes, particularly uSLOs #3 (Critical Thinking) and #5 (Communication), and pSLO # 1 (Broad Knowledge).

University Student Learning Outcomes

1. Students understand and apply the University philosophy of wholeness into their personal and professional lives.
2. Students understand the importance of integrating LLU's Christ-centered values in their personal and professional lives.
3. Students demonstrate critical thinking.
4. Students develop a commitment to discovery and life-long learning.
5. Students demonstrate effective communication skills in English.
6. Students demonstrate effective use of technology appropriate to the discipline.
7. Students understand the importance of embracing and serving a diverse world.
8. Students demonstrate the importance of collaborating with others within and across disciplines.

Program Student Learning Outcomes

1. Students will demonstrate a broad knowledge of the biomedical sciences.
2. Students will demonstrate subject mastery in molecular, cellular and integrative aspects of their chosen discipline.
3. Students will interpret the current literature in their chosen discipline.
4. Students will make original contributions to the body of biomedical knowledge.
5. Students will demonstrate an understanding of the principles of scientific and professional ethics.
6. Students will understand the process of applying for external funding.

Americans with Disabilities Act (ADA) Policy:

If you are an individual with a certifiable disability and need to make a request for reasonable accommodation to fully participate in this class, please visit the Dean's Office of the School of Medicine. To view the Disability Accommodation Policy please go to: http://www.llu.edu/llu/handbook/6e.htm. **Students with learning difficulties requesting modifications to the standard testing outlined in this syllabus must submit written approval for the requested accommodations to the course director a minimum of 1 week prior to the first examination.**

Protected Health Information:

The purpose of the Protected Health Information (PHI) policy is to provide guidance and establish clear expectations for students regarding the appropriate access to and use of PHI during course studies and related program activities. Under the Health Insurance Portability and Accountability Act (HIPAA), patient health information is protected. For further information, please go to: http://www.llu.edu/llu/students/documents/phi-guidelines.pdf.

Flexibility:

The course syllabus provides a general plan for the course; deviations may be necessary. If it becomes necessary to alter the dates for the exams or the material covered in these exams, the changes will be announced in class as early as possible. The course director is the final arbiter and reserves the right to make the final decision when situations not described in this syllabus arise. Students are strongly advised to contact the course director for clarification before unusual circumstances occur.

IBGS 512 Lecture Schedule
Winter 2013

Date	Day	Lecture Title	Lecturer
		Structure and Compartments	
1/7/2013	Monday	Lipid Aggregates and Membrane Fusion	Hessinger
1/8/2013	Tuesday	Cytoskeleton – Actin and Cell Motility; Molecular Motors, Intermediate Filaments, Microtubules	Wright
		Signaling	
1/9/2013	Wednesday	Calcium Signaling	Buchholz
1/10/2013	Thursday	Ion Channels and Membrane Electrical Properties	Hessinger
1/14/2013	Monday	Cell Communication and Signaling in Prokaryotes	Johnson
1/15/2013	Tuesday	Cell Communication and Signaling in Eukaryotes	Wilcox
1/16/2013	Wednesday	Cell-Cell Interactions – Junctions	Hessinger
1/17/2013	Thursday	Cell-Cell Interactions – Fertilization	Hessinger
1/21/2013	Monday	NO CLASS-Martin Luther King Jr. Day	
		Cell Division	
1/22/2013	Tuesday	Cell Cycle I	Soto
1/23/2013	Wednesday	Cell Cycle II	Soto
1/24/2013	Thursday	Prepare for examination	
1/28/2013	Monday	**Examination I**	
		Cell Death	
1/29/2013	Tuesday	Apoptosis – Overview and Pathways, Detection Methods	Casiano
1/30/2013	Wednesday	Apoptosis – Control, Cancer and Survival Pathways	Casiano
1/31/2013	Thursday	Apoptosis/Cell Cycle – Drug Development I	Wall
2/4/2013	Monday	Apoptosis/Cell Cycle – Drug Development II	Brantley
		Immunology, Viruses and Microbes	
2/5/2013	Tuesday	Immunology I & II	D-Hughes
2/6/2013	Wednesday	Immunology of Disease: Bacteria/Host Interactions	H Fletcher
2/7/2013	Thursday	Immunology and Assays: A Nobel Application	Khan
2/11/2013	Monday	Immunology of Disease: Virus/Host Interactions	Watts
2/12/2013	Tuesday	Prepare for examination	
2/13/2013	Wednesday	**Examination 2**	

Anatomy

2/14/2013	Thursday	Digestive and Reproductive Systems	Escobar-Poni
2/18/2013	Monday	NO CLASS-President's Day	
2/19/2013	Tuesday	Musculoskeletal System	Wright
2/20/2013	Wednesday	Respiratory and Cardiovascular Systems	Nava
2/21/2013	Thursday	Hematopoietic System	Payne

Endocrinology

2/25/2013	Monday	Adrenal Endocrinology	Ducsay
2/26/2013	Tuesday	Organization of the Endocrine System/Neuro-Endocrine Boundaries	Tang
2/27/2013	Wednesday	Endocrine Regulation of Fertility: Differentiation, Maturation and Growth, Male Reproduction	Yellon
2/28/2013	Thursday	Endocrine Regulation of Fertility: Female Reproduction, Implantation, Pregnancy	Yellon/Ducsay
3/4/2013	Monday	Growth Hormone and IGFs/Thyroid	Tang
3/5/2013	Tuesday	Pancreas/Control of Blood Glucose	Tang
3/6/2013	Wednesday	Prepare for examination	
3/7/2013	Thursday	**Examination III**	

Development

3/11/2013	Monday	Introduction and Molecular Basis	Oberg
3/12/2013	Tuesday	Gametogenesis and Fertilization	Oberg
3/13/2013	Wednesday	Axis Formation and Gastrulation	Oberg
3/14/2013	Thursday	Organogenesis: Ecto/neuroectoderm	Oberg
3/18/2013	Monday	Organogenesis: Meso/Endoderm	Oberg
3/19/2013	Tuesday	Cell Differentiation and Patterning	Oberg
3/20/2013	Wednesday	Sex Determination, Regeneration & Oncogenesis	Oberg
3/21/2013	Thursday	**Examination IV**	