College of Medicine
University of Cincinnati

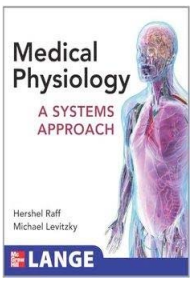
HUMAN PHYSIOLOGY 2013-14 (13FS)
Course MCP6000 (4 Graduate Credits)

COURSE DIRECTOR:
Yana Zavros, Ph.D.
yana.zavros@uc.edu
MSB 4255 (558-2421)

M/W/F 11:30am-12:25pm
TH 3:45-4:30pm

LOCATION – *See Below by Date*

COURSE DESCRIPTION



A single-semester course designed for all Graduate Students in the Medical Sciences. Also appropriate for advanced undergraduate students. The course will provide students with an understanding of the function, regulation and integration of human body organ systems. Emphasis will be placed on homeostatic maintenance in health as well as in some disease processes. Course content will include introductory cell physiology and all major organ systems. The course will be textbook based and taught by experts in each organ system.

REQUIRED TEXT BOOK: Medical Physiology: A Systems Approach (Lange Medical Books), Hershel Raff, Michael Levitzky

The successful student will be able to:

1. Explain the concept of homeostasis.
2. Identify the structure and transport functions of cell membrane including diffusion of water and solutes, carrier-mediated active transport systems, ion pumps and channels, origin of membrane potential and the basis of membrane excitability.
3. Explain the structure and functional organization of the human nervous system and its subdivisions
4. Develop a comprehensive understanding of cardiovascular physiology will include an appreciation of the muscular nature of the heart as a fluid pump, as well as the blood vessels as elements for flow and exchange
5. Describe the basic anatomy and functions of the pulmonary system
6. Know the role of kidney physiology in blood pressure, electrolyte, and fluid homeostasis.
7. Know the fundamentals of gastrointestinal development, physiology and pathophysiology.
8. Know the physiological relationships between endocrine organs, distributed endocrine tissues, and their target tissues.

DATE 2013	DAY	TIME	LOCATION	CORE LECTURES	PROFESSOR
8/26	M	11:30am-12:25pm	MSB e351	**CELL PHYSIOLOGY** Overview: General Physiological Processes (Ch 1), Cells and Cellular Processes (Ch 2), Cell Membranes and Transport Processes (Ch 3)	Heiny
8/28	W	11:30am-12:25pm	MSB 3051	Cell Membranes and Transport Processes, continued	Heiny
8/29	TH	3:35-4:30pm	MSB 3351	Channels and the Control of Membrane Potential (Ch 4)	Heiny
8/30	F	11:30am-12:25pm	MSB e351	Action Potentials (Ch 6)	Heiny
9/2	**M**	**----**	**----**	**LABOR DAY HOLIDAY**	
9/4	W	11:30am-12:25pm	MSB 3051	Sensory Generator Potentials (Ch 5), Synapses (Ch 7)	Heiny
9/5	TH	3:45-4:30pm	MSB 3351	**MUSCLE PHYSIOLOGY** Overview of Muscle Function (Ch 8), Skeletal Muscle Structure Function (Ch 9)	Heiny
9/6	F	11:30am-12:25pm	MSB e351	Skeletal Muscle Mechanics, Force-Length	Heiny

				and Velocity, Crossbridge Cycle, Exercise	
9/9	M	11:30am-12:25pm	MSB e351	Cardiac Muscle (Ch 10), Excitation-Contraction Coupling in Cardiac & Skeletal Muscle	Heiny
9/11	W	11:30am-12:25pm	MSB 3051	Smooth Muscle (Ch 11)	Paul
9/12	TH	3:45-4:30pm	MSB 3351	**NEURAL PHYSIOLOGY** Introduction to the Nervous System	MacLennan
9/13	F	11:30am-12:25pm	MSB e351	General Sensory Systems	MacLennan
9/16	M	11:30am-12:25pm	MSB e351	Special Senses – Vision	MacLennan
9/18	W	11:30am-12:25pm	MSB 3051	Special Senses – Hearing	MacLennan
9/19	TH	3:45-4:30pm	MSB 3351	Control of Posture and Movement	MacLennan
9/20	F	11:30am-12:25pm	MSB 3351	Autonomic Nervous System	MacLennan
9/23	M	11:30am-12:25pm	MSB e351	Higher Brain Functions I: Electrical Activity of the Brain, Sleep-Wake States, and Circadian Rhythms	MacLennan
9/25	W	11:30am-12:25pm	MSB 3051	Higher Brain Functions II: Learning, Memory, Language and Speech	MacLennan
9/26	**TH**	**2:35-5:35pm**	**MSB 5051**	**EXAM 1**	
9/27	F	11:30am-12:25pm	MSB 4051	**CARDIOVASCULAR PHYSIOLOGY** Overview of the Cardiovascular System and Cardiac Muscle Cells	Lorenz
9/30	M	11:30am-12:25pm	MSB e351	The Heart Pump	Lorenz
10/2	W	11:30am-12:25pm	MSB 3051	Cardiac Function Assessments	Lorenz
10/3	TH	3:45-4:30pm	MSB 3351	Peripheral Vascular System	Lorenz
10/4	F	11:30am-12:25pm	MSB e351	Vascular Control	Lorenz
10/7	**M**	**----**	**----**	**FALL READING DAYS**	
10/9	W	11:30am-12:25pm	MSB 3051	Venous Return and Cardiac Output	Lorenz
10/10	TH	3:45-4:30pm	MSB 3351	Arterial Pressure Regulation	Lorenz
10/11	F	11:30am-12:25pm	MSB e351	**PULMONARY PHYSIOLOGY** Lecture 1: Pulmonary Ventilation	Lorenz
10/14	M	11:30am-12:25pm	MSB 4051	Lecture 2: Mechanics of Breathing 1	Lorenz
10/16	W	11:30am-12:25pm	MSB 3051	Lecture 3: Mechanics of Breathing 2	Lorenz
10/17	TH	3:45-4:30pm	MSB 3351	Lecture 4: Gas Exchange – Diffusion	Lorenz
10/18	F	11:30am-12:25pm	Kettering G26	Lecture 5: Transport of O2 and CO2	Lorenz
10/21	M	11:30am-12:25pm	MSB 3351	Lecture 6: Ventilation/Perfusion Mismatch	Lorenz
10/23	W	11:30am-12:25pm	MSB 3051	Lecture 7: Regulation of Respiration	Lorenz
10/24	TH	3:45-4:30pm	MSB 5051	**RENAL PHYSIOLOGY** Renal 1: Introduction & Glomerular Filtration	Worrell
10/25	F	11:30am-12:25pm	MSB 4051	Renal 2: Tubular Transport & Renal Clearance	Worrell
10/28	M	11:30am-12:25pm	MSB e351	Renal 3: Na^+ Balance	Worrell
10/30	W	11:30am-12:25pm	MSB 3051	Renal 4: Regulation of Na+ and Water Balance	Worrell
10/31	TH	3:45-4:30pm	MSB 3351	Renal 5: K^+ & Ca^{++} / Phosphate Balance & Regulation, Calcium & Phosphate	Worrell

11/1	F	11:30am-12:25pm	MSB 2351	Renal 6: H^+ Balance, Acid/Base Regulation	Worrell
11/4	**M**	**11:30am-2:30pm**	**Kettering G26**	**EXAM 2**	
11/6	W	11:30am-12:25pm	MSB 3051	**GASTROINTESTINAL PHYSIOLOGY** GI System Overview	Zavros
11/7	TH	3:45-4:30pm	MSB 3351	Gastric Secretion	Zavros
11/8	F	11:30am-12:25pm	MSB e351	Pancreatic and Salivary Secretion	Zavros
11/11	**M**	**----**	**----**	**VETERANS DAY HOLIDAY**	
11/13	W	11:30am-12:25pm	MSB 3051	Intestine and Water and Electrolyte Absorption	Zavros
11/14	TH	3:45-4:30pm	MSB 3351	Digestion and Absorption of Carbohydrates and Proteins	Zavros
11/15	F	11:30am-12:25pm	MSB e351	Intestinal Motility	Zavros
11/18	M	11:30am-12:25pm	MSB e351	Liver and Gallbladder	Zavros
11/20	W	11:30am-12:25pm	MSB 3051	**ENDOCRINOLOGY/REPRODUCTION** Organization of the Hormonal Systems	Horseman
11/21	TH	3:45-4:30pm	MSB 5051	The Hypothalamus-Pituitary System	Horseman
11/22	F	11:30am-12:25pm	MSB 4051	The Endocrine Pancreas and Metabolism	Horseman
11/25	M	11:30am-12:25pm	MSB e351	The Adrenal and Thyroid Glands	Horseman
11/27	W	11:30am-12:25pm	MSB 3051	Calcium Homeostasis	Horseman
11/28	**TH**	**----**	**----**	**THANKSGIVING HOLIDAY**	
11/29	**F**	**----**	**----**	**THANKSGIVING HOLIDAY**	
12/2	M	11:30am-12:25pm	MSB e351	Male Reproductive Physiology	Horseman
12/4	W	11:30am-12:25pm	MSB 3051	Female Reproductive Physiology 1	Horseman
12/5	TH	3:45-4:30pm	MSB 5051	Female Reproductive Physiology 2	Horseman
12/6	**F**	**11:30am-2:30pm**	**MSB e351**	**EXAM 3**	

GRADING POLICY
Three exams: each is worth 25% of total grade (75% combined of total grade)

5 Assignments: each is worth 5% of total grade (25% combined of total grade)

1) Cell and Muscle Physiology
2) Neural Physiology
3) Cardiovascular Physiology
4) Renal Physiology
5) Gastrointestinal Physiology and Endocrinology

The course final grade will be an average of these grades. The final letter grade will be awarded based on the following table.

Percentage	***Letter Grade Awarded***
89.50% to 100**	A
84.5% to 89.499%**	A^-
81.5% to 84.499%**	B^+
76.5% to 81.499%**	B
73.5% to76.499%**	B^-
69.5% to 73.499%**	C^+
66.5% to 69.499%**	C
Below 66.5%***	F