

New Course Request

Indiana University

Indianapolis Campus

Check Appropriate Boxes: Undergraduate credit Graduate credit Professional credit

1. School/Division Medicine/Graduate 2. Academic Subject Code GRAD

3. Course Number G830 (must be cleared with University Enrollment Services) 4. Instructor J. Tune, PhD

5. Course Title Advanced Cardiovascular Physiology

Recommended Abbreviation (Optional) _____
(Limited to 32 Characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2009

7. Credit Hours: Fixed at 3 or Variable from -- to --

8. Is this course to be graded S-F (only)? Yes No

9. Is variable title approval being requested? Yes No

10. Course description (not to exceed 50 words) for Bulletin publication: Advanced (3cr hr) study of the cardiovascular system using contemporary methods is emphasized. Concepts of cardiovascular structure, function, hemodynamics, excitation-contraction coupling, signal transduction and electrophysiology are reinforced. The format of the course will include faculty lectures and facilitated interactive student discussion.

11. Lecture Contact Hours: Fixed at 39 or Variable from _____ to _____

12. Non-Lecture Contact Hours: Fixed at 9 or Variable from _____ to _____

13. Estimated enrollment: 5 of which 100 percent are expected to be graduate students.

14. Frequency of scheduling: Bi-annually Will this course be required for majors? No

15. Justification for new course: An elective module in the curriculum of new TBMG PROGRAM

16. Are the necessary reading materials currently available in the appropriate library? Yes

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:
Michael Storch Date 6/1/09
Department Chairman/Division Director

Approved by:
A.J. Rhodes Date 6/1/09
Dean

Date _____
Dean of Graduate School (when required)

Date _____
Chancellor/Vice-President

Date _____
University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

I. HEADER**Advanced Cardiovascular Physiology**

Course Number: G830

Course Director: Johnathan Tune

Prerequisites: Cardiovascular, Renal and Respiratory Function (G735) or consent of instructor.

II. COURSE DESCRIPTION AND RATIONALE

Advanced (3 credit hour) study of the physiology, pharmacology, and pathophysiology of the cardiovascular system using contemporary methods is emphasized. Concepts of cardiovascular structure, function, hemodynamics, excitation-contraction coupling, signal transduction and electrophysiology are reinforced. The format of the course will include faculty lectures and facilitated interactive student discussion (3 hours/week).

III. EDUCATIONAL OBJECTIVES

At the completion of this course the students will:

1. Understand basic structure, energetics and functional mechanics of cardiac muscle.
2. Understand cardiac signaling and cytoskeletal regulation.
3. Outline mechanisms of cardiac excitation-contraction coupling.
4. Understand cardiac energy utilization and regulation of contractile performance.
5. Understand cardiac electrophysiology, electrocardiogram and arrhythmias.
6. Understand integrative regulation of coronary blood flow.
7. Understand hemodynamics and the cardiovascular effects of exercise.
8. Understand the mechanisms of coronary artery disease and cardiac ischemia.
9. Understand the mechanisms of collateral growth and angiogenesis.
10. Understand the pathophysiologic mechanisms of heart failure.

IV. COURSE CONTENT

WEEK	SUBJECT	READING	FACULTY
1	Structure and energetics of cardiac muscle	Katz: Chapters 1-2	Tune
2	Contractile proteins and cytoskeleton	Katz: Chapters 4-5	Tune/Gallagher
3	Cardiac signal transduction: functional & proliferative	Katz: Chapters 8-9	Herring/Gallagher
4	Cardiac E-C coupling and performance	Katz: Chapters 7, 10	Sturek/Tune
5	Cardiac energy utilization and mechanics	Katz: Chapters 3, 6	Tune
6	Examination 1		
7	Cardiac ion channels and action potential	Katz: Chapters 13-14	Sturek
8	Cardiac electrocardiogram and arrhythmias	Katz: Chapters 15-16	Tune
9	Coronary circulation	<i>Physiol Rev</i> 88:1009-1046, 2008	Tune
10	The heart as a pump	Katz: Chapters 11-12	Tune
11	Examination 2		
12	Cardiovascular hemodynamics & exercise	TBA	Tune
13	Coronary artery disease & the ischemic heart	Katz: Chapter 17	Sturek/Tune
14	Angiogenesis/collateral growth	TBA	Unthank/Miller
15	Heart failure	Katz: Chapter 18	Tune
16	Examination 3		

V. REQUIRED AND RECOMMENDED TEXTS

The students are required to have Physiology of the Heart, 4th Edition by A. M. Katz, Lippincott Williams and Wilkins, 2006. Additional original research papers and selected review articles may be assigned by faculty.

VI. EVALUATION AND GRADING

	DESCRIPTION	WEIGHT
Discussion	Interactive discussion to demonstrate critical thinking about concepts	25%
Examinations	Score on three written exams	75%

Grading Scale:

Letter grade	Percentage
A	93-100
A-	90-92.99
B+	87-89.99
B	75-86.99
C	60-74.99
D	50-59.99
F	<50

VII. BIBLIOGRAPHY

1. Physiology of the Heart, 4th Edition by A. M. Katz, Lippincott Williams and Wilkins, 2006.
2. Duncker DJ, Bache RJ. Exercise and coronary blood flow. *Physiol. Rev.* 88:1009-1046, 2008.

VIII. CHEATING AND PLAGIARISM

Students are instructed to make themselves aware of University regulations concerning plagiarism, the maintenance of academic honesty and the definitions of unacceptable behavior and cheating. Academic misconduct of any sort will not be tolerated and will be dealt with as outlined in the ***IU/IUPUI Code of Student Rights, Responsibilities, and Conduct***, which can be viewed at:

<http://www.iupui.edu/code/>

Examples of misconduct include but are not limited to:

1. Cheating

A student must not use or attempt to use unauthorized assistance, materials, information, or study aids in any academic exercise

2. Fabrication

A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citations to the sources of information.

3. Plagiarism

A student must not adopt or reproduce ideas, words, or statements of another person without appropriate acknowledgment. A student must give credit to the originality of others and acknowledge an indebtedness whenever he or she does any of the following:

- a. Quotes another person's actual words, either oral or written
- b. Paraphrases another person's words, either oral or written
- c. Uses another person's idea, opinion, or theory; or
- d. Borrows facts, statistics, or other illustrative material, unless the information is common knowledge.

4. Interference

- a. A student must not steal, change, destroy, or impede another student's work.
- b. A student must not give or offer a bribe, promise favors, or make threats with the intention of affecting a grade or the evaluation of academic performance.

Potential consequences for academic misconduct:

If the instructor has information that one of his/her students committed an act of academic misconduct, the faculty member will hold an informal conference with the student. The conference will be prompt and private. If the faculty member concludes that the student is responsible for the misconduct, then the faculty member will impose an appropriate academic sanction (i.e., lower or failing grade on the assignment, assessing a lower or failing grade for the course).

IX. AMERICANS WITH DISABILITIES ACT:

If you need any special accommodations due to a disability, please contact Adaptive Educational Services at (317)-274-3241.