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Charles E. Schmidt College of Biomedical Science

Graduate Programs of Study:

Biomedical Science

Charles E. Schmidt College of Biomedical Science

The ninth and youngest college at Florida Atlantic University is dedicated to the education of medical students, graduate students, physicians, biomedical scientists, and other health professionals. The expert faculty of the College teach and conduct research in the biomedical sciences to provide insight into human disease with an emphasis on therapy. Diseases of aging are of particular interest because of their emerging urgency. The College currently consists of two departments: the Department of Basic Science and the Department of Clinical Science.

The College houses a medical education program in the form of the regional campus of the University of Miami Miller School of Medicine. This program currently provides the first two years of medical education to UMMSM students but is now in a transitional stage to offer a four-year program that will eventually graduate 64 students per year.

Graduate programs are offered leading to the Master of Science (M.S.) in Biomedical Science (with or without thesis) and the Ph.D. in Integrative Biology, the latter being a joint program with the Department of Biological Sciences in the Charles E. Schmidt College of Science.

Biomedical Science

Faculty:

Friedland, M. L., Dean; Azzarolo, A. M.; Blanks, J. C.; Blanks, R. H.; Bosch, B.; Brew, K.; Brickman, L.; Burns, C.; Caputi, M.; Cresanta, J.; Dorey, K.; Forstot, J. Z.; Gelb, I. J.; Guthrie, K. M.; Huang, X.; Iragavarapu-Charyulu, V.; Isgor, C.; Kantorow, M.; Lemanski, L. F.; Li, Z.; Libow, M.; Lichtstein, D. M.; Lu, M.; Markowitz, S. L.; Paull, W.; Prentice, H. M.; Rose, G. J.; Shen, W.; Shibata, Y.; Tao, R.; Warren, D. W., Emeritus; Wei, J.; Wragg, S.; Wu, J. Y.

Master of Science with Major in Biomedical Science

The Charles E. Schmidt College of Biomedical Science offers graduate programs leading to the master's degree in Biomedical Science. Students interested in pursuing advanced studies in biomedical science may obtain a degree of Master of Science (M.S.), taking either the thesis or nonthesis option. The thesis option is oriented towards those students interested in pursuing biomedical research. The nonthesis program is an option to students seeking to solidify their knowledge base in order to apply to health professional schools.

Admission Requirements

The University's general graduate admission requirements must be achieved, including a minimum undergraduate grade point average of 3.0 in the last 60 credits and the completion of the GRE or equivalent standardized test. Prerequisites of the master's degree program include one year each of biology, chemistry, and physics; one semester each of biochemistry and organic chemistry; and at least two upper-division biology classes. A personal statement explaining career goals is required, as well as three letters of recommendation, at least 2 of which must be from former professors.

Degree Requirements

NonThesis Option

This degree requires 30 credits, 6 of which may be taken as upper-division undergraduate courses at the 4000 level or higher. With their advisor's approval, students design a course of study from the courses offered in the Charles E. Schmidt College of Biomedical Science as well as courses in related departments and colleges chosen from the following list. A comprehensive examination is required in the final semester.

Thesis Option

This option also requires a minimum of 30 credits, consisting of course work chosen from the following list, thesis credits, and graduate seminars. Students design a course of study and research with the guidance and approval of the advisors and thesis committees.

Graduate Level Courses

Biomedical Science

Human Gross Anatomy -		
Head and Neck	BMS 6101C	4 3
Human Gross Anatomy - Trunk	BMS 6102C	4 3
Human Gross Anatomy -		
Extremities	BMS 6104C	4 3
Brain Diseases:		
Mechanism and Therapy	BMS 6736	3
Introduction to Radiation Biology	BSC 6834	3
RNA Biology and Diseases	PCB 6525	3
Molecular Biology of the		
Cardiovascular System and		
Cardiac Disease	PCB 6705	3
Reproductive Endocrinology	PCB 6804	3
Physiology of the Heart	PCB 6885	3
Special Topics	PCB 6933	1-8
Graduate Seminars	PCB 6934	1-2
Directed Independent Studies	PCB 6905	1-3
Master's Thesis	PCB 6971	1-12
Developmental Neurobiology	PSB 5515	3

Biology

Bioinformatics	BSC 6458C	4
Advanced Virology	MCB 6506	3
Advanced Immunology	PCB 6236	3

Chemistry

Biochemistry of the Gene	BCH 5415	3
Advanced Biochemistry	BCH 6740	3

Complex Systems & Brain Sciences

Cognitive Neuroscience	ISC 5465	3
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Psychology

Principles of Neuroscience	PSB 6037	3
Neuroscience 1	PSB 6345	3
Neuroscience 2	PSB 6346	3

Undergraduate Level Courses (6 credits may be taken)**Biology**

Biology of Cancer	BSC 4806	3
Medical Bacteriology	MCB 4203	3
Virology	MCB 4503	3
Molecular and Cell Biology	PCB 4023	3
Immunology	PCB 4233	3
Molecular Genetics	PCB 4522	4
Human Physiology	PCB 4702	3

Philosophy

Biomedical Ethics	PHI 4633	4
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Psychology

Psychopharmacology	PSB 4444	3
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Doctoral Degree Program Information

The Charles E. Schmidt College of Biomedical Science offers a doctoral program leading to the Doctor of Philosophy (Ph.D.) degree in Integrative Biology. This is a joint program with the Department of Biological Sciences of the Charles E. Schmidt College of Science in which students can pursue interests across a number of fields, including marine science, biomedical science, biotechnology, and biology.

For complete program details, visit http://med.fau.edu/biomedical/biomedical_programs/doctoral.html.

Course Descriptions

for undergraduate and graduate courses in the

Charles E. Schmidt
College of Biomedical Science

Biomedical Science

Undergraduate Courses

Brain Diseases: Mechanism and Therapy (BMS 4732) 3 credits

Prerequisite: Permission of instructor

Course includes discussion of the molecular and cellular basis of brain diseases and provides the current status of therapeutic intervention for brain diseases.

Introduction to Radiation Biology (BSC 4833) 3 credits

Prerequisites: BSC 1010, PHY 2048, PHY 2049

An overview of the effects of ionizing radiation on humans and other biological systems. It involves consideration of cell survival after exposure to ionizing radiations, repair of radiation damage, radiosensitizers, radioprotectors, doses and risks in diagnostic radiology, cardiology, and nuclear medicine, and basic safety rules.

Introduction to Preprofessional Studies (PCB 3083) 3 credits

Prerequisites: 8 credits general chemistry, 8 credits general biology, permission of instructor

Corequisite: PCB 3083L

To familiarize premedical or allied field students with the requirements, demands, and rewards of a career in medicine. The course features lectures about a variety of medical disciplines.

Introduction to**Preprofessional Studies Lab (PCB 3083L) 1 credit**

Prerequisite: Permission of instructor

Corequisite: PCB 3083

Shadowing of physicians in hospital and office settings, including visits to local facilities and observations of actual medical procedures. *Grading: Pass/fail option*

RNA Biology and Diseases (PCB 4521) 3 credits

Prerequisite: Permission of instructor

This course provides advanced-level training in molecular biology of RNA. It covers the fundamental principles of RNA structure, function, and metabolism; methodologies for studying RNA; diseases related to RNA deficiencies; and applications of RNA technologies in research and clinical development.

Reproductive Endocrinology (PCB 4803) 3 credits

Prerequisites: BSC 1010, 1010L, 1011, 1011L; CHM 2045, 2045L, 2046, 2046L

Course describes the origin, structure, properties, and physiological actions of hormones related to reproductive function, as well as the clinical implications of their deficiency and excess at different stages of life. The anatomy, histology, and physiology of reproductive organs and related endocrine glands are studied. This course is taught in a case-based manner. Participation in seminars presented by graduate students on topics related to the lectures is required at the end of the course.

Directed Independent Study (PCB 4905) 1-3 credits
Independent research.

Special Topics (PCB 4930) 1-8 credits
Special topics of interest to biomedical students.

Graduate Courses

Human Gross Anatomy - Head and Neck (BMS 6101C) 3 credits
Prerequisite: Permission of instructor

A clinically oriented human gross anatomy course. Course covers head and neck anatomy, including the cranium, cranial nerves, facial musculature, vasculature and adnexa.

Human Gross Anatomy - Trunk (BMS 6102C) 3 credits
Prerequisite: Permission of instructor

A clinically oriented human gross anatomy course. Course covers the trunk region of anatomy, including chest, mediastinum, heart, abdomen and abdominal viscera, and pelvis and perineum of the male and female.

Human Gross Anatomy - Extremities (BMS 6104C) 3 credits
Prerequisite: Permission of instructor

A clinically oriented human gross anatomy course. Course covers appendicular anatomy, including the bones, muscles, nerves, vessels, and adnexa of the upper and lower extremities.

Brain Diseases: Mechanism and Therapy (BMS 6736) 3 credits
Prerequisite: Permission of instructor

Discussion of the molecular and cellular basis of brain diseases and of the current status of therapeutic intervention for those diseases.

Introduction to Radiation Biology (BSC 6834) 3 credits
Prerequisites: BSC 1010, 1010L, PHY 2048, 2048L, 2049, 2049L

An overview of the effects of ionizing radiations on human and other biological systems. The course involves consideration of cell survival after exposure to ionizing radiations, repair of radiation damage, radiosensitizers and radioprotectors, doses and risks in diagnostic radiology, cardiology, nuclear medicine, and basic safety rules. A student seminar is required at the end of the course.



Advanced Cell Physiology (PCB 6207) 3 credits

RNA Biology and Diseases (PCB 6525) 3 credits
Prerequisite: Permission of instructor

Course provides advanced-level training in molecular biology of RNA. Topics covered include principles of RNA structure, function, and metabolism; methodologies for studying RNA; diseases related to RNA deficiencies; and applications of RNA technologies in research and clinical development.

Molecular Biology of the Cardiovascular System and Cardiac Disease (PCB 6705) 3 credits
Prerequisites: BCH 3034, PCB 4023 or permission

Examination of the molecular biology of cellular function focused on tissue adaptation in cardiovascular disease. Investigation of survival responses to cellular stress in atherosclerosis, cardiac hypertrophy, myocardial ischemia and hypertension.

Reproductive Endocrinology (PCB 6804) 3 credits
Prerequisites: Permission of instructor

Course describes the origin, structure, properties, and physiological actions of hormones related to reproductive function, as well as the clinical implications of their deficiency and excess at different stages of life. Anatomy, histology, and

physiology of reproductive organs and related endocrine glands are studied. This course is taught in a case-based manner. Students are required to prepare and present a topic related to the lectures at the end of the course.

Physiology of the Heart (PCB 6885) 3 credits
Prerequisites: BCH 3034, PCB 4023 or permission

Course emphasizes the relationship between the biochemical properties of the individual constituents of the heart cell (myocardium), the biophysics of cardiac muscle function, and the performance of the intact heart. The course format will involve lectures, journal club presentations, round table discussions, invited speakers as well as special projects.

Directed Independent Study (PCB 6905) 1-3 credits
Independent research.

Special Topics (PCB 6933) 1-8 credits
Prerequisite: Permission of instructor

Topics of interest to students in Biomedical Science, such as Biomedical Science 1 and 2, Protein Misfolding and Disease, Advanced Cell Physiology, and Tumor Immunology.

Graduate Seminars (PCB 6934) 1-2 credits

Graduate students (with thesis) will give a presentation on their research project (1 credit) before beginning the project and give a presentation of their thesis (1 credit) at the end of the project. Graduate students (without thesis) will give one to two presentations on research papers or specific topics (1-2 credits).
Grading: S/U

Master's Thesis (PCB 6971) 1-12 credits
Grading: S/U

Developmental Neurobiology (PSB 5515) 3 credits
(See Psychology Dept. courses, College of Science section)