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University Council

January 15, 2021

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Dear Colleagues:

The attached proposal from the College of Veterinary Medicine for a new major in Biomedical Physiology (B.S.) will be an agenda item for the January 22, 2021, Full University Curriculum Committee meeting.

Sincerely,

John Maerz, Chair
University Curriculum Committee

cc: Provost S. Jack Hu
Dr. Rahul Shrivastav

USG ACADEMIC PROGRAM PROPOSAL
(Effective 2/22/18)

Institution: University of Georgia

Date Completed at the Institution: September 16, 2020

Name of Proposed Program: Bachelor of Science with a Major in Biomedical Physiology

Degree: Bachelor of Science (B.S.)

Major: Biomedical Physiology

CIP Code: 26090101

School/Division/College: College of Veterinary Medicine

Department: Physiology and Pharmacology

Anticipated Implementation Date: Fall 2021

Requesting Differential Tuition Rate: _____ Yes[1] ___X___ No

Delivery Mode (Check all that apply):

On-campus, face-to-face only	**X**
Off-campus location, face-to-face only (specify the location)	
Online Only *If this program will be offered online, within two weeks after Board approval, the USG institution must upload requisite information into Georgia ONmyLINE using the institutional PDA account.* *See Appendix II for specific questions involved for Georgia ONmyLINE.*	
Combination of on-campus and online (specify whether 50% or more is offered online for SACSCOC)	
Combination of off-campus and online (specify whether 50% or more is offered online for SACSCOC)	
Hybrid, combination delivery, but less than 50% of the total program is online based on SACSCOC	
Contractual Location (specify the location and timeframe/start and end dates)	

[1] All documents and forms requesting a differential tuition rate must be submitted to the Office of Fiscal Affairs prior to Academic Affairs Review of the Degree Proposal

1. Forecast: *If this program was not listed on your one of the past two-year academic forecasts provide an explanation concerning why it was not forecasted, but is submitted at this time.*

This proposal was not included in the University of Georgia's Academic Forecast because it had not yet been submitted for review through the faculty governance process.

2. Academic Framework: *Within the context of strategic planning of all resources and divisions within short-term and long-term perspectives, provide a narrative that explains campus leadership review and attention to newly institutionally approved programs within the last four years, low-producing programs, and post-approval enrollment analyses prior to approving the proposed program for submission to the system office.*

The Office of Instruction reviews newly institutionally approved programs, low-producing programs, and post-approval enrollment to monitor and assess future viability of all academic programs.

3. Rationale: *Provide the rationale for proposing the new academic program. (In other words, does the state need the program; should your institution offer the program; and can your institution develop and implement the program.)*

The proposed undergraduate program in Biomedical Physiology addresses a critical need in the state of Georgia to prepare skilled individuals to enter life-science and healthcare-oriented careers. The Georgia Department of Labor projects an estimated 20.4% employment growth in the healthcare sector as well as 14% projected growth in professional and business services, including scientific and technical services, through 2026. These sectors are #1 and #3 in overall projected job growth in the state, with healthcare and healthcare-support occupations, in particular, expected to create nearly 20% of new jobs. These estimates for Georgia track along national trends, with both healthcare and life-sciences occupations projected to grow at faster rates than average across the country through 2028, according to the U.S. Bureau of Labor Statistics. Therefore, it is exceedingly important to the state that University of Georgia (UGA) graduates are fully prepared for future careers in these actively growing sectors, which provide vital services to the citizens of Georgia.

A comprehensive understanding of physiology—the study of how the body functions—is essential for a well-trained professional workforce in the healthcare, biomedical, and life-science industries. Data from two peer institutions with established undergraduate physiology programs, Michigan State University and the University of Arizona, indicate that approximately 86% to 90% of physiology majors aspire to healthcare careers.[1] Yet, currently, there is no undergraduate program in the state of Georgia devoted to comprehensive training in physiology. The proposed Biomedical Physiology major is particularly suited to meet an impending employment need in Georgia and to prepare undergraduate students for successful careers in healthcare.

As the state's oldest, most comprehensive, and most academically diversified institution of higher education and research, UGA is uniquely poised to offer the proposed bachelor's degree in Biomedical Physiology. The University of Georgia is recognized for its commitment to student excellence through its emphasis on rigorous learning experiences both inside and outside the classroom, including hands-on research and leadership opportunities. These experiences contribute to the university's exceptional rates in retention, graduation, and career placement.

UGA attracts students from across the state intending to pursue baccalaureate degrees in more than 142 fields, including a substantial number of students who identify as pre-health majors. Recent data from the Pre-Professional Advising Office at UGA indicates that 15.5% of all undergraduates (4,500 of the 29,000 total students enrolled) identified as pre-health in spring semester 2019. These students are preparing to enter various health-related programs, including medical, dental, nursing, and veterinary professional schools, as well as allied health programs that train physician assistants, physical therapists, and occupational therapists. Currently, pre-health students enroll in a variety of majors, with Biology being the top choice, making it the largest major at UGA with nearly 3,000 enrolled students. The remaining students enroll in other life-science majors, including Biological Science, Biochemistry and Molecular Biology, Genetics, and Cellular Biology.[2] Although a portion of these students may be adequately served by these majors, a significant number of life-science students at UGA would benefit strongly from a program that specifically emphasizes physiology and more directly prepares them for programs in healthcare professions as well as the life-science industry. Because such a program is not currently offered, the needs of this large population of students are not being optimally met. The proposed major in Biomedical Physiology from the Department of Physiology and Pharmacology is optimized to meet the needs of these students and fill this gap.

In addition, it is anticipated that the proposed program will also attract new students with an interest in pursuing a Biomedical Physiology major to UGA, as no comparable program is currently offered in the Southeastern United States. The closest institution with a general physiology program is Southern Illinois University, followed by Indiana University, while the University of Delaware, which is opening a program in fall 2020, and the University of Scranton are the closest programs on the Eastern Seaboard.[3] As detailed in the recruitment plan, outreach will initially focus on Georgia residents. Upon the establishment of the program, outreach will expand to also recruit out-of-state students who are motivated to study physiology but are unable to find a physiology program in their own state.

The Department of Physiology and Pharmacology in the College of Veterinary Medicine trains veterinary and graduate students in various aspects of human/mammalian physiology, pharmacology, and toxicology and is well prepared to offer the proposed program. The department currently offers the most comprehensive undergraduate course in physiology at UGA (VPHY 3100, Essentials of Physiology) to more than 700 students annually, a significant majority of whom are pre-health majors. This course is highly sought by students, with a significant waitlist each semester. Dr. Oliver Li, the physiology course coordinator

and instructor, has received numerous teaching awards for his outstanding instructional efforts, including the coveted Josiah Meigs Distinguished Teaching Professorship, the University's highest honor for excellence in instruction. The faculty are highly skilled and versatile. They include D.V.M.-Ph.D. and Ph.D. scientists who are well trained in diverse subdisciplines of physiology, lead physiology-related research programs, and possess valuable clinical training, all of which are critical to the integration of basic and clinical principles in physiology education. Hence, the department is uniquely positioned to offer a rigorous undergraduate major in Biomedical Physiology that fills a critical educational gap at UGA and addresses the needs of the state of Georgia for a well-trained, professional workforce in the life-science and healthcare industries.

[1] "Setting national guidelines for physiology undergraduate degree programs." Wehrwein EA. *Advances in Physiology Education* 42: 1-4, 2018.
[2] University of Georgia Office of Institutional Research, Fall 2019 enrollment.
[3] "A brief history of the Physiology Majors Interest Group (P-MIG), physiology undergraduate degrees, and existing resources for undergraduate degree programs." Wehrwein EA, Poteracki JM, Halliwill JR. Submitted for publication, January 2020.

4. Mission Fit and Disciplinary Trends: *Description of the program's fit with the institutional mission and nationally accepted trends in the discipline (explain in narrative form). If the program is outside the scope of the institutional mission and sector, provide the compelling rationale for submission.*

The newly proposed undergraduate Biomedical Physiology program fits well within the mission of the University of Georgia in its commitment to "*excellence in teaching and learning*" as outlined in UGA's 2025 Strategic Plan. Moreover, the program addresses a vital and increasing need in the state of Georgia to prepare skilled individuals to enter life-science and healthcare-oriented careers. Therefore, this program also fits strongly within the University's "*commitment to excellence in public service, economic development, and technical assistance activities designed to address the strategic needs of the state of Georgia.*"

The program also fits well within the College of Veterinary Medicine's mission to "*improve animal and human health through excellence in veterinary and biomedical education, research, and clinical service.*" The College's 2018-2028 Strategic Plan specifically calls for expanding instruction beyond the veterinary curriculum as part of the strategy for the College to become a leader in biomedical education. UGA's unique blend of veterinarian-scientists (D.V.M.-Ph.D.) and Ph.D. scientists are engaged in studying both basic science and applied physiology issues related to human health. This positions the department to train students in issues related not only to human health, but also animal health and the life-sciences in general. The faculty's qualifications may be viewed in the faculty roster in Section 24.

A strong demand for training in physiology is reflected in the significant growth of physiology programs now offered nationwide at several large state universities. In 2005, 14

programs across the U.S. emphasized general physiology. However, by 2019 that number had increased to 21 programs in 13 states.[1] A recent survey of enrollment trends over the past 5-10 years documented increased enrollment in two-thirds of the 21 physiology programs, while the others maintained stable enrollment levels.[2] These trends are illustrated in Figure 1, which details the robust student enrollment increase within 3 of the larger physiology programs in the U.S.[1]

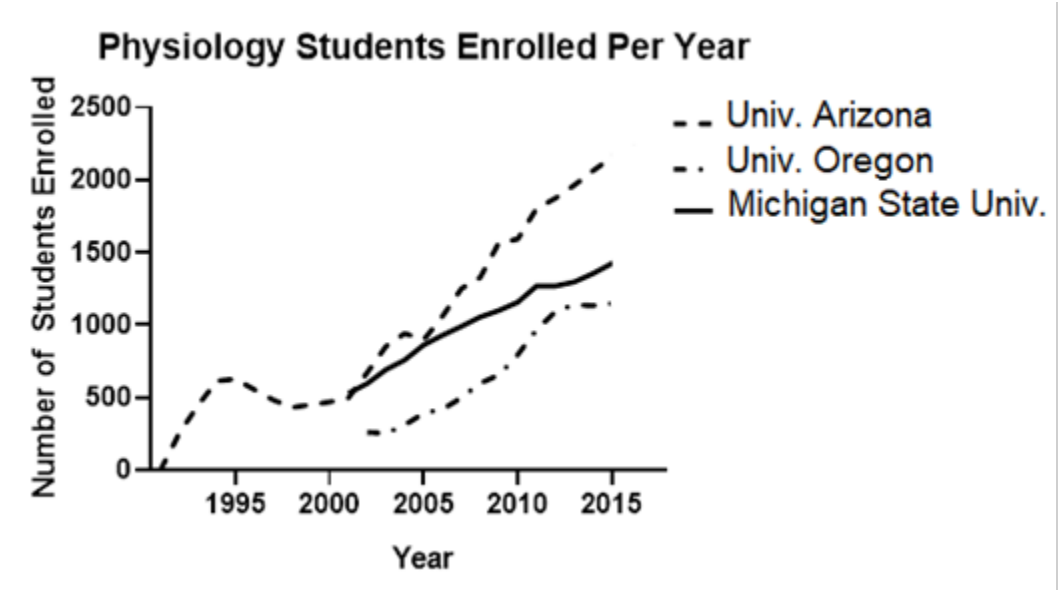


Fig. 1. Number of students enrolled in Physiology majors from 1990-2015, in established programs, at Michigan State University (solid line), the University of Arizona (dashed line) and the University of Oregon (dashed/dotted line).

Concurrent with the growth in physiology programs at a national level, there has been a concerted effort to create national guidelines. This effort is spearheaded by the Physiology Majors Interest Group (P-MIG), an independent group of physiology educators mainly from U.S. institutions. This group aims to release proposed national program guidelines in 2020. The department has worked closely with P-MIG during program planning in order to incorporate the most current trends in the discipline. The letter of support from Dr. Erica Wehrwein, who is in the leadership of P-MIG, attests to the efforts to ensure that the program incorporates best practices for educating physiology students. The "core concepts of physiology" are scientific principles considered essential for a comprehensive understanding of physiology. These originally stem from a 2017 publication from the American Physiological Society[3] and have been folded into the national guidelines proposed by P-MIG. This program will incorporate these essential concepts into each of the science-based physiology courses.

Notably, the proposed national guidelines for physiology go beyond scientific content and encompass additional recommended features.[4] One such feature is the inclusion of training in professional competencies, referred to as "career skills" or "soft skills" throughout this proposal. This is the primary aim of the VPHY 3110, Careers in Biomedical Physiology and

Professional Skills, course. Moreover, professional skills are embedded throughout the required and elective courses. Experiential learning is another key feature of successful programs in physiology. The hands-on course, VPHY 3107L, Integrative Concepts in Physiology Laboratory, provides an important experiential learning opportunity for students. Future aims for additional experiential learning experiences will include student participation in laboratory research, as the department and college have numerous active researchers, and developing relationships with life-science companies as a network for potential student internships. A flexible curriculum is also a desirable element for successful physiology programs. Section 7, addresses how physiology graduates tend to follow mainly two career paths: healthcare professions and life-sciences industries. The proposed curriculum provides students with the flexibility to pursue different courses, broadening their experience and interests in different areas of physiology to help inform their career choices.

Additional best-practices features of successful physiology programs include rigorous programmatic assessment of learning outcomes. Section 19 details the plans to incorporate the Phys-MAPS system for assessment of physiology concepts knowledge, as well as other assessment practices to evaluate and improve performance. Another important trend in the discipline is to develop **strong and relevant career advising** capabilities for the program. Therefore, the department will partner with UGA's Pre-Professional Advising Office to provide essential updated information regarding admission requirements for health-related professional programs. Moreover, for students interested in careers in the life-sciences industry, the department is engaging with the UGA Career Center to help students develop career skills and access key resources for seeking internships and post-graduate employment. This proposal includes letters of support from the Pre-Professional Advising Office and the Career Center.

[1] "A brief history of the Physiology Majors Interest Group (P-MIG), physiology undergraduate degrees, and existing resources for undergraduate degree programs." Wehrwein EA, Poteracki JM, Halliwill JR. Submitted for publication, January 2020.
[2] "Characteristics of physiology undergraduate degree programs: Who, what, where, when, and why?" Ogrodzinski Y, Kelly K, et al. Submitted for publication, January 2020.
[3] The Core Concepts of Physiology: A New Paradigm for Teaching Physiology. Michael J, Cliff W, et al., and the American Physiological Society. Springer, New York. 2015.
[4] Wehrwein EA. "Setting national guidelines for physiology undergraduate degree programs." *Advances in Physiology Education* 42: 1-4, 2018.

5. Description and Objectives: *Program description and objectives (explain in narrative form).*

The proposed undergraduate major in Biomedical Physiology adheres to UGA and USG policies requiring a total of 120 course hours for degree completion and is designed to be completed in four years. Students who complete the program will possess the knowledge and skills necessary to pursue careers in a variety of biomedical science-related fields, including the healthcare and life-science industries.

The broad program objectives for future students are:

- To provide a strong knowledge base and training in concepts of general and systems physiology, as well as integrative responses of body systems to physiological changes and pathophysiology.
- To promote student competencies in critical analysis and information synthesis, problem solving, and oral and written scientific communication skills.
- To engage and facilitate student exploration of diverse career options in health and biosciences fields available with training in physiology.
- To effectively prepare students for careers in healthcare, and the life-sciences and biomedical industries.

The proposed major in Biomedical Physiology has several important strengths, including a comprehensive curriculum that fosters a strong knowledge base in physiology as well as critical thinking skills. The curriculum also includes a career-skills course that targets core workplace competencies and enables students to explore opportunities in health and biotechnology fields. Courses such as biostatistics, biochemistry, and upper-level science electives are built into the requirements to strengthen and broaden the science-related skillset of our students. New courses developed for the major will incorporate problem-solving and active learning approaches. Moreover, flexibility is intentionally built into the curriculum to enable students to simultaneously meet pre-professional course requirements while also exploring different areas of interest in physiology. This multi-faceted approach will optimally prepare students for subsequent training in professional and graduate programs as well as meet the diverse needs of the biomedical and healthcare industries.

Courses required for the major are designed to provide the skills and knowledge essential for becoming proficient in physiology. Notably, these courses will integrate organ system physiology with underlying cellular and molecular mechanisms. This integrative approach will provide the essential comprehensive understanding of whole-body physiologic processes, a critical level of understanding necessary for success in healthcare and life-science careers.

- The required biostatistics (BIOS or STAT) and biochemistry and molecular biology (BCMB) courses will provide students with a conceptual understanding of fields considered essential for a deeper understanding of physiology.[1]
- The year-long course series Integrative Concepts in Physiology I and II (VPHY 3107-3107D, VPHY 3108) will provide students with a comprehensive overview of the human body/organ systems. Lectures will be supplemented with discussion sections guided by faculty experts in our department to delve deeper into select topics. These two courses provide the foundation on which students will expand their physiology-based knowledge through additional required and elective coursework. VPHY 3107 will parallel our

existing VPHY 3100 course in content but will be restricted to biomedical physiology majors and allow a more thorough examination of physiology topics.

- The Integrative Concepts in Physiology Laboratory (VPHY 3107L) will supplement student learning of physiology concepts by providing hands-on experience in collecting and analyzing physiologic measurements. Students will measure non-invasive respiratory, cardiovascular, and other physical parameters using each other as test subjects. Together with strengthening their knowledge base, this active approach will allow students to develop skills in working with patients and subjects in their future careers.

- Careers in Biomedical Physiology and Professional Skills (VPHY 3110) will focus on developing workplace competencies, including written and oral communication skills. The targeted skills in this course will be aligned with recommendations from the Career Readiness Initiative at the University of Minnesota and the Association of American Medical Colleges' Core Competencies of Entering Medical Students.[2] VPHY 3110 will also address important career skills, such as leadership, resilience and adaptability, self-reflection, diversity engagement, career management, digital literacy, and strategic thinking. The UGA Career Center will be consulted in the planning of this course. The expertise of their staff will be invaluable in assisting us to optimize the course content. Students will be required to participate in seminars in the Arch Ready Professionalism Certificate Program offered through the Career Center, which will serve as a further introduction to the invaluable services the Career Center can provide both before and after graduation. (See letter of support from the UGA Career Center in Appendix I.)

- Required physiology elective courses include students taking two 4000-level physiology courses from our department. These courses include pathophysiological concepts and are designed to enhance problem-solving skills using clinically-oriented examples and discussions. Current courses in this category are VPHY 4200, Physiologic Basis of Diseases, VPHY 4300, Endocrine Physiology, and VPHY 4600, Physiological Toxicology. Additional courses will be offered as needs arise.

- Required upper-level science electives include offerings in anatomy, cellular biology, genetics, microbiology, or organic chemistry from outside the Department of Physiology and Pharmacology. These courses provide additional content to enhance student understanding of physiologic processes throughout the body. Importantly, these courses also allow students to complete requirements for post-graduate applications to healthcare-related professional and graduate programs and provide important background knowledge for students entering the life-sciences industry.

The last component of the program is Major Electives. Requirements for this section of the curriculum will be flexible to enable students to expand their understanding of physiology and pursue areas of interest. Thus, the major electives requirement for our program can be fulfilled by a variety of course offerings across campus, provided that each course has a physiology-related component to it. In conversations with various departments across

campus, we have identified courses in animal science, biochemistry and molecular biology, cellular biology, nutritional sciences, kinesiology, marine sciences, wildlife, pharmacy, poultry, psychology, and others that will allow students to broaden their understanding of physiology and explore diverse fields.

[1] "Physiology undergraduate degree requirements in the U.S." VanRyn VS, Poteracki JM, Wehrwein EA. *Advances in Physiology Education* 41: 572-577, 2017.
[2] https://www.aamc.org/services/admissions-lifecycle/competencies-entering-medical-students

6. **Need:** *Description of the justification of need for the program. (Explain in narrative form why the program is required to expand academic offerings at the institution, the data to provide graduates for the workforce, and/or the data in response to specific agency and/or corporation requests in the local or regional area, and/or needs of regional employers.) (A list of resources, not exhaustive, is available on the public web link along with the proposal form at: http://www.usg.edu/academic_programs/new_programs)*

The need for a program in Biomedical Physiology at the University of Georgia was addressed in Section 3. To briefly recap, in the state of Georgia, as well as nationally, there is a critical need for skilled individuals to enter healthcare and life-science fields. A national survey reported that 55% of students with a bachelor's in physiology progress to an advanced degree, mainly professional healthcare programs, while the bachelor's is the terminal degree for 45% of students. The primary occupations for physiology graduates include health professions, management, sales, administrative, and community service.[1] Therefore, graduates with training in physiology are well positioned to proceed to professional and technical healthcare training programs where they will train to become doctors, dentists, veterinarians, physician assistants, nurses, and therapists, to name a few of the possible careers. Additionally, graduates of physiology programs that follow forthcoming curriculum standards will have the scientific background and career skills (i.e., soft skills) to pursue employment in the biomedical and life-sciences industries.

The ability for Georgia to optimally meet the need for more healthcare and life-science employees is hampered by the current lack of a comprehensive, general physiology program in the Southeastern U.S. Moreover, students convey a strong interest in having access to a physiology program at the University of Georgia (see Section 7). Hence, the proposed program in Biomedical Physiology will help address the state's critical need for graduates knowledgeable in physiology to pursue health care and life-sciences careers and also address the current gap in student access to a comprehensive physiology degree at UGA.

Career Placement and Salary Outlook:
The Georgia Department of Labor projects an estimated 20.4% employment growth in the healthcare sector as well as 14% projected growth in professional and business services, including scientific and technical services, through 2026. These sectors are #1 and #3 in

overall projected job growth in the state, with healthcare and healthcare-support occupations, in particular, expected to create nearly 20% of new jobs.

Given the numerous careers that graduates with a bachelor's degree in physiology may pursue, it is challenging to give precise employment projections. However, the following data from the Georgia Department of Labor's 2018-2028 projections and the U.S. Bureau of Labor Statistics' 2019 Occupational Employment and Wage Estimates for Georgia should aid in understanding of the career prospects for the program's graduates.

Graduates with a B.S. in physiology as their terminal degree enter a variety of technical or scientist positions. For example, Biological Technicians (projected annual growth rate in Georgia 13.7%; projected annual openings in Georgia 180; 2019 annual mean wage in Georgia $47,720), Biological Scientists (growth rate 9.5%; annual openings 120, mean wage $73,740), and Life Science Technicians (growth rate 16.4%; annual openings 290; mean wage $54,230) are frequently employed in the biomedical and life-sciences industries.

As discussed above, many graduates with a B.S. in physiology pursue managerial or sales-related positions. While there are a variety of different categories of positions in both fields that graduates may pursue, two that are germane are Medical and Health Services Managers (growth rate 2.4%; annual openings 1,080; mean wage $107,610) and Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (growth rate 4.5%; annual openings 1,050; mean wage $74,440).

Graduates may pursue occupations requiring additional training. Examples include Clinical Laboratory Technologists and Technicians (growth rate 20%; annual openings 980; mean wage $51,450); Occupational Health and Safety Specialists (growth rate 11.7%; annual openings 120; mean wage $74,550), and Emergency Medical Technicians and Paramedics (growth rate 30.7%; annual openings 1,020; mean wage $34,450). (The latter occupation often serves as a springboard into higher-level medical training programs.) Graduates with a bachelor's degree in physiology entering fields such as these can expect to be better positioned for advancement than employees with associate's-level training.

Graduates who pursue occupations requiring more lengthy advanced training, particularly in healthcare fields, have a particularly promising outlook for employment. Examples include Physician Assistants (growth rate 44.1%; annual openings 410; mean wage $101,460), Occupational Therapists (growth rate 31.9%; annual openings 290; mean wage $85,310), Physical Therapists (growth rate 35.6%; annual openings 440; mean wage $87,590), Speech-Language Pathologists (growth rate 41.7%; annual openings 360; mean wage $78,440), and Registered Nurses (growth rate 22.5%; annual openings 6,340; mean wage $69,590).

For graduates who progress to doctoral training programs, the outlook for employment in Georgia is also promising. Ph.D.'s may pursue, for example, careers as Medical Scientists (growth rate 19%; annual openings 180; mean wage $78,210) or Biological Science

Educators, Postsecondary (growth rate 32.8%; annual openings 90; mean wage $92,710). Physicians have a variety of employment opportunities including Internists, General (growth rate 28.2%; annual openings 130; mean wage $95,690) and Physicians and Surgeons, All Other (growth rate 17.5%; annual openings 570; mean wage $236,530). Other examples of careers requiring doctoral training include Dentists, General (growth rate 9.6%; annual openings 150; mean wage $187,640), Optometrists (growth rate 25.2%; annual openings 60; mean wage $113,800), and Veterinarians (growth rate 38.3%; annual openings 190; mean wage $94,970).

[1] "What's It Worth? The Economic Value of College Majors" Georgetown University Center on Education and the Workforce, 2011.

7. **Demand:** *Please describe the demand for the proposed program. Include in this description the supporting data from 1) existing and potential students and 2) requests from regional industries. How does the program of study meet student needs and employer requirements in terms of career readiness and employability, requirements to enter the profession, post-graduate study, and disciplinary rigor at the level required for professional success and advanced educational pursuits? (In other words, how does the program of study prepare students for the next step?)*

   To gauge current student demand for a proposed program, students in the Department of Physiology and Pharmacology VPHY 3100, Elements of Physiology, course[1] were surveyed in spring semester 2019. The survey received 257 responses out of 309 students (83% response rate). The students were asked to rate their interest in pursuing a Bachelor of Science degree in physiology if such a degree were available during their academic career. Notably, approximately 70% of all respondents indicated a moderate to high level of interest. Figure 2 indicates the percentage of program interest by student major. Although the survey did not specifically ask about career interests, several students self-identified their interests in a comments section. Forty-seven students identified as pre-health students in the comments, and, of those students, 93% indicated a moderate to high level of interest in a physiology degree. These response rates indicate a strong demand for a degree program in physiology if it were offered. Enrollment projections are listed in Section 23.

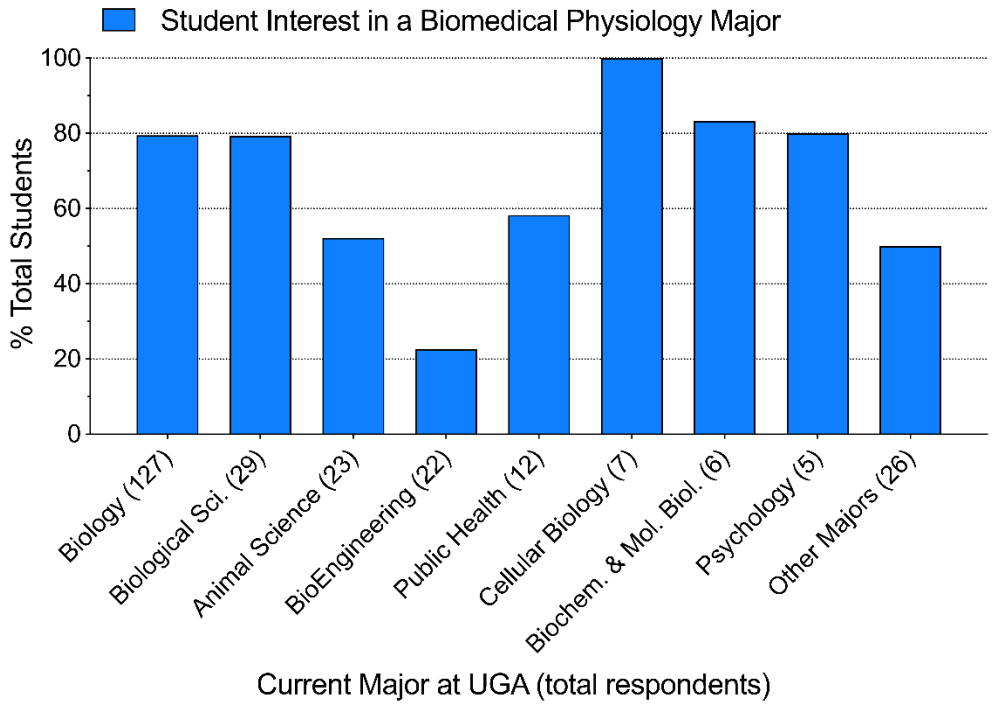


Fig 2: Percentage of students with an expressed interest in a Biomedical Physiology Major. Results based on a survey of undergraduate students (n=257) enrolled in VPHY 3100 in the spring semester 2019 at the University of Georgia.

Regarding demand from regional employers, it is important to note that graduates with a bachelor's in physiology tend to follow two main career paths, either progressing to an advanced degree, mainly in the healthcare professions, or pursuing careers in the biomedical and life-science industries, as discussed in Section 6.

Speaking to the demand for skilled graduates from the healthcare professions, letters of support from several physician, physician assistant, nursing, occupational therapy, and physical therapy programs across the state are included with this proposal. These letters speak to the perceived value of the program, both in making University of Georgia students more competitive applicants for healthcare professional programs and in providing students with a strong background that will allow them to succeed once admitted to these programs. As discussed in Section 3, the healthcare industry will continue to grow in Georgia and nationally. This program can help ensure that students pursuing advanced degrees in healthcare have a sound foundation upon which they can build their careers.

The life-science and biomedical industries are projected to grow steadily in Georgia and nationally throughout the coming decade, as was discussed in Section 3. To address how the program will help meet these demands, included are letters of support from Georgia Bio Life Sciences Partnership and Georgia BioEd Institute, the former a life-sciences industry trade association and the latter a technical-skills training institute. In addition, two life-science companies in Georgia, Femasys, Inc. and WuXi AppTec, also provided letters of support. The consensus from these letters is that (1) there is a need for employees with both scientific

and soft skills, and that (2) the program is structured to train and equip graduates with the necessary skills that will help smooth the transition into their early-career positions.

[1] VPHY 3100 has approximately 700 enrollees annually.

8. **Duplication:** *Description of how the program does not present duplication of existing academic offerings in the geographic area, within the system as a whole, and within the proposing institution regardless of academic unit. If similar programs exist, indicate why these existing programs are not sufficient to address need and demand in the state/institution's service region and how the proposed program is demonstrably different or complementary to other USG degrees and majors.*

   The proposed program does not duplicate existing academic offerings in the University System of Georgia or the state of Georgia. There are no existing programs that offer a major in physiology. These conclusions are based on a search of the USG database of academic programs in addition to online searches for physiology programs at private institutions in Georgia.

   There are only a few related programs available. One program at Georgia Tech offers a certificate in Applied Physiology as part of their B.S. in Biology and a Minor in Physiology. However, Georgia Tech does not offer a major in physiology. This proposed major will involve more comprehensive core coursework in physiology.

   Valdosta State University offers a Bachelor of Science in Exercise Physiology. As described on their website, "Exercise physiology is the study of muscular activity and the associated functional responses and adaptations." Similarly, University of Georgia offers a B.S.Ed. in Exercise and Sport Science through the Department of Kinesiology, which their website describes as "the science of physical activity and sport." Both programs focus on the function of the muscular and, to some extent, the cardiovascular systems. In contrast, this program will train students in a more integrative approach to all of the physiologic systems in the body.

   Although other programs such as Cellular Biology on the UGA campus offer courses that contain physiology content, there is no cohesive, physiology-focused program on the UGA campus. The goal is to provide that focused program for students. The department has been in communication with the Cellular Biology and Exercise and Sport Science programs and have agreed that by working with them to make their current and future physiology-related courses available to Biomedical Physiology majors, all three departments will be able to elevate the level of physiology training available on the UGA campus.

9. **Collaboration:** *Is the program in collaboration with another USG Institution, TCSG institution, private college or university, or other entity?*

   Yes___ or No__X__ (place an X beside one)

If yes, list the institution below and include a letter of support from the collaborating institution's leadership (i.e., President or Provost and Vice President for Academic Affairs) for the proposed academic program in Appendix I.

10. Admission Criteria: *List the admission criteria for the academic program, including standardized test and grade point average requirements for admission into the program. Also, at what point (e.g., credit hours completed) are students admitted to the program.*

No additional entrance criteria beyond the standards required for admission to the University of Georgia will be specified for this program. Students will have the ability to declare the Biomedical Physiology (B.S.) major during the University of Georgia Admission application process. Major required courses must be completed with a grade of "C" (2.0) or better.

11. Curriculum

a. *Specify whether the proposed program requires full-time study only, part-time study only, or can be completed either full time or part time.*

The proposed program can be completed with either full-time or part-time study.

b. *If the proposed program will be offered online, describe measures taken by the academic unit to sufficiently deliver the program via distance education technologies and provide instructional and learning supports for both faculty and students in a virtual environment. Will the program be offered in an asynchronous or synchronous format?*

The program is designed for interactive in-person learning and will <u>not</u> be offered online.

c. *List the entire course of study required to complete the academic program. Include the course prefixes, course numbers, course titles, and credit hour requirement for each course. Indicate the word "new" beside new courses. Include a program of study.*

Bachelor of Science in Biomedical Physiology Degree Requirements

Courses (list acronym, number, and title)	Hours
Area I: Foundation Courses	
ENGL 1101 English Composition I	3
ENGL 1102 English Composition II	3
Preferred:	
MATH 1113 Precalculus	3

Area II: Sciences	
Physical Sciences: *Preferred:*	
CHEM 1211 Freshman Chemistry I	3
CHEM 1211L Freshman Chemistry Laboratory I	1
Life Sciences: *Preferred:*	
BIOL 1107 Principles of Biology I	3
BIOL 1107L Principles of Biology I Laboratory	1
Area III: Quantitative Reasoning	
Preferred:	
PHYS 1111-1111L Introductory Physics I	4
Area IV: World Languages and Culture, Humanities and the Arts	
Area IV Elective 1	3
Area IV Elective 2	3
Area IV Elective 3	3
Area IV Elective 4	3
Area V: Social Sciences	
POLS 1101 American Government	3
HIST 2111/2112 American History to 1865/Since 1865	3
Area V Elective	3
Area VI: Courses Related to the Program of Study	
BIOL 1108 Principles of Biology II or BIOL 2108H Principles of Biology II (Honors)	3
BIOL 1108L Principles of Biology II Laboratory or BIOL 2108L Principles of Biology II Laboratory (Honors)	1
CHEM 1212 Freshman Chemistry II or CHEM 1312H Advanced Freshman Chemistry II (Honors) or CHEM 1412 Advanced Modern Chemistry II	3
CHEM 1212L Freshman Chemistry Laboratory II or CHEM 1312L Advanced Principles of Chemistry Laboratory II (Honors) or CHEM 1412L Advanced Modern Chemistry Laboratory II	1
CHEM 2211 Modern Organic Chemistry I or CHEM 2311H Advanced Organic Chemistry I (Honors)	3
CHEM 2211L Modern Organic Chemistry Laboratory I or CHEM 2311L Advanced Organic Chemistry Laboratory I	1
MATH 2250(E) Calculus I for Science and Engineering or MATH 2300H Differential Calculus (Honors) or MATH 2400 Differential Calculus with Theory or MATH 2400H Differential Calculus with Theory (Honors)	4
PHYS 1112-1112L Introductory Physics II or PHYS 1212-1212L Principles of Physics for Scientists and Engineers	4
Major Required Courses[a] – Common Curriculum:	
BIOS 2010 or BIOS 2010E, Elementary Biostatistics or STAT 2000 or STAT 2000E, Introductory Statistics or STAT 2010, Statistical Methods for Data Scientists or STAT 2100H, Introduction to Statistics and Computing (Honors) or STAT 3110 or STAT 3110E, Introduction to Statistics for Life Sciences	3-4
BCMB 3100(E) Introductory Biochemistry and Molecular Biology or BCMB 4020 Biochemistry and Molecular Biology II	3-4 4

VPHY 3107-3107D Integrative Concepts in Physiology I – NEW	1
VPHY 3107L Integrative Concepts in Physiology Laboratory – NEW	3
VPHY 3108 Integrative Concepts in Physiology II – NEW	2
VPHY 3110 Careers in Biomedical Physiology and Professional Skills – NEW	3
VPHY 4XXX Required Physiology Elective 1[b] – NEW	3
VPHY 4XXX Required Physiology Elective 2[b] – NEW	3-4
Upper-Level Science Required Elective 1[c]	3-4
Upper-Level Science Required Elective 2[c]	
Concentration	N/A
Major Electives:[d]	
Major Elective 1	3-4
Major Elective 2	3-4
Major Elective 3	3-4
General Electives	14-19
Total Semester Credit Hours	120

[a] Undergraduates in the College of Veterinary Medicine must earn a grade of "C" (2.0) or better in major-required courses.

[b] Choose 2 courses from departmental 4000-level physiology courses. Currently available courses include VPHY 4200, Physiologic Basis of Diseases; VPHY 4300, Endocrine Physiology; and VPHY 4600, Physiological Toxicology. Additional 4000-level electives will be developed as the program expands.

[c] Choices for Upper-Level Science Electives include:
CBIO 3000-3000L, Comparative Vertebtate Anatomy, or CBIO 3010-3010L, Functional Human Anatomy, or VBDI 4999E, Comparative Veterinary Anatomy
CBIO 3400, Cell Biology
(CHEM 2212, CHEM 2212L, Modern Organic Chemistry II with Laboratory) or (CHEM 2312H, CHEM 2312L, Advanced Organic Chemistry II (Honors) with Laboratory)
GENE 3200-3200D, Genetics, or GENE 3200H, Genetics (Honors)
(MBIO 3500, MIBO 3500L) or (MBIO 3500E, MIBO 3500L), Introductory Microbiology

[d] Students, with the guidance of their academic advisor, choose 3 courses for a minimum of 9 hours from a list of UGA courses that contain physiology-related content. Choices allow students to tailor their degree to areas or fields of personal interest. Departments that offer relevant courses include Animal and Dairy Science (ADSC), Animal Nutrition (ANNU), Biochemistry and Molecular Biology (BCMB), Cell Biology (CBIO), Chemistry (CHEM), Ecology (ECOL), Environmental Health Science (EHSC), Fisheries and Aquaculture (FISH), Foods and Nutrition (FDNS), Genetics (GENE), Gerontology (GRNT), Infectious Diseases (IDIS), Kinesiology (KINS), Large Animal Medicine and Surgery (LAMS), Marine Sciences (MARS), Microbiology (MIBO), Pharmacy (PHRM, PMCY), Poultry Science (POUL), Psychology (PSYC), Veterinary Biosciences and Diagnostic Imaging (VBDI), Veterinary Pathology (VPAT), Physiology and Pharmacology (VPHY), and Wildlife (WILD). Specific courses are listed in the Appendix.

Bachelor of Science in Biomedical Physiology Representative Program of Study

First Year			
Fall Semester		Spring Semester	
ENGL 1101 English Composition I	3	ENGL 1102 English Composition II	3
MATH 1113 Precalculus	3	MATH 2250 Calculus I Sci/Eng	4
CHEM 1211/1211L Chemistry I/Lab	4	CHEM 1212/1212L Chemistry II/Lab	4
BIOL 1107/1107L Biology I/Lab	4	BIOL 1108/1108L Biology II/Lab	4
POLS 1101 American Government	3	First-Year Odyssey Seminar	1
Total	17	Total	16
Second Year			
Fall Semester		Spring Semester	
CHEM 2211/2211L Organic Chem I/Lab	4	BIOS 2010 Elementary Biostatistics	4
PHYS 1111-1111L Intro Physics I	4	PHYS 1112-1112L Intro Physics II	4
HIST 2111 American History	3	BCMB 3100 Biochem & Molecular Biol	4
Area IV Elective 1	3	Area IV Elective 2	3
Area V Elective	3		
Total	17	Total	15
Third Year			
Fall Semester		Spring Semester	
VPHY 3107-3107D Integr Physiology I NEW	4	VPHY 3108 Integrative Physiology II NEW	3
VPHY 3107L Integr Physiology Lab NEW	1	VPHY 3110 Careers Biomed Physiology NEW	2
Upper-Level Science Required Elective 1	4	Upper-Level Science Required Elective 2	4
Major Science Elective 1	4	Major Science Elective 2	3
Area IV Elective 3	3	Area IV Elective 4	3
Total	16	Total	15
Fourth Year			
Fall Semester		Spring Semester	
VPHY 4XXX Physiology Elective 1 NEW	3	VPHY 4XXX Physiology Elective 2 NEW	3
Major Science Elective 3	3	General Elective	3
General Elective	3	General Elective	3
General Elective	3	General Elective	3
Total	12	Total	12
		Grand Total	**120**

d. *State the total number of credit hours required to complete the program, but do not include orientation, freshman year experience, physical education, or health and wellness courses that are institutional requirements as defined in the Academic and Student Affairs Handbook, Section 2.3.1 and the Board Policy Manual, 3.8.1.*

A total of 120 hours is required to complete the proposed program in physiology. This total does not include the 1-hour physical education requirement.

e. *Within the appendix, append the course catalog descriptions for new courses and their prerequisite courses. Include the course prefixes, course numbers, course titles, and credit hour requirements.*

Please refer to Appendix I for descriptions of courses created in support of the proposed program in physiology. A brief list of course titles and hours follows:
VPHY 3107-3107D, Integrative Concepts in Physiology I (4 hours) NEW
VPHY 3107L, Integrative Concepts in Physiology Laboratory (1 hour) NEW
VPHY 3108, Integrative Concepts in Physiology II (3 hours) NEW
VPHY 3110, Careers in Biomedical Physiology and Professional Skills (2 hours) NEW
VPHY 4200/6200, Physiologic Basis of Diseases (3 hours) NEW
VPHY 4300/6300, Endocrine Physiology (3 hours) NEW
VPHY 4600/6600, Physiological Toxicology (3 hours) NEW

f. *If this is an undergraduate program, how does or would the department/institution use eCore, eMajor, or dual enrollment?*

This program will not be offered online. Appropriate course credit earned through dual enrollment may apply to the program requirements.

g. *If this is a doctoral program, provide the names of four external reviewers of aspirational or comparative peer programs complete with name, title, institution, e-mail address, telephone number, and full mailing address. External reviewers must hold the rank of associate professor or higher in addition to other administrative titles.*

Not applicable.

12. Program of Study - UNDERGRADUATE ONLY

Please see Section 11c.

13. Program of Study - GRADUATE ONLY (provide the program of study).

Not applicable.

14. Alternative Curricular Pathway: *What alternative curricular pathways exist (for example for students who were not admitted to the major but are still in satisfactory standing at the institutional level)? Please describe them below and describe how these students are advised about the alternative(s).*

Students who are not successful in the Biomedical Physiology major (B.S.) may be interested in pursuing one of the following majors: Animal Science (B.S.A.), Applied Biotechnology (B.S.A.B.), Biological Science (B.S.A.), Biology (B.S.), Science Education (B.S.Ed.), Ecology (B.S.), Entomology (B.S.E.S.), Environmental Health Science (B.S.E.H.), Food Science (B.S.A.), Nutritional Sciences (B.S.F.C.S.), or Psychology (B.S.). Students will make the decision to transfer to a different major with the guidance of the program's academic advisor.

15. **Prior Learning Assessment:** *Does the program include credit for prior learning assessment? How will credit be assessed and for what specific courses in the curriculum inclusive of prerequisites? If this is not applicable, indicate "NA" in this section.*

    Not applicable.

16. **Open Educational Resources:** *Does the program include open educational resources that have been assessed for quality and permissions, can be connected with related curricular resources, and are mapped to learning outcomes? If this is not applicable, indicate "NA" in this section.*

    Not applicable.

17. **Waiver to Degree-Credit Hour** (if applicable):

    - *All bachelor's degree programs require 120-semester credit hours.*
    - *Master's level programs have a maximum of 36-semester hours. Semester credit-hours for the program of study that are above these requirements require a waiver to degree-credit hour request with this proposal.*
    - *State whether semester credit-hours exceed maximum limits for the academic program and provide a rationale.*
    - *This is not applicable for specialist in education and doctoral programs.*

      The proposed program will not exceed the maximum of 120 credit hours for undergraduate programs.

18. **Student Learning Outcomes:** *Student Learning outcomes and other associated outcomes of the proposed program (provide a narrative explanation).*

    Graduates earning a B.S. in Biomedical Physiology will have the skills necessary to pursue careers in a variety of biomedical science-related fields, including the healthcare and bioscience industries. Specifically, the Major Area courses required by the Department of Physiology and Pharmacology (VPHY) will result in the following outcomes for biomedical physiology majors:

Outcome 1: Graduates of the program will be able to successfully demonstrate knowledge and understanding of general and systems-based physiology concepts.

Outcome 2: Graduates of the program will be able to explain the integrative responses of body systems to maintain normal functioning in response to physiologic perturbations.

Outcome 3: Graduates of the program will be able to locate, critically evaluate, and synthesize information from a variety of sources to incorporate into problem-solving processes.

Outcome 4: Graduates of the program will be able to clearly communicate, both orally and in writing, scientific knowledge at a level appropriate for the intended audience.

Outcome 5: Graduates of the program will be able to work both independently and collaboratively to solve problems and complete tasks in a professional and ethical manner.

Map of programmatic outcomes to VPHY physiology courses.

	Outcomes				
	1	2	3	4	5
VPHY 3107-3107D	✓✓✓	✓	✓✓	✓✓	✓✓
VPHY 3017L	✓✓✓	✓	✓✓	✓✓✓	✓✓✓
VPHY 3108	✓✓✓	✓✓✓	✓✓	✓	✓
VPHY 3110	✓			✓✓✓	✓✓✓
4000-level electives	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓

✓, ✓✓, ✓✓✓ indicates that course contributes to the outcome a little, a moderate amount, or to a great extent.

19. Assessment: *Describe institutional programmatic assessments that will be completed to ensure academic quality, viability, and productivity.*

Curriculum assessment of the program's learning outcomes will be ongoing throughout each year and will involve both quantitative and qualitative measures. The department plans to incorporate Phys-MAPS[1], a validated and reliable assessment of knowledge of physiology concepts administered to students at multiple points in the program, to obtain quantitative data on progress toward meeting our learning outcomes. Additionally, the department plans to compare performance in the program's VPHY 3017 course with performance in the parallel VPHY 3100 course for non-majors as a means of assessing whether the introductory course provides enhanced understanding of physiology concepts. Performance in courses, exit interviews, and job placement rates will allow the department to assess the more skills-based aspects of our curriculum. The department also aspires to track long-term employment career trends in graduates, which is data that is currently lacking in the field.

Additionally, the program will assist with performing the Academic Program Review performed by the university's Program Review and Assessment Committee and the Office of Accreditation and Institutional Effectiveness, which is mandated to occur every 7 years.

[1] "Phys-MAPS: a programmatic physiology assessment for introductory and advanced undergraduates." Semsar K, Brownell S, et al. Advances in Physiology Education 43: 15-27, 2019.

20. Accreditation: *Describe disciplinary accreditation requirements associated with the program (if applicable, otherwise indicate NA).*

Not applicable.

21. SACSCOC Institutional Accreditation: *Is program implementation contingent upon SACSCOC action (e.g., substantive change, programmatic level change, etc.)? Please indicate Yes or No.*

No

ENROLLMENT SECTION *(Consult with Enrollment Management)*

22. Recruitment and Marketing Plan: *What is the institution's recruitment and marketing plan?*

The department will integrate information about the Biomedical Physiology major into the College of Veterinary Medicine's website. Additionally, the department will create a specific webpage to highlight the major. This site will focus on providing information about the program to prospective students as outreach. Moreover, it will include all needed program information for students enrolled in the program.

Within the University of Georgia, the department will partner with academic advisor groups, particularly in the Franklin College of Arts and Sciences, the Pre-Professional Advising Office, and the Academic Advising Services Exploratory Center, to continually update advisors on offerings related to the physiology degree. Information about the degree will be provided at both the New Student and Transfer Student Orientation Resource Fairs, and a representative of the department will be at the Majors Fairs offered by the university each academic year. Majors Fairs are events designed to allow students to learn more about many of the majors available at the university.

Additionally, the Office of Undergraduate Admissions will send an annual email introducing the Biomedical Physiology degree to prospective, or newly enrolled, students who self-report as pre-health or pre-professional students. The admissions office will also communicate information about the major via their Twitter and Instagram accounts once the major has been approved.

Extramurally, the department will seek to identify and utilize multiple venues for recruitment and marketing of the proposed major. The department plans to work with the

Office of Undergraduate Admissions to communicate information regarding the Biomedical Physiology major to undergraduate institutions both within and outside the state to generate interest in potential transfer students who have completed their lower-level coursework. Initial recruitment efforts will focus on schools within and outside of Georgia from which the largest numbers of transfer students originate.

Moreover, the department will work with the Physiology Majors Interest Group and the Human Anatomy and Physiology Society, which are national organizations of undergraduate physiology educators, to better determine which additional venues for recruitment and marketing are most fruitful.

What is the proposed program's start-up timeline?

The target date for the program to officially commence is the fall semester of 2021. This will be the first semester that students may declare a major in Biomedical Physiology.

All core courses were approved by the University Curriculum Committee in spring 2020. The planned sequence of new course offerings is VPHY 3107L in spring 2021 and VPHY 3107-3107D, VPHY 3108, and VPHY 3110 at the anticipated implementation date in fall 2021.

Upper-level electives VPHY 4300 and 4600 are established courses, currently offered in the spring and fall semesters, respectively. VPHY 4200 was approved and will be offered in the fall 2020 semester.

23. Enrollment Projections: *Provide projected enrollments for the program specifically during the initial years of implementation.*

a. *Will enrollments be cohort-based?* Yes____ or No__X__ (place an X beside one)

b. *Explain the rationale used to determine enrollment projections.*

	First FY	Second FY	Third FY	Fourth FY
I. ENROLLMENT PROJECTIONS				
Student Majors				
Shifted from other programs	15	10	0	0
New to the institution	14	28	44	68
Total Majors	29	67	111	179

The enrollment projections are based on a survey of the department's VPHY 3100, Elements of Physiology, students in the spring 2019 semester, with 257 students responding. It should accurately reflect the students that will be interested in this program. In the survey, students were asked to rate their interest in pursuing a Bachelor of Science degree in physiology, if such a degree was available during their academic career: 69% indicated a

moderate to high level of interest. Survey results were used to estimate enrollment projections.

24. Faculty

a. *Provide the total number of faculty members that will support this program:* __16__

b. *Submit your SACSCOC roster for the proposed degree. Annotate in parentheses the person who will have administrative responsibility for the program. Indicate whether any positions listed are projected new hires and currently vacant.*

FACULTY NAME (F = Full-time, P = Part-time), RANK	UNDERGRADUATE COURSES TAUGHT Including Term, Course Number & Title, Credit Hours† *Only courses in proposed major listed.	ACADEMIC DEGREES & COURSEWORK Relevant to Courses Taught Including Institution & Major. List specific graduate coursework if needed.	OTHER QUALIFICATIONS & COMMENTS Related to courses taught.††
Edwards, Gaylen (F), Professor (**Dept. Head**)	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Veterinary Medicine** Veterinary Medicine (DVM) 1984 Washington State University **Doctor of Philosophy** Animal Physiology 1986 Washington State University **Master of Science** Animal Physiology 1980 University of Idaho **Bachelor of Science** Zoology/Animal Biology 1978 Idaho State University	Georgia Athletic Association Professorship in Veterinary Medicine Clinical degree Expertise in cardiovascular and respiratory physiology, neurology, pharmacology, toxicology.
Eubig, Paul (F), Lecturer (**Program Coordinator**)	Fall VPHY 3107-3107D Integrative Concepts in Physiology I, 4 VPHY 3107L Integrative Concepts in Physiology Laboratory, 1 VPHY 3108 Integrative Concepts in Physiology II, 3 VPHY 3110 Careers in Biomedical Physiology and Professional Skills, 2 VPHY 4600/6600 Physiological Toxicology, 3 Spring VPHY 3107-3107D Integrative Concepts in Physiology I, 4 VPHY 3107L Integrative Concepts in Physiology Laboratory, 1	**Doctor of Veterinary Medicine** Veterinary Medicine (DVM) 1993 University of Georgia **Doctor of Philosophy** Comparative Biosciences 2013 University of Illinois **Master of Science** Comparative Biosciences 2006 University of Illinois **Bachelor of Science** Biological Sciences 1989 University of Notre Dame	Clinical degree Dr. Erwin Small Teaching Excellence Award Diplomate, American Board of Toxicology Expertise in comparative physiology, neurophysiology, neurotoxicology, pharmacology, toxicology.

	VPHY 3108 Integrative Concepts in Physiology II, 3 VPHY 3110 Careers in Biomedical Physiology and Professional Skills, 2 VPHY 4300/6300 Endocrine Physiology, 3		
Li, Wan-I (F), Associate Professor	Fall VPHY 3107-3107D Integrative Concepts in Physiology I, 4 VPHY 3108 Integrative Concepts in Physiology II, 3 VPHY 4200/6200 Physiologic Basis of Diseases, 3 Spring VPHY 3107-3107D Integrative Concepts in Physiology I, 4 VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Veterinary Medicine** Veterinary Medicine (DVM) 1979 National Taiwan University **Doctor of Philosophy** Cell/Cellular Biology and Anatomical Sciences, Other 1987 University of Florida **Master of Science** Cell/Cellular Biology and Anatomical Sciences, Other 1984 University of Florida	Clinical degree Teaching awards incl. UGA Senior Teaching Fellow, Josiah Meigs Distinguished Teaching Professor, Norden-Pfizer-Zoetis Distinguished Veterinary Teacher, Lilly Teaching Fellow. Expertise in vascular physiology, reproductive physiology.
Coffield, Julie (F), Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 VPHY 4600/6600 Physiological Toxicology, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Veterinary Medicine** Veterinary Medicine (DVM) 1989 University of Wisconsin - Madison **Doctor of Philosophy** Veterinary Toxicology and Pharmacology (Cert, MS, PhD) 1991 University of Wisconsin - Madison **Bachelor of Arts** Biology/Biological Sciences, General 1980 Hollins University	Associate Dean of UGA Graduate School Clinical degree Expertise in neurology, neurophysiology, neurotoxicology, toxicology.
Wells, Karen (P), Instructor	Fall VPHY 3107-3107D Integrative Concepts in Physiology I, 4 Spring VPHY 3107-3107D Integrative Concepts in Physiology I, 4	**Doctor of Philosophy** Physiology and Pharmacology 1997 Emory University **Bachelor of Science** Biochemistry 1989 University of Illinois	Expertise in molecular physiology, protein biochemistry, neuroscience.
Projected New Position (F), Lecturer	Fall VPHY 3107-3107D Integrative Concepts in Physiology I, 4 VPHY 3107L Integrative Concepts in Physiology Laboratory, 1	**Doctor of Philosophy and/or Clinical Degree (DVM or MD)**	Expertise in general physiology.

	VPHY 3108 Integrative Concepts in Physiology II, 3 VPHY 3110 Careers in Biomedical Physiology and Professional Skills, 2 VPHY 4XXX New Required Physiology Elective to be developed Spring VPHY 3107-3107D Integrative Concepts in Physiology I, 4 VPHY 3107L Integrative Concepts in Physiology Laboratory, 1 VPHY 3108 Integrative Concepts in Physiology II, 3 VPHY 3110 Careers in Biomedical Physiology and Professional Skills, 2 VPHY 4XXX New Required Physiology Elective to be developed		
Freeman, Kimberly (F), Research Professional I	Fall VPHY 3107L Integrative Concepts in Physiology Laboratory, 1 Spring VPHY 3107L Integrative Concepts in Physiology Laboratory, 1	**Master of Science** Animal Science 1994 University of Idaho **Bachelor of Science** Animal Science 1989 University of Nebraska-Lincoln	Expertise in behavioral physiology.
De La Fuente, Rabindranath (F), Associate Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Veterinary Medicine** Veterinary Medicine (DVM) 1989 National Autonomous University of Mexico **Doctor of Philosophy** Biomedical Sciences, General 1998 University of Guelph **Master of Science** Biomedical Sciences, General 1993 University of Guelph	Clinical degree Expertise in molecular genetics, reproductive physiology, toxicology.
Filipov, Nikolay (F), Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Philosophy** Toxicology 1998 University of Georgia **Master of Science** Physiology, General 1996 University of Georgia **Bachelor of Science** Animal Sciences, General 1990 Thracian University of Stara Zagora	Fellow, Academy of Toxicological Sciences Expertise in neurodegenerative diseases, neurology, neurotoxicology, toxicology.

Lee, Jae-Kyung (F), Assistant Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Philosophy** Biomedical Sciences, General 2005 University of North Texas Health Science Center at Fort Worth **Master of Science** Biology/Biological Sciences, General 1999 Kyungpook National University **Bachelor of Science** Biology/Biological Sciences, General 1997 Kyungpook National University	Expertise in neuro-degenerative diseases, neurophysiology.
Schank, Jesse (F), Associate Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Philosophy** Biomedical Sciences, General 2008 Emory University **Bachelor of Arts** Biology/Biological Sciences, General 2001 University of Virginia Main Campus **Bachelor of Arts** Psychology, General 2001 University of Virginia Main Campus	Expertise in neurology, neurophysiology, pharmacology.
Viveiros, Maria (F), Associate Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor Of Philosophy** Biomedical Sciences, General 1996 University of Guelph **Master Of Science** Biomedical Sciences, General 1992 University of Guelph **Bachelor Of Science** Natural Sciences 1988 McMaster University	Lilly Teaching Fellow, UGA Teaching Academy Fellow Expertise in molecular genetics, reproductive physiology, endocrinology, toxicology.
Wagner, John (F), Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor Of Philosophy** Pharmacology 1991 University of Washington **Bachelor Of Science** Chemistry, General 1987 Eastern Washington University	Expertise in neurophysiology, pharmacology.
Ye, Xiaoqin (F), Professor	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor Of Medicine** Medicine (MD) 1990 Peking University **Doctor Of Philosophy** Toxicology 1999 University of California, Riverside **Master Of Public Health** Toxicology 1993 Chinese Academy of Medical Science	Clinical degree Expertise in reproductive physiology, toxicology.

Projected New Position (F), Tenure-track Faculty	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Philosophy Optional Clinical Degree.**	Expertise in cardiovascular physiology.
Projected New Position (F), Tenure-track Faculty	Fall VPHY 3108 Integrative Concepts in Physiology II, 3 Spring VPHY 3108 Integrative Concepts in Physiology II, 3	**Doctor of Philosophy Optional Clinical Degree.**	Expertise in respiratory or gastrointestinal physiology.

† New course assignments are projected. Actual teaching assignments will be made by the department head per departmental policy.
†† Clinical degrees, such as Doctor of Veterinary Medicine (D.V.M.) or Medical Doctor (M.D.), involve extensive training in all aspects of human (M.D., D.V.M.) and mammalian (D.V.M.) physiology. Thus, individuals with clinical degrees are qualified to teach physiology at the undergraduate level.

c. *Does the institution require additional faculty to establish and implement the program? Yes or No.* ___Yes___ *Please indicate your answer in the space provided.*

The plan for initiating the program is to start with existing faculty. All faculty involved in the program are listed in section 24 b. The department recognizes that as the program grows, additional sections of existing courses will be needed, as well as development of new courses. This can only be accomplished by the hiring of new faculty. The growth of the program will support the new faculty hires through tuition generated by the program. At this time, the department anticipates the need to start recruitment of the first new faculty member in year 2 of the program. This will allow the incumbent to be in place and teaching in year 3 of the program. The number of students will also dictate the level of staff support.

25. Fiscal, Tuition, and Estimated Budget

a. *Describe the resources that will be used specifically for the program.*

Existing faculty and staff will be used to launch the program. As the program grows, additional faculty and staff will be required. Funding for these positions will ultimately be supported by tuition generated by the program.

There will be a need for laboratory teaching equipment that will need to be funded internally. Estimated cost is $40,000 for the initial set up. As the program grows, additional equipment will be purchased from tuition dollars generated by the program.

There will be a need for supplies for the laboratory exercises. This will be less than $5,000 annually. The College of Veterinary Medicine will support these costs.

b. *Does the program require a tuition cost structure different from or above a regular tuition designation for the degree level?* Yes __ or No __X__

c. *Does the program require a special fee for the proposed program?* Yes __ or No__X__

d. *If the program requires a different tuition cost structure or special fee, such requests require approval through both the Committee on Academic Affairs (for the academic program) and the Committee on Fiscal Affairs (for the tuition increase or special fee designation). The resultant tuition and/or fee request for a new degree is to be submitted to both the academic affairs and fiscal affairs offices. Complete Appendix III that includes information for a differential tuition cost structure involving a proposal for a new academic program.*

Not applicable.

e. *Note: The web link for approved tuition and fees for USG institutions is located at the following url: http://www.usg.edu/fiscal_affairs/tuition_and_fees*

f. *Budget Instructions: Complete the form further below and provide a narrative to address each of the following:*

g. *For Expenditures (ensure that the narrative matches the table)*:

i. *Provide a description of institutional resources that will be required for the program (e.g., personnel, library, equipment, laboratories, supplies, and capital expenditures at program start-up and recurring).*

Three existing positions in the Department of Physiology and Pharmacology, for a total of $129, 640, will be reassigned to this program.

Start-up costs for equipment involves an initial purchase of physiology-testing electronic equipment and computers for VPHY 3107L laboratory in FY 1 followed by a second purchase to expand the number of testing stations in FY 3. The goal is to be able to accommodate 45 students per lab section for FY 3. The department has already acquired 6 lab stations. The department anticipates 2-3 students per lab station, and thus a need for 15 to 18 lab stations by FY 3.

Supplies to run the laboratory course.

Travel includes $2,000 for two teaching faculty to attend one national and one local USG meeting focused on educational methods each year. Registration for the Annual USG Teaching and Learning Conference and the USG Innovation in Teaching Conference, both held on the UGA campus, totaled $350 in the 2019-2020 academic year.

ii. *If the program involves reassigning existing faculty and/or staff, include the specific costs/expenses associated with reassigning faculty and staff to support the program (e.g., cost of part-time faculty to cover courses currently being taught by faculty*

being reassigned to the new program, or portion of full-time faculty workload and salary allocated to the program).

Support staff expenses include advising and administrative assistance.

(1) For FY 1-2, lower-level advising will be provided by the advising group at Franklin College for $75 per student per semester, resulting in anticipated expenses of $2,100 for FY 1 and $6,300 for FY 2. Initially, upper-level advising will be provided by the primary departmental faculty for the program. Hiring an advisor in FY 3 is anticipated to provide lower and upper-level advising (minimum salary for Advisor II position is $39,125). Additional advisors will be hired as the program grows.

(2) The department anticipates hiring an administrative assistant in FY 3 (minimum salary $35,000).

(3) The department anticipates a need for additional faculty positions, with the first new faculty starting in year 3 of the program. This will require recruiting the position in year 2 to allow time for a search and for the faculty to get to campus and develop their courses.

h. *For Revenue (ensure that the narrative matches the table):*

i. *If using existing funds, provide a specific and detailed plan indicating the following three items: source of existing funds being reallocated; how the existing resources will be reallocated to specific costs for the new program; and the impact the redirection will have on units that lose funding.*

Three existing positions in the Department of Physiology and Pharmacology will be reassigned to the proposed program. This reallocation of effort is within the same unit and thus does not involve a loss of funding to any unit. No other reallocations are necessary.

ii. *Explain how the new tuition amounts are calculated.*

Tuition generated by students in the major was calculated by obtaining the tuition rate for ≥ 12 hours per semester at the University of Georgia FY 2020 from the University System of Georgia Fiscal Affairs website and doubling to calculate an annual tuition rate (fall and spring semesters) of $9,790. This was then multiplied by the number of projected students in the program for each FY (FY 1 = 29 students, FY 2 = 67 students, FY 3 = 111 students, FY 4 = 179 students) to determine the projected tuition amounts per FY.

iii. *Explain the nature of any student fees listed (course fees, lab fees, program fees, etc.). Exclude student mandatory fees (i.e., activity, health, athletic, etc.).*

Not applicable.

iv. *If revenues from Other Grants are included, please identify each grant and indicate if it has been awarded.*

Not applicable.

v. *If Other Revenue is included, identify the source(s) of this revenue and the amount of each source.*

Not applicable.

i. *Revenue Calculation: Provide the revenue calculation, in other words, the actual calculation used to determine the projected tuition revenue amounts for each fiscal year involving start-up and implementation of the proposed program.*

Tuition generated by students in the major was calculated by obtaining the tuition rate for ≥ 12 hours per semester at the University of Georgia FY 2020 from the University System of Georgia Fiscal Affairs website and doubling to calculate an annual tuition rate (fall and spring semesters) of $9,790. This was then multiplied by the number of projected students in the program for each FY (FY 1 = 29 students, FY 2 = 67 students, FY 3 = 111 students, FY 4 = 179 students) to determine the projected tuition amounts per FY. These calculations are entered in the chart under Revenue Sources: FY 1 = $283,910, FY 2 = $655,930, FY 3 = $1,086,690, FY 4 = $1,752,410.

j. *When Grand Total Revenue is not equal to Grand Total Costs:*

i. *Explain how the institution will make up the shortfall. If reallocated funds are the primary tools being used to cover deficits, what is the plan to reduce the need for the program to rely on these funds to sustain the program?*
ii. *If the projected enrollment is not realized, provide an explanation for how the institution will cover the shortfall.*
iii. *If the projected enrollment is not realized, what are your next action steps in terms of bolstering the program, potentially altering the program, teach-outs, a planned phase-out, etc.?*

I. EXPENDITURES	FY1 $	FY2 $	FY3 $	FY4 $
Personnel - reassigned or existing positions				
Faculty **(see 25.g.ii)**	$114,640	$114,640	$114,640	$114,640
Part-time Faculty **(se 25.g.ii)**	$15,000	$15,000	$15,000	$15,000
Graduate Assistants **(see 25.g.ii)**	$31,000 (1 GA)	$31,000 (1 GA)	$31,000 (1 GA)	$31,000 (1 GA)
Administrators **(see 25.g.ii)**				
Support Staff **(see 25.g.ii)**				
Fringe Benefits	$1,550	$1,550	$1,550	$1,550
Other Personnel Costs				
Total Existing Personnel Costs	$162,140	$162,140	$162,140	$162,140

EXPENDITURES *(Continued)*				
Personnel - new positions (see 25.g.i)				
Faculty			$90,000	$90,000
Part-time Faculty			$20,000	$20,000
Graduate Assistants	$31,000 (1 GA)	$62,000 (2 GA)	$62,000 (2 GA)	$93,000 (3 GA)
Administrators				
Support Staff	$2,100	$6,300	$74,125	$74,125
Fringe Benefits	$1,550	$3,100	$75,350	$76,900
Other personnel costs				
Total New Personnel Costs	$34,650	$71,400	$321,475	$354,025
Start-up Costs (one-time expenses) (see 25.g.i)				
Library/learning resources				
Equipment	$37,902		$37,711	
Other				
Physical Facilities: construction or renovation (see section on Facilities)				
Total One-time Costs	$37,902		$37,711	
Operating Costs (recurring costs - base budget) (see 25.g.i)				
Supplies/Expenses	$2,400	$2,400	$3,600	$3,600
Travel	$4,000	$4,000	$4,000	$4,000
Equipment				
Library/learning resources				
Other				
Total Recurring Costs	$6,400	$6,400	$7,600	$7,600
GRAND TOTAL COSTS	$241,092	$239,990	$528,926	$523,765

II. REVENUE SOURCES	FY1 $	FY2 $	FY3 $	FY4 $
Source of Funds				
Reallocation of existing funds **(see 25.h.i)**	$129,640	$129,640	$129,640	$129,640
New student workload				
New Tuition **(see 25.h.ii)**	$283,910	$655,930	$1,086,690	$1,752,410
Federal funds				
Other grants **(see 25.h.iv)**				
Student fees **(see 25.h.iii)** Exclude mandatory fees (i.e., activity, health, athletic, etc.)				
Other **(see 25.h.v)**				
New state allocation requested for budget hearing				
GRAND TOTAL REVENUES	$413,550	$785,570	$1,216,330	$1,882,050

Nature of Revenues				
Recurring/Permanent Funds	$413,550	$785,570	$1,216,330	$1,882,050
One-time funds				
Projected Surplus/Deficit (Grand Total Revenue - Grand Total Costs) (see 20.j.)	$172,458	$545,580	$687,404	$1,358,285

26. Facilities/Space Utilization for New Academic Program Information

Facilities Information - Please complete the table below.

				Total GSF
a.	**Indicate the floor area required for the program in gross square feet (gsf). When addressing space needs, please take into account the projected enrollment growth in the program over the next 10 years.**			14,000
b.	**Indicate if the new program will require new space or use existing space. (Place an "x" beside the appropriate selection.)**			
	Type of Space		**Comments**	
i.	Construction of new space is required (x).-→		No	
ii.	Existing space will require modification (x). →		No	
iii.	If new construction or renovation of existing space is anticipated, provide the justification for the need.		N/A	
iv.	Are there any accreditation standards or guidelines that will impact facilities/space needs in the future? If so, please describe the projected impact.		No	
v.	Will this program cause any impact on the campus infrastructure, such as parking, power, HVAC, other? If yes, indicate the nature of the impact, estimated cost, and source of funding.		No	
vi.	Indicate whether existing space will be used.	X	Yes	
c.	**If new space is anticipated, provide information in the spaces below for each category listed:**			
i.	Provide the estimated construction cost.		N/A	
ii.	Provide the estimated total project budget cost.		N/A	
iii.	Specify the proposed funding source.		N/A	
iv.	What is the availability of funds?		N/A	

v.	When will the construction be completed and ready for occupancy? (Indicate semester and year).	N/A
vi.	How will the construction be funded for the new space/facility?	N/A
vii.	Indicate the status of the Project Concept Proposal submitted for consideration of project authorization to the Office of Facilities at the BOR. Has the project been authorized by the BOR or appropriate approving authority?	N/A

d.	**If existing space will be used, provide information in the space below.**			
	Provide the building name(s) and floor(s) that will house or support the program. Indicate the campus, if this is part of a multi-campus institution and not physically located on the main campus. Please do not simply list all possible space that could be used for the program. We are interested in the actual space that will be used for the program and its availability for use.			
	The program will be housed on the 2nd and 3rd floors of the College of Veterinary Medicine building on UGA's main campus, and existing classroom and laboratory space in this building will be utilized (see below). If future needs arise, potential additional spaces have been identified in the following buildings: Forestry Resources, Paul D. Coverdell Center for Biomedical and Health Sciences, Miller Plant Sciences, Biological Sciences, and Science Learning Center.			
e.	**List the specific type(s) and number of spaces that will be utilized (e.g. classrooms, labs, offices, etc.)**			
i.	**No. of spaces**	**Type of Space**	**Number of Seats**	**Assignable Square Feet (ASF)**
	4	Classrooms	Rm H237 = 232 Rm H203 = 102 Rm 222 = 30 Rm 311 = 42 Rm 363 = 248	4,034 1,553 967 788 2,146
		Labs (dry)		
	1	Labs (wet)	Rm H216 = 60	673
	4	Meeting/Seminar Rooms	Rm H211 = 16 Rm H227 = 16 Rm H228 = 16 Rm 236 = 33	314 321 327 564
		Offices		
		Other (specify)		
Total Assignable Square Feet (ASF)				11,687
ii.	If the program will be housed at a temporary location, please provide the information above for both the temporary space and the permanent space. Include a time frame for having the program in its permanent location.			
	N/A			

Chief Business Officer or Chief Facilities Officer Name & Title	**Phone No.**	**Email Address**
	Signature	

Note: A Program Manager from the Office of Facilities at the System Office may contact you with further questions separate from the review of the new academic program.

APPENDIX I

Use this section to include letters of support, curriculum course descriptions, and recent rulings by accrediting bodies attesting to degree level changes for specific disciplines, and other information.

Curriculum Course Descriptions

List of Major Elective Courses

Letters of Support

New Course Descriptions

Below is the list of new courses developed to support the Biomedical Physiology program referenced in Section 11e. The 3000-level courses are required core courses for all students in the major, while the 4000-level courses provide a range of electives from which students are required to complete two. Additional 4000-level electives will be developed as the program expands and additional supporting faculty members are hired.

VPHY 3107-3107D, Integrative Concepts in Physiology I
4 hours: 3 lecture hours and a 1-hour small group discussion section, weekly.
This course will focus on the function of the key mammalian body systems, including the nervous, muscular, respiratory, cardiovascular, digestive, renal, endocrine, and reproductive systems. Small group discussions will build upon class material by emphasizing core concepts in physiology as related to integrative functioning of organ systems.
Prerequisite courses: none.
Course will be offered Fall and Spring semesters each year.
Course was approved by the University Curriculum Committee and will be offered Fall and Spring semesters beginning at the program's anticipated implementation date of Fall 2021.

VPHY 3107L, Integrative Concepts in Physiology Laboratory
1 hour: 2 laboratory hours, weekly.
Weekly laboratory sessions in which students actively engage in physiology experiments to strengthen their understanding of cardiovascular, respiratory, neuromuscular, and sensory organ systems function.
Prerequisite or co-requisite courses: VPHY 3017-3107D.
Course will be offered Fall and Spring semesters each year.
Course was approved by the University Curriculum Committee and will be offered Fall and Spring semesters in Spring 2021 prior to the program's anticipated implementation date.

VPHY 3108, Integrative Concepts in Physiology II
3 hours: 3 lecture hours, weekly.
Emphasizes the physiologic mechanisms by which mammalian body systems function under normal conditions and respond to diseases and changes in the external environment. Includes functional, integrated aspects of nervous, endocrine, metabolic, immune, cardiovascular, respiratory, muscular, digestive, renal, and reproductive systems.
Prerequisite course: VPHY 3107-3107D.
Course will be offered Fall and Spring semesters each year.
Course was approved by the University Curriculum Committee and will be offered Fall and Spring semesters beginning at the program's anticipated implementation date of Fall 2021.

VPHY 3110, Careers in Biomedical Physiology and Professional Skills
2 hours: 2 lecture hours, weekly.
The course focuses on physiology career options. It is geared to help students develop written and oral communication skills applicable to professional settings. In addition, it will foster skills

in leadership and teamwork; workplace-related social skills; emotional intelligence, resiliency, and reflective practices; and develop an understanding of professionalism and ethical principles.
Prerequisite courses: none.
Course will be offered Fall and Spring semesters each year.
Course was approved by the University Curriculum Committee and will be offered Fall and Spring semesters beginning at the program's anticipated implementation date of Fall 2021.

VPHY 4200/6200, Physiologic Basis of Diseases
3 hours: 3 lecture hours, weekly.
Physiology studies normal body functions. Deviations from normal function of organs/systems leads to disease states. This course will address the mechanisms of disease progression from physiologic and clinical perspectives. The topics include specific and in-depth examinations of diseases in the digestive, endocrine, muscle, respiratory, renal and cardiovascular systems.
Prerequisite course: VPHY 3100 or 3107-3107D.
Course was approved by the University Curriculum Committee and will be offered Fall semesters beginning 2020.

VPHY 4300/6300, Endocrine Physiology
3 hours: 3 lecture hours, weekly.
This course addresses hormone function and the respective signaling mechanisms, which maintain homeostasis in different body systems. Includes normal physiologic phases such as growth, pregnancy, and lactation, as well as common hormone-related disorders and their therapies.
Prerequisite course: One semester undergraduate physiology, including VPHY 3107-3017D when it begins to be offered.
Existing course offered Spring semesters since 2019.

VPHY 4600/6600, Physiological Toxicology
3 hours: 3 lecture hours, weekly.
A body-systems approach is used to promote a clinical understanding of how xenobiotics, including pharmaceuticals and environmental contaminants, affect health by altering physiology. Also includes toxicokinetics and toxicodynamics, carcinogenesis, and radiation toxicology.
Prerequisite course: One semester undergraduate physiology including, VPHY 3107-3017D when it begins to be offered.
Existing course offered Fall semesters since 2019.

Major Elective Courses

ADSC 3300, Animal Nutrition and Metabolism (3 hours)
ADSC 3400, Physiology of Reproduction in Domestic Animals (3 hours)
ADSC 3420, Physiology of Lactation in Farm Animals (3 hours)
ADSC(POUL) 4380/6380, Food Animal Growth and Development 3 hours)
ADSC 4390/6390-4390L/6390L, Equine Nutrition (3 hours)
ADSC 4410/6410-4410L/6410L, Applied Reproductive Management in Cattle and Swine (3 hours)
ADSC 4430/6430-4430L/6430L, Equine Exercise Physiology (3 hours)
ADSC 4520/6520, Animal Cognition and Behavior (3 hours)
ANNU(ADSC) 4360/6360, Ruminant Nutrition (3 hours)
ANNU(ADSC)(POUL) 4370/6370, Monogastric Nutrition (3 hours)
BCMB 4010/6010, Biochemistry and Molecular Biology I (4 hours)
BCMB(CHEM) 4110/6110, Physical Biochemistry (3 hours)
BCMB 4120/6120, Human Biochemistry and Disease (4 hours)
BCMB 4130, Human Biochemistry II (3 hours)
BIOL 4200W, Science and Health Writing (3 hours)
BIOL 4300W, Scientific Research Writing (3 hours)
CBIO 3000-3000L, Comparative Vertebrate Anatomy (4 hours)
CBIO 3010-3010L, Gross Anatomy (4 hours)
CBIO 3400, Cell Biology (4 hours)
CBIO 3600, Developmental Biology (4 hours)
CBIO 3800, Neurobiology (4 hours)
CBIO(MIBO)(IDIS) 4100/6100-4100D/6100D, Immunology (4 hours)
CHEM 4120, Chemistry of Drug Design and Drug Action (3 hours)
ECOL 4240-4240L, Physiological Ecology (4 hours)
EHSC 4490, Environmental Toxicology (3 hours)
FDNS 3100, Macronutrients and Energy Balance (3 hours)
FDNS 4050/6050, Optimal Nutrition for the Life Span (3 hours)
FDNS 4100/6100, Micronutrient Nutrition (3 hours)
FDNS 4530/6530, Medical Nutrition Therapy II (4 hours)
FDNS 4590/6590, Metabolism and Physiology of Energy Balance and Obesity (3 hours)
FDNS 4800/6800, Nutrition and Pharmacotherapy for Disease Management (3 hours)
FISH 4300, Environmental Biology of Fishes) (3 hours)
FISH 4500/6500 and FISH 4500L/6500L, Fish Physiology and Laboratory (4 hours)
GENE 3200-3200D or GENE 3200H, Genetics or Honors Genetics (4 hours)
GENE 4200/6200, Advanced Genetics (3 hours)
GENE(CBIO) 4310/6310, Genetic Approaches to Developmental Neuroscience (3 hours)
GENE 4500/6500, Human Genetics (3 hours)
GRNT 3100E, Early Life Influences on Aging (3 hours)
GRNT 3400E or GRNT 7400E, Cognition and the Aging Brain (3 hours)
GRNT 7600E, Pharmacology, Health, and Aging (3 hours)
IDIS 3100 or IDIS 3100H, People, Parasites, and Plagues (3 hours)
IDIS(POPH) 3110, Food Animal Infectious Diseases (3 hours)
IDIS(FDNS) 4200/6200, We Are What We Eat! How Your Gut Influences Your Overall Health (3 hours)

KINS 3700 or KINS 3700E, Applied Exercise Physiology (3 hours)
KINS 4630/6630, Exercise Physiology (3 hours)
KINS 4680/6680, Integrative Cardiovascular Physiology (3 hours)
KINS 4690/6690-4690L/6690L, Neuromuscular Physiology (4 hours)
KINS 5140/7140, Current Problems in Kinesiology (1-3 hours)
KINS 5690/7690, Skeletal Muscle & Mitochondria Physiology (3 hours)
LAMS 3000E, Foundations of Clinical Medicine I (1 hour)
LAMS 3010E, Foundations of Clinical Medicine II (1 hour)
LAMS 3020E, Foundations of Clinical Medicine III (1 hour)
MARS 3550, Life in Fluids (3 hours)
MIBO(POPH) 4220/6220 or MIBO(POPH) 4220S/6220S, Pathogenic Bacteriology (3 hours)
MIBO 4700/6700, Medical Mycology (3 hours)
PHRM(PMCY) 4000, The War on Cancer (3 hours)
PHRM(PMCY) 5050/7050, Abused Drugs (3 hours)
PMCY 3800, Introduction to Pharmacology (3 hours)
PMCY 4200/6200, Pharmacokinetics and Pharmacodynamics (3 hours)
PMCY 4300/6300, Medicinal Chemistry (3 hours)
PMCY 4600/6600, Biological Therapeutics (3 hours)
POUL 3000-3000L, Avian Surgical Techniques (4 hours)
POUL 3123, Avian Biology: Ecology, Physiology, and Behavior (3 hours)
POUL 3750, Integrated Animal Nutrition (4 hours)
POUL(BIOL) 4060/6060, Reproductive Endocrinology (3 hours)
POUL 4175, Avian Anatomy and Physiology (3 hours)
POUL 4200/6200-4200L/6200L, Avian Anatomy and Physiology (4 hours)
POUL 4300/6300, Nutritional Immunology in Health and Production (3 hours)
PSYC 4120, Sensation and Perception (3 hours)
PSYC 4130, Physiological and Comparative Psychology (3 hours)
PSYC 4140, Cognitive Neuroscience (3 hours)
PSYC 4150, Biological Foundations of Health Psychology (3 hours)
PSYC 5850, Psychopharmacology – Drugs and Behavior (3 hours)
VBDI 4997E, Pre-Veterinary/Pre-Medical Histology (3 hours)
VBDI 4998E/6998E, Principles Endocrine Physiology and Pharmacology (3 hours)
VBDI 4999E, Comparative Veterinary Anatomy for Pre-Veterinary Students (3 hours)
VPAT 3100H, Intro to Disease (Honors) (3 hours)
VPAT 4000/6000, On the Origins of Disease (3 hours)
VPAT 4100, Common Diseases of Production Animals (3 hours)
VPHY 4200/6200, Physiologic Basis of Disease (3 hours)
VPHY 4300/6300, Endocrine Physiology (3 hours)
VPHY 4600/6600, Physiological Toxicology (3 hours)
WILD(ECOL) 4040/6040-4040L/6040L, Herpetology (4 hours)
WILD(ECOL) 4060/6060-4060L/6060L, Ornithology (4 hours)
WILD 4400/6400, Wildlife Physiology and Nutrition (3 hours)

Letters of Support

The following letters of support were provided by different stakeholders at the University of Georgia and throughout the state.

1. Dr. Lisa Nolan, Dean of the College of Veterinary Medicine, University of Georgia. Dean Nolan provides details of how the College will support the proposed program.

2. Physiology Majors Interest Group. Dr. Erica Wehrwein, leadership member of a group of professional physiology educators, discusses the strengths and value of the proposed program, and how it aligns with forthcoming national curricular guidelines in physiology education.

3. University of Georgia, Pre-Professional Advising Office. Caroline Piotrowski, Coordinator, describes why the program would be welcomed by many pre-health students and would be beneficial for their career plans. Also, she explains the dynamics behind why students will declare different majors upon entering the university but may then switch to our Biomedical Physiology program once they better understand what our program offers.

4. University of Georgia, Career Center. Brianna Bennett, Senior Career Consultant, addresses how our program will coordinate with the Career Center to prepare students for post-graduation success.

5. Professional Schools in Georgia

Medical schools throughout Georgia provided letters of support that address how our proposed Biomedical Physiology program will (i) make UGA students more competitive applicants for their respective programs, as well as (ii) provide students with a strong physiology background to foster their success within the medical program. Letters are also included from physician, physician assistant, nursing, occupational therapy, and physical therapy programs.

a. Augusta University-University of Georgia Medical Partnership.

b. Morehouse School of Medicine.

c. Philadelphia College of Osteopathic Medicine-Georgia Campus

d. Augusta University, Physician Assistant Department.

e. Emory University, Nell Hodgson Woodruff School of Nursing.

f. Georgia Southern University, School of Nursing.

g. University of North Georgia, College of Health Science and Professions.

h. Augusta University, Department of Occupational Therapy

i. Brenau University, School of Occupational Therapy

j. Georgia State University, Department of Occupational Therapy.

k. Augusta University, Department of Physical Therapy.

l. Brenau University, Department of Physical Therapy.

m. Emory University, Department of Rehabilitation Medicine, Division of Physical Therapy.

6. Biomedical Companies in Georgia

a. Georgia Bio Life Sciences Partnership. Maria Thacker Goethe, President and CEO of a life-sciences industry trade association, conveys how graduates of our program will possess career skills necessary for success in Georgia's growing life-sciences industry.

b. Georgia BioEd Institute Science Training Center. Phil Gibson, Chair of a life-sciences skills-training institute, also indicates that graduates of our program will possess career competencies necessary for success in Georgia's growing life-sciences industry.

Two human resources professionals from a smaller life-science company in Suwanee, GA, and a multi-national life-science company in Atlanta, convey their support for our program's emphasis on developing career skills in our graduates.

7. Femasys Inc. - Suwanee

8. WuXi AppTec - Atlanta

UNIVERSITY OF
GEORGIA

College of Agricultural & Environmental Sciences
Department of Animal and Dairy Science

Board of Regents of the University System of Georgia
270 Washington Street, SW
Atlanta, GA 30334

Dear Distinguished Board Members,

The Department of Animal and Dairy Science at the University of Georgia supports the proposed undergraduate degree program in Biomedical Physiology. The complementary offerings between our two departments provide a unique opportunity to strengthen the knowledge and skills base our students will take with them upon graduation. We also anticipate that the new program will provide enhanced exposure of our program to students interested in health-related and bioscience careers.

Drs. Edwards and Eubig from the Department of Physiology and Pharmacology initially met with us to describe their plans, and they have subsequently updated us and sought our input through the various stages of developing the Biomedical Physiology major and minor. The proposed program offers training in the function and integration of organ systems throughout the body, which dovetails with our department's focus on animal health, and animal and medicinal biotechnology. Many of our students strive to enter post-undergraduate professional programs related to animal or human health, and research-focused doctoral programs. The proposed program will offer our majors an opportunity to either double-major or minor in Biomedical Physiology, resulting in our graduates being even better prepared for the diversity of careers that await them.

In summary, we look forward to approval of these proposals and the enhanced collaboration with the Department of Physiology and Pharmacology in courses and research that examine whole animal function.

Sincerely,

Francis L. Fluharty
Professor and Head

Edgar L. Rhodes Center | Athens, Georgia 30602
Telephone 706-542-1852 | Fax 706-542-2465

UNIVERSITY OF GEORGIA

College of Public Health
Dean's Office
Health Sciences Campus
105 Spear Road, Rhodes Hall
Athens, Georgia 30602
TEL 706-542-0939 | FAX 706-542-6730
www.publichealth.uga.edu

December 15, 2020

Dean Lisa Nolan
UGA College of Veterinary Medicine
Athens, Georgia

RE: Letter of Support for Biomedical Physiology Program

Dean Nolan,

The University of Georgia's College of Public Health supports the proposed program in Biomedical Physiology in the College of Veterinary Medicine. The proposed undergraduate program offers a unique opportunity to complement the training offered by our College. We anticipate that some of our students will minor or double-major in Biomedical Physiology, allowing them to be more effective public health professionals upon graduation. These options will especially appeal to our students who will apply to medical school and other health profession programs.

Physiology, with its focus on the functioning and health of individuals, is an important launching point into public health, with its focus on the health of populations. Our Environmental Health majors are required to take EHSC 2100 Environmental Physiology, while our Health Promotion majors take the CBIO 2200/2210 physiology and anatomy sequence depending on the area of emphasis. By permitting EHSC 2100 to meet the requirement for the introductory physiology course for the minor in Biomedical Physiology, the College of Veterinary Medicine is exhibiting a willingness to work with our students to facilitate their gaining further experience in physiology.

The use of statistical methods in evaluating the health of populations is a critical component of public health practice. The Biomedical Physiology major includes a requirement in statistics which aligns well with our College's emphasis on training in statistics. Our BIOS 2010 Elementary Biostatistics is one of courses that meets the statistics requirement for the proposed program. We look forward to the opportunity to train some of the physiology majors in the appropriate use of statistical methodology.

Marsha Davis

Marsha Davis
Dean
College of Public Health

UNIVERSITY OF GEORGIA

Old College
Athens, Georgia 30602
TEL 706-542-3400
www.franklin.uga.edu

Franklin College of Arts and Sciences
Office of the Dean

January 22, 2021

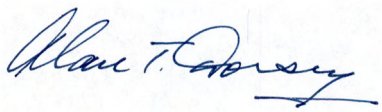
University Curriculum Committee
University of Georgia

Re: proposal for a Biomedical Physiology major in the College of Veterinary Medicine

Dear University Curriculum Committee:

I have read the proposal for a new major in Biomedical Physiology in the College of Veterinary Medicine. In general, I support the expansion of STEM programs across the campus, and the proposed program could be attractive to UGA students who intend to enter health professions. Indeed, I have already provided a letter of support for the Biomedical Physiology *minor* (attached), which I understood to be a first step in developing the program for the major. Unfortunately, I only recently received the proposal for the major, and have not had an opportunity to review the proposal with the unit leaders whose programs would be most affected by the proposed major. I would like to see some assessment of impact on related programs in the Franklin College, such as Biology or Cellular Biology; I also imagine this will affect programs in other colleges, such as Kinesiology in the Mary Frances Early College of Education and programs in the College of Agriculture and Environmental Sciences. My concerns might be mitigated if there were some limits on enrollments, at least initially, so there would not be disruptive effects on related programs.

Sincerely,



Alan T. Dorsey
Dean

Documentation of Approval and Notification

Proposal: Biomedical Physiology (B.S.)

College: College of Veterinary Medicine

Department: Physiology and Pharmacology

Proposed Effective Term: Fall 2021

Department Approval:

- Physiology and Pharmacology Department Head, Dr. Gaylen Edwards, 8/4/20

School/College Approval:

- College of Veterinary Medicine Dean, Dr. Lisa Nolan, 7/8/20

Additional Support Letters

- College of Public Heath Dean, Dr. Marsha Davis, 12/15/20
- College of Pharmacy Associate Dean, Dr. Michael Bartlett, 12/11/20
- Animal and Dairy Science Department Head, Dr. Francis Fluharty, 12/1/20
- Foods and Nutrition Department Head, Dr. Lynn Bailey, 12/20/20
- Kinesiology Department Head, Dr. Janet Buckworth, 11/5/20
- UGA Pre-Professional Advising Office Coordinator, Caroline Piotrowski, 2/19/20
- UGA Career Center Senior Career Consultant, Brianna Bennett
- Augusta University Medical Partnership Dean, Dr. Michelle Nuss, 3/13/20
- Augusta University Department of Occupational Therapy Program Director, Dr. Pamalyn Kearney, 5/10/20
- Augusta University Department of Physical Therapy Chair, Dr. Kevin Brueilly, 2/17/20
- Augusta University Physician Assistant Program Director, Dr. Judith Stallings, 3/5/20
- Brenau University Department of Physical Therapy Chair, Dr. Heather Ross, 3/3/20
- Brenau University School of Occupational Therapy Director, Dr. Kathleen Foley, 5/12/20
- Emory School of Nursing Dean, Dr. Linda McCauley, 3/5/20
- Emory University School of Medicine Division of Physical Therapy Interim Director, Marie Johanson, 2/20/20
- Georgia Southern School of Nursing Associate Chair, Dr. Melissa Garno, 3/5/20
- Morehouse School of Medicine Dean, Dr. Valerie Montgomery Rice, 2/26/20
- Morehouse School of Medicine Associate Dean, Dr. Erica Sutton, 2/26/20
- Philadelphia College of Osteopathic Medicine – Georgia Campus Associate Dean, Dr. B.A. Buxton, 5/21/20
- University of North Georgia College of Health Sciences and Professions Interim Dean, Dr. Carolynn DeSandre, 3/9/20
- Femasys Inc. Product Manager and IP Specialist, Kayla Sepsick, 3/4/20

- Georgia Bio President & CEO, Maria Thacker Goethe
- Georgia BioEd Institute Board Chair, Philip Gibson, 3/6/20
- Georgia BioEd Institute Director, Kristin Boscan, 3/6/20
- Georgia State University Department of Occupational Therapy Chair, Dr. Kinsuk Maitra
- Physiology Majors Interest Group Director, Dr. Erica Wehrwein, 12/7/19
- WuXi AppTec – Atlanta Human Resources Associate Director, Shirley Simmons, 2/27/20

Use of Course Notifications:

- Animal and Dairy Science Department Head, Dr. Francis Fluharty, 10/12/20
- Biochemistry and Molecular Biology Department Head, Dr. Christopher West, 10/12/20
- Biology Department Head, Dr. Kris Miller, 12/18/20
- Cell Biology Interim Department Head, Dr. Mark Farmer, 10/12/20
- Chemistry Department Head, Dr. Gary Douberly, 10/12/20
- Foods and Nutrition Department Head, Dr. Lynn Bailey, 10/12/20
- Genetics Department Head, Dr. Nancy Manley, 10/12/20
- Kinesiology Department Head, Dr. Janet Buckworth, 10/12/20
- Marine Sciences Department Head, Dr. Daniela Di Iorio, 10/12/20
- Microbiology Department Head, Dr. Aaron Mitchell, 10/12/20
- Poultry Science Department Head, Dr. Todd Applegate, 12/17/20
- Psychology Department Head, Dr. Stephen Miller, 10/12/20
- College of Pharmacy Associate Dean, Dr. Lori Duke, 10/12/20
- College of Public Health Associate Dean, Dr. Erin Lipp, 10/12/20
- Odum School of Ecology Associate Dean, Dr. John Drake, 10/12/20
- Warnell School of Forestry and Natural Resources Associate Dean, Dr. Robert Bringolf, 10/12/20