

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—PROGRAM CHANGE REQUEST

UGPC APPROVAL _____

UFS APPROVAL _____

CATALOG _____

DEPARTMENT: PHYSICS

COLLEGE: CESCOS

PROGRAM NAME:

BS PHYSICS/PROFESSIONAL SCIENCE MASTER IN MEDICAL PHYSICS (BS PHYSICS/PSMMP)
EFFECTIVE DATE

(PROVIDE TERM/YEAR)

FALL 2016

PLEASE EXPLAIN THE REQUESTED CHANGE(S) AND OFFER RATIONALE BELOW AND/OR ATTACHED:

THE PROPOSED: BS PHYSICS/PROFESSIONAL SCIENCE MASTER IN MEDICAL PHYSICS (BS PHYSICS/PSMMP) IS AN ACCELERATED PROGRAM THAT COMBINES THE 4-YEAR BS IN PHYSICS WITH THE TWO YEAR PSM IN MEDICAL PHYSICS. STUDENTS ACCEPTED IN THIS PROGRAM WILL HAVE REDUCED TIME OF STUDIES BY ONE ACADEMIC YEAR.

 Faculty contact, email and complete phone number:
 Dr. Theodora Leventouri, leventou@fau.edu
 561-297-2695

 Consult and list departments that might be affected by the change and attach comments.
 No Department will be affected by the proposed program.

Approved by:

Department Chair: _____

College Curriculum Chair: _____

College Dean: _____

UGPC Chair: _____

Graduate College Dean: _____

UFS President: _____

Provost: _____

Date:

1/19/2016

2/19/2016

2/23/2016

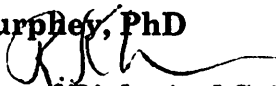
 Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.



Charles E. Schmidt College of Science
Department of Biological Sciences
777 Glades Road
Boca Raton, FL 33431
tel: 561.297-3320
fax: 561.297-2749

MEMORANDUM

TO: College Graduate Program Committee

Through: Rodney Murphey, PhD
Chair 
Department of Biological Sciences

From: David Binninger, PhD
Associate Chair
Department of Biological Sciences

DATE: February 8th, 2016

SUBJECT: Prerequisite Course Change Requests

This note constitutes acknowledgement and consent of the Department of Biological Sciences for requested changes to the prerequisites for the attached course. The entire biology faculty has vetted the requested changes to the prerequisites after discussions with those responsible for teaching the courses. These prerequisites provide a student with a realistic expectation of prior knowledge as they begin each biology course.

Phone (561) 297-3323 Email: binninge@fau.edu

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—COURSE CHANGE REQUEST¹

UGPC	APPROVAL
UFS	APPROVAL
SCNS	SUBMITTAL
CONFIRMED _____	
BANNER	POSTED
CATALOG _____	

DEPARTMENT BIOLOGICAL SCIENCES	COLLEGE SCIENCE
COURSE PREFIX AND NUMBER PCB 5245	CURRENT COURSE TITLE ADVANCED MOLECULAR GENETICS OF AGING
CHANGE(S) ARE TO BE EFFECTIVE (LIST TERM) SPRING 2017	___ TERMINATE COURSE (LIST FINAL ACTIVE TERM)
<p>CHANGE TITLE TO:</p> <p>CHANGE PREFIX FROM: TO:</p> <p>CHANGE COURSE NO. FROM: TO:</p> <p>CHANGE CREDITS² FROM: TO:</p> <p>CHANGE GRADING FROM: TO:</p> <p>CHANGE DESCRIPTION TO:</p>	<p>CHANGE PREREQUISITES/MINIMUM GRADES TO*:</p> <p>EXISTING PREREQUISITES PCB 4023 MINIMUM GRADE OF C</p> <p>NEW PREREQUISITES BSC 1010 Minimum Grade of C- or BSC 1011 Minimum Grade of C-</p> <p>CHANGE COREQUISITES TO*:</p> <p>CHANGE REGISTRATION CONTROLS TO:</p> <p>*Please list both existing and new pre/corequisites, specify AND or OR, and include minimum passing grade.</p>
<p>Faculty contact, email and complete phone number: Kailiang Jia, kjia@fau.edu, (561)799-8054</p>	<p>Attach syllabus for ANY changes to current course information.</p>
<p>Should the requested change(s) cause this course to overlap any other FAU courses, please list them here:</p>	<p>Please consult and list departments that might be affected by the change(s) and attach comments.</p>

<p>Approved by: </p>	<p>Date: <u>02.09.16</u></p>	<p>1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf</p> <p>2. Review Provost Memorandum: Definition of a Credit Hour www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf</p> <p>3. Consent from affected departments (attach if applicable)</p>
<p>Department _____ Chair: _____</p>	<p>_____</p>	
<p>College _____ Curriculum _____ Chair: _____</p>	<p>_____</p>	
<p>College Dean: _____</p>	<p>_____</p>	
<p>UGPC _____ Chair: _____</p>	<p>_____</p>	
<p>Graduate _____ College _____ Dean: _____</p>	<p>_____</p>	
<p>UFS President: _____</p>	<p>_____</p>	
<p>Provost: _____</p>	<p>_____</p>	

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting.

FAUchange—Revised July 2015

Advanced Molecular Genetics of Aging

Spring Semester, 2017

Course information

Course Title: Advanced Molecular Genetics of Aging
Course Number: PCB 5245 (3 credits)
Course Date: Jan.11 – May 6, Tuesday and Thursday, 10:00am –11:20am
Course Location: Boca Campus, Sanson Life Science Building, Rm. 119
Instructor: Kailiang Jia, M.D., Ph.D.
Associate Professor
Department of Biological Sciences
Sanson Life Science Building, Rm. 261
Email: kjia@fau.edu, Phone: (561) 297-0512
Office hours: Tuesday and Thursday, 1:00pm – 4:00pm or by appointment

Course description

This course is open to graduate students. In this course students will learn current theories of aging, molecular pathways modulating aging, major discoveries of aging in different model organisms including yeast, *C. elegans*, *Drosophila* and mouse, and in mammalian system. Additionally, students will learn how to read and criticize research articles.

Pre-requisite

BSC 1010 Minimum Grade of C- or BSC 1011 Minimum Grade of C-

Course objectives/student learning outcomes

Students are expected to: gain current knowledge and research methods of aging and learn how to design experiments to address aging-related scientific questions.

Instructional methods

Lectures, paper discussions and student presentations

Required texts/reading

Research papers and review articles, available in the Content folder at Blackboard.

Supplementary/recommended reading

Molecular Biology of Aging (2008). Edited by Leonard P. Guarente, Linda Partridge and Douglas C. Wallace. Cold Spring Harbor Laboratory Press. Cold Spring Harbor, New York

Advanced Molecular Genetics of Aging

Spring Semester, 2016

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Email: kjia@fau.edu, Phone: (561) 297-0512
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Course topical outline (subject to change depending on course needs)

- Week 1** (1) Course overview
(2) Theories of aging

Assigned reading: An integrated theory of ageing in the nematode *Caenorhabditis elegans*

- Week 2** (1) Longevity pathways in *C. elegans*

Assigned reading: The Plasticity of Aging: Insights from Long-Lived Mutants

- (2) Dietary restriction in *C. elegans* – 1

Assigned reading: The genetics of caloric restriction in *Caenorhabditis elegans*

- Week 3** (1) Dietary restriction in *C. elegans* – 2

Assigned reading: PHA-4/Foxa mediates diet-restriction induced longevity of *C. elegans*

- (2) Dietary restriction in *C. elegans* – 3

Assigned reading: (1). Life extension via dietary restriction is independent of the Ins/IGF-1 signalling pathway in *Caenorhabditis elegans* (2). Pyruvate imbalance mediates metabolic reprogramming and mimics lifespan extension by dietary restriction in *Caenorhabditis elegans*

- Week 4** (1) Dietary restriction in yeast

Assigned reading: Regulation of Yeast Replicative Life Span by TOR and Sch9 in Response to Nutrients

- (2) Dietary restriction in fly

Assigned reading: (1). Extended Life-Span Conferred by Cotransporter Gene Mutations in *Drosophila* (2). Regulation of Lifespan in *Drosophila* by Modulation of Genes in the TOR Signaling Pathway

- Week 5** (1) Dietary restriction in mouse

Assigned reading: (1). Life-Span Extension in Mice by Prewaning Food Restriction and by Methionine Restriction in Middle Age (2). Rapamycin fed late in life extends lifespan in genetically heterogeneous mice (3). Dietary restriction normalizes glucose metabolism and BDNF levels, slows disease progression, and increases survival in huntingtin mutant mice

- (2) Dietary Restriction in mammals

Assigned reading: (1). Caloric Restriction Delays Disease Onset and Mortality in Rhesus Monkeys (2). Impact of caloric restriction on health and survival in rhesus monkeys from the NIA study

- Week 6** (1) Mitochondria activity and aging - *C. elegans* (1)

Assigned reading: Mitochondrial Electron Transport Is a Key Determinant of Life Span

in *Caenorhabditis elegans*.

(2) Mitochondria activity and aging – *C. elegans* (2)

Assigned reading: (1). A mutation in succinate dehydrogenase cytochrome b causes oxidative stress and ageing in nematodes (2). Extension of Life-Span with Superoxide Dismutase/Catalase Mimetics

Week 7 (1) Mitochondria activity and aging – fly

Assigned reading: High-quality life extension by the enzyme peptide methionine sulfoxide reductase

(2) Mitochondria activity and aging – mouse

Assigned reading: Mitochondrial DNA Mutations, Oxidative Stress, and Apoptosis in Mammalian Aging

Week 8 (1) class review

(2) **Mid-term Exam**

Week 9 **Spring Break (no class)**

Week 10 (1) Discovery of the role of IGF signaling pathway in aging

Assigned reading: (1) Interacting genes in nematode dauer larva formation (2). A *C. elegans* mutant that lives twice as long as wild type (3) *daf-2*, an Insulin Receptor-Like Gene That Regulates Longevity and Diapause in *Caenorhabditis elegans*

(2) Target genes of IGF signaling in *C. elegans*

Assigned reading: (1). *daf-16* integrates developmental and environmental inputs to mediate aging in the nematode *Caenorhabditis elegans* (2). DAF-16 Target Genes That Control *C. elegans* Life-Span and Metabolism

Week 11 (1) IGF signaling in fly

Assigned reading: Extension of Life-Span by Loss of CHICO, a *Drosophila* Insulin Receptor Substrate Protein

(2) IGF signaling in mouse

Assigned reading: Extended Longevity in Mice Lacking the Insulin Receptor in Adipose Tissue

Week 12 (1) NAD-dependent deacetylase (SIRT) in yeast

Assigned reading: Requirement of NAD and SIR2 for Life-Span Extension by Calorie Restriction in *Saccharomyces cerevisiae*

(2) SIRT in *C. elegans*

Assigned reading: Increased dosage of a sir-2 gene extends lifespan in *Caenorhabditis elegans*

Week 13 (1) SIRT in fly

Assigned reading: (1). Sir2 mediates longevity in the fly through a pathway related to calorie restriction (2). Absence of effects of Sir2 overexpression on lifespan in *C. elegans* and *Drosophila*

(2) SIRT in mouse

Assigned reading: (1). The sirtuin SIRT6 regulates lifespan in male mice (2). Role of sirtuins in lifespan regulation is linked to methylation of nicotinamide.

Week 14 (1) Autophagy and aging

Assigned reading: (1). Longevity pathways converge on autophagy genes to regulate life span in *Caenorhabditis elegans* (2). ω -6 Polyunsaturated fatty acids extend life span through the activation of autophagy

(2) Telomere and aging

Assigned reading: (1). Long lifespan in worms with long telomeric DNA (2). Telomere length in early life predicts lifespan (3). Telomere length correlates with life span of dog breeds.

Week 15 (1) Aging research in humans

Assigned reading: Positional Cloning of the Werner's Syndrome Gene

(2) class review

Week 16 (1) An inter-disciplinary theory of aging

(2) Final Exam

Week 17 Final Exam Week (no class)

Assessment

Two written exams	70%
Four Quizzes	20%
Attendance	10%

Assignment of Grades

Percentage	Grade
93 – 100%	A
90 – 92%	A ⁻
87 – 89%	B ⁺
83 – 86%	B
80 – 82%	B ⁻
77 – 79%	C ⁺
73 – 76%	C
70 – 72%	C ⁻
67 – 69%	D ⁺

63 – 66%	D
60 – 62%	D
59% or less	F

Policy on absences, makeup tests, late work, and incompletes

Absences for which a medical or court excuse is provided (professional letterhead required) will be recorded but not figured in the attendance grade. Likewise, one absence for which advance notice is given by phone or in person will not be figured in the attendance grade. Any significant tardy or early departure from class will be figured as one absence. Three absences will result in grade F. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. These students will be allowed to make up missed work without any reduction in the student's final course grade.

Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

If a student cannot attend an exam or hand in a homework project on time due to circumstances beyond their control then the instructor may assign appropriate make-up work.

Classroom etiquette policy

University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions."

Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) in Boca Raton, SU 133 (561-297-3880); in Davie, MOD 1 (954-236-1222); in Jupiter, SR 117 (561-799-8585); or at the Treasure Coast, CO 128 (772-873-3305) and follow all OSD procedures.

Religious Accommodations

Students who wish to be excused from course work, class activities or examinations must notify the instructor in advance of their intention to participate in religious observation and request an excused absence.

Code of Academic Integrity Statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf