

Advanced Cardiac Physiology & Anatomy (PHSL 5510)

January 5-9, 2009
8:00 AM to 6:00 PM

Lecture Schedule & Syllabus

Topic	Instructor	Time
Day 1: Monday, January 5th		
Welcome	Wangensteen	7:45 AM
Course Introduction/General Review of the Cardiovascular System	Iaizzo	8:00 AM
Cardiac Myocytes	Barnett	9:00 AM
The Conduction System of the Heart	Iaizzo	10:00 AM
12-Lead ECG (Demonstration)	Sigg	11:00 AM
<i>LUNCH (provided)</i>		12-1 PM
<i>Optional Lab—Biopac</i>	Bateman Rolfes	12:30 PM
The Microcirculation I: The Physical Limits of O ₂ Supply and the Krogh Cylinder Model	Levitt	1:30 PM
Thoracic Surface Anatomy, Subclavian Region, and Great Vessels	Weinhaus	2:30 PM
Gross Anatomy Lab 1: Thoracic Surface Anatomy, Subclavian Region, and Great Vessels	Weinhaus	3:00 PM
Day 2: Tuesday, January 6th		
The Microcirculation II: 1) Physiological Implications of Krogh Model: Exercise and Local Control of Blood Flow and 2) Capillary Permeability	Levitt	8:00 AM
The Heart as a Pump—Mechanical Aspects of Cardiac Performance	Wangensteen	9:00 AM
Coronary System and Disease	Katz	10:00 AM
Cardiac Development	Martinsen	11:00 AM
<i>LUNCH (provided)</i>		12-1 PM
The University of Minnesota: Open-Heart Surgery and Biomedical Devices	Iaizzo	12:30 PM
Autonomic Nervous System and Cardiac Function	Osborn	1:00 PM
Blood Pressure, Heart Tones and Diagnoses	Bojanov	2:00 PM
Surface Anatomy of the Heart and Lungs	Weinhaus	3:00 PM
Gross Anatomy Lab 2: Lungs, Great Vessels and Coronary Vessels	Weinhaus	3:30 PM
Reception sponsored by the Institute for Engineering in Medicine and the Lillehei Heart Institute, University of Minnesota		6:30 PM
Keynote Presentation: “Designing Bio-sensors for Repair of Failing Hearts,” Joseph Metzger, PhD, Department Head of Integrative Biology and Physiology, University of Minnesota		7:00 PM

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Topic	Instructor	Time
Day 3: Wednesday, January 7th		
Large Mammalian Comparative Cardiac Anatomy	Hill	8:00 AM
Cardiac Receptors and Signal Transduction	Sigg	9:00 AM
Energy Metabolism in the Normal and Abnormal Heart	From	10:00 AM
Angiotensin System and Cardiac Function	Katz	11:00 AM
<i>LUNCH (provided)</i>		12-1 PM
Introduction to Echocardiography	Lohr	1:00 PM
Evaluation of Cardiac Function in the Intensive Care Unit	Birch	2:00 PM
Internal Anatomy of the Heart and Posterior Mediastinum	Weinhaus	3:00 PM
Gross Anatomy Lab 3: Internal Anatomy of the Heart and Posterior Mediastinum	Weinhaus	3:30 PM
Day 4: Thursday, January 8th		
Harnessing Cardiopulmonary Interactions for the Treatment of Life-threatening Hypotension and Cardiac Arrest	Lurie	8:00 AM
Pre-clinical Assessment of New or Modified Heart Valves	Bianco	9:00 AM
Minimally Invasive Cardiac Surgery: Operating Inside the Box	Liao	10:00 AM
Anesthesia for Cardiac Patients	Loushin	11:00 AM
<i>LUNCH (provided)</i>		12-1 PM
Pacing and Defibrillation	Laske	1:00 PM
Valvular Heart Disease	John	2:00 PM
Anatomy: Review and Questions	Weinhaus	3:00 PM
Gross Anatomy Lab 4: Clinical Aspects and Anatomy Review	Weinhaus	3:30 PM
<i>Small Group Demos: In vitro swine, fresh cadaver (B172 Mayo)</i>	Iaizzo	3:30 PM
Day 5: Friday, January 9th		
The Visible Heart®: Functional Cardiac Anatomy	Iaizzo	8:00 AM
3-D Electrophysiologic Cardiac Mapping	Quill	9:00 AM
Patent Ductus Arteriosus, Device Evolution	Bass	10:00 AM
Cardiac Resynchronization Therapy	Boyle	11:00 AM
<i>LUNCH (provided)</i>		12-1 PM
Ventricular Assist Devices (VADs)	St. Louis	1:00 PM
Ablation	Lu	2:00 PM
Coronary Stents	Raveendran	3:00 PM
Gross Anatomy Lab: Finish Dissections and “Grand Rounds”	Weinhaus	4:00 PM

Course Grading

- **0 Credits:** Students registered for 0 credits DO NOT take a final exam or complete a research project. Attendance, however, is mandatory.
- **2 Credits:** Students registered for 2 credits are required to complete one take-home exam (**Due: Friday, March 6, 2009**). The score on that exam along with individual participation in the labs and lectures will be used to determine the final grade. This course can be taken for either a letter grade (A-F) or as pass/fail (S/N). A satisfactory (S) grade will be equivalent to a grade of C or better.
- **3 Credits:** Students registered for 3 credits are required to complete one take-home exam (see above). In addition, students must satisfactorily complete a research project, which includes a summary report or research paper, and pay an additional fee for the credit. The grade on the project will contribute to 25% of the total grade. Students who do not complete their project by the due date for submitting grades will be given an incomplete until it is satisfactorily completed.