BOARD OF GOVERNORS
STATE UNIVERSITY SYSTEM OF FLORIDA
NEW DOCTORAL DEGREE PROPOSAL STAFF ANALYSIS

Program: Ph.D. in Anatomical Sciences Education
CIP Code: 26.0403
Institution: University of Florida
Proposed Implementation Date: Spring 2019
Staffed By: Disraelly Cruz
Initial Review Date: 1/24/19 **Last Update:** 5/21/19

Projected program costs:

	Total	% & $ Current Reallocated	% & $ New Recurring	% & $ New Non-Recurring	% & $ C&G	% & $ Philanthropy & Endowment	Auxiliary Funds	Cost per FTE	SUS 17-18 Average Cost per FTE
Year 1	$392,779	100% $392,779	0% $0	0% $0	0% $0	0% $0	$0	$0	$13,285.44 26 CIP
Year 5	$920,475	100% $920,475	0% $0	0% $0	0% $0	0% $0	$0	$0	

Projected FTE and Headcount are:

	Student Headcount	Student FTE
First Year	2	2
Second Year	4	4
Third Year	6	6
Fourth Year	8	8
Fifth Year	10	10

On March 29, 2007, the Florida Board of Governors approved Board Regulation 8.011, which sets forth criteria for implementation and authorization of new doctorates by the Board of Governors, as well as criteria for implementation and authorization of Bachelor's, Master's and Specialist degrees by Boards of Trustees. The following staff analysis is an assessment of how well the university meets Board Accountability and Readiness criteria for implementation of this degree program.

Proposal Page Numbers:

INTRODUCTION		ACCOUNTABILITY		READINESS				
Program Description	BOG Goals	Overall	Budget	Mission and Strength	Program Quality	Curriculum	Faculty	Resources
3	6	8	10	13	15	16	24	26

A. Program Description:

University of Florida's College of Medicine and College of Education are proposing a joint Doctor of Philosophy of Anatomical Sciences Education. This program is designed to train individuals to become fully qualified educators in all anatomical science disciplines and conduct scholarly research on anatomical pedagogy (p. 2). The joint degree will focus on anatomical knowledge, pedagogical expertise, and assessment skills critical for training students for a career in teaching anatomy at the university level and conducting scholarship in medical education.

The Ph.D. in Anatomical Sciences Education will require completion of a minimum of 90 credit hours beyond the bachelor's degree, completion of qualifying and final exams, and completion of a dissertation. For students who are accepted into the doctoral program with a master's, up to 30 credit hours may be transferred at the discretion of the program director and the graduate school (p. 14).

B. System-Level Analysis and Evaluation in accordance with BOG Regulation 8.011:

The proposal provides alignment of the program with the State University System's (SUS) strategic plan in the areas of academic and research excellence. The joint doctoral program focuses on anatomical sciences, educational research, and curriculum instruction and design. It is expected that graduates will go on to teach at higher education institutions and produce scholarly research on medical education (p. 2). The production of research in anatomical sciences education is in line with the SUS's strategic goal of increasing research and commercialization activity. Additionally, while not included as a program of strategic emphasis, graduates of the program will engage in STEM education for additional science programs which are included in the areas of strategic emphasis (p. 5).

Need for Graduates in the Labor Market

The proposal documents the need for doctorates in anatomical sciences education. Citing a journal article from *Anatomical Sciences Education,* the proposal notes the need for anatomists trained in methodologies of teaching and evaluation (pp. 5-6). One reason for the increase in need is that traditionally-trained anatomists are retiring and

not being sufficiently replaced. Dr. Brokow, Director of Indiana University's Anatomical Sciences Education Program, notes that "rarely a week goes by where I do not receive at least one phone call or e-mail from a program somewhere seeking to fill a faculty tenure-track teaching position in anatomy" (p. 253). Additionally, there has been an increase in the number of medical schools and physician assistant programs, resulting in a greater need for anatomy instructors. A second reason is that new educational technologies have been developed that supplement cadaver-based anatomy courses, creating complementary and alternative methods of anatomy education (pp. 5-6). Although these new educational technologies are more cost-effective, there is a gap of qualified educators who have the skillset to integrate the emerging technologies into the current established curriculum.

Board staff conducted an independent analysis of labor market data, both nationally and locally, and the job outlook for anatomical sciences (CIP 26.0403) is projected to grow at an above average pace. As noted in Table 1, ten-year growth projections for postsecondary instructors is fifteen percent. Additional opportunities beyond academia are available and also have strong projections, but these opportunities do not require an advanced degree.

A search was conducted on the Chronicle of Education's job board[1] on April 2, 2019, to assess the availability of academic jobs. Between August of 2018 and April 2, 2019, 93 full-time academic job openings were posted. Position requirements ranged from expertise in general biology with the ability to teach human anatomy to position announcements that explicitly sought individuals with expertise in human anatomy. For example, Miami University in Ohio has an opening for a full-time Assistant Teaching Professor of Biology in Human Anatomy and Physiology who will teach courses in human physiology, human anatomy and physiology, human anatomy, and pathophysiology. The Alabama College of Osteopathic Medicine has an opening for an individual with a Ph.D. of Human Anatomy who can teach a cadaver-based clinical course.

Board staff noted that several positions were non-tenure track, teaching positions, or sought faculty members with expertise in specific biomedical sciences. A few job announcements stated research and grant funding expectations. For example, one opening at the University of Central Florida's College of Medicine specifically sought an individual with expertise in pathology to teach courses in neurobiology, musculoskeletal, anatomy, and cadaver autopsy pathology while also conducting research and obtaining external funding.

Graduates of the proposed anatomical sciences education program may tailor their electives to prepare to teach courses in a variety of biomedical sciences; however, as

[1] Retrieved from https://chroniclevitae.com/job_search/new on April 2, 2019.

Table 1: Labor Market Demand for Anatomy (CIP 26.0403)

	Employment Change (Percent)		Annual Average Job Openings		Employment Change (Number)		
Occupations	**FL, 2018-26**	**National, 2016-26**	**FL**	**National**	**FL , 2018-26**	**National, 2016-26**	**BLS Typical Education Needed for Entry**
Natural Sciences Managers	12.4	9.9	104	5,200	130	5,600	Bachelor's degree
Biological Scientists, All Other	9.3	8.0	178	3,700	166	3,100	Bachelor's degree
Medical Scientists, Except Epidemiologists	18.7	13.4	243	12,100	402	16,100	Doctoral or professional degree
Biological Science Teachers, Postsecondary	15.5	15.2	230	6,000	357	9,400	Doctoral or professional degree

Sources:
U.S. Bureau of Labor Statistics – https://www.bls.gov/ooh
Florida Department of Economic Opportunity - http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/employment-projections

noted by one of the external consultants "there are few opportunities for external awards that support educational scholarship" (p. 252). While the consultant was focusing on stipends and institutional support for graduates, external funding could be an area of concern for individuals choosing to specialize in anatomical sciences education versus biomedical sciences. The external funding concern may be less of an issue for teaching positions.

The proposed Ph.D. of Anatomical Sciences Education will be one of three in the United States (U.S.), one of four internationally, and only one of two programs in the U.S. that has a joint program with the College of Education. Given the projected headcount of the program, the headcounts of the other four programs, and the headcounts of biomedical sciences doctoral students in the SUS, the job outlook for graduates of the proposed doctoral program appears strong.

Student Demand for the Program

Three surveys were conducted to assess demand for a program in anatomical sciences education. The first survey was conducted in 2017 with students who were enrolled in the Department of Anatomy and Cell Biology's online certificate in anatomical sciences education. The purpose of this survey was to identify current students' careers. Seven of the twelve students that responded identified as instructors at community colleges or teachers in secondary education. In another survey conducted in the summer of 2017, six out of eleven respondents identified as teachers or instructors. Eight out of eleven respondents expressed interest in enrolling in an online master's in anatomical sciences or an on-site doctoral program in anatomical sciences education (p. 6). Another survey, conducted in the fall of 2017, sought to identify students' interest in pursuing advanced degrees. Of 17 respondents, less than half of the respondents (47.1%) indicated that they would be interested in pursuing a master's or doctorate in anatomical sciences education, with 2.3% indicating they were possibly interested (p. 7).

Within the State University System, this would be the first doctoral program offered in CIP 26.0403 with a focus on anatomy and anatomy pedagogy. While no other doctoral program in the System is substantially similar, the enrollment and degrees awarded for the System's doctoral programs in biological and biomedical sciences are included in Tables 2 and 3. The proposal notes that these two programs primarily prepare individuals to enter health-care professions, whereas the proposed program is focused on preparing educators in anatomical sciences (p. 2). The projected headcount is two for the first year and ten by the fifth year. Per the proposal, the primary source of students for this program will be individuals who have previously graduated from the University of Florida (Appendix A, Table 1-B). Given these numbers, there would not be a duplication of programs in the SUS.

Table 2: Enrollment, Ph.D. in Biological/Biomedical Sciences (CIP 26.9999)

Institution	2013	2014	2015	2016	2017
UF	190	190	186	182	196
USF	100	89	92	88	78
Grand Total	**290**	**279**	**278**	**270**	**274**

Source: Board ODA analysis of enrollment by CIP, retrieved April 2, 2019

Table 3: Degrees Awarded, Ph.D. in Biological/Biomedical Sciences (CIP 26.9999)

Institution	2015-2016	2016-2017	2017-2018
UF	37	33	37
USF	13	25	15
Grand Total	50	58	52

Source: Board ODA analysis of enrollment by CIP, retrieved April 2, 2019

External Consultant's Report

Dr. Michael Lehman, Professor and Chair of the Department of Neurobiology and Anatomical Sciences at the University of Mississippi Medical Center; Pawlina Wojciech M.D., Professor and Chair of Anatomy at Mayo Clinic; and Dr. James J. Brokaw, Professor and Vice Chair for Education of the Department of Anatomy and Cell Biology at Indiana University School of Medicine, reviewed the University of Florida's proposal for the Ph.D. in Anatomical Sciences Education. All three consultants provided letters of support.

All three consultants commented on the value and need for anatomical sciences educators. Dr. Lehman noted the shift in the discipline from "wet lab research and teaching to a discipline that centers on the careers of faculty who are master teachers and educator-scholars" (p. 251). Dr. Lehman added that the proposed program would support disciplinary changes towards a more integrated curriculum calling the program "novel and forward thinking, presenting unique opportunities for types of training experiences students can take advantage of" (p. 251). Dr. Brokaw noted the need and demand for qualified anatomy teachers stating "rarely a week goes by where I don't receive at least one phone call or e-mail from a program somewhere seeking to fill a faculty tenure-track teaching position in anatomy" (p. 253).

All three consultants expressed concern over the number and training of faculty members. Both Dr. Lehman and Dr. Brokaw mentioned that while a critical mass is present to start the program, the program should consider investing in future junior faculty lines, especially in the area of anatomical sciences education. Dr. Lehman and Dr. Wojciech discussed the importance of faculty development. Dr. Wojciech suggested additional training for College of Medicine faculty (p. 252). In response to this concern, the proposal provides information regarding medical and dental students success on

Step-I of the United States Medical Licensing Examination. Additionally, the College of Medicine faculty has regularly received exemplary teaching awards (p. 25).

Lastly, Dr. Lehman and Dr. Wojciech commented on the importance of stable funding for graduate student stipends. Recognizing that traditional biomedical science doctoral programs funding comes from external grants and awards, Dr. Lehman noted that there are fewer opportunities for external research awards that support educational scholarship (p. 251). Dr. Wojciech also noted the value of disseminating students' research and supporting travel to national and international meetings (p. 212).

Summary

The University of Florida is proposing to develop a Ph.D. of Anatomical Sciences Education. This program will be the first doctoral program with the CIP 26.0403 in the SUS. The purpose of the program is to prepare students to teach and conduct research in the anatomical sciences (p. 2). The proposed program requires a minimum of 90 or more credit hours beyond the bachelor's degree and will be offered on the University of Florida main campus beginning fall of 2019.

The proposed program addresses both the growing need for postsecondary educators and the disciplinary changes that have emerged due to new educational technologies. Graduates of this program will not only be trained in both new technologies and cadaveric dissections but will also be conducting scholarship to improving pedagogical approaches to the anatomical sciences.

An assessment was done with students who were enrolled in the online Anatomical Sciences Education Certificate program. These students were asked one global question: "Would you be interested in an online anatomical education master's or on-site Ph.D. program (p. 7)?" As the online anatomical sciences master's and the doctorate in anatomical sciences education are two completely separate proposed programs, it is difficult to assess what a "yes" response is referencing. A targeted question focusing on the on-site Ph.D. program would have been more helpful to ascertain students' interest in the program.

C. Assessment of the University Review Process in accordance with BOG Regulation 8.011:

Due to the system of stair step accountability set in place by the Board of Governors in Regulation 8.011, it is now incumbent upon University Board of Trustees to verify that all doctoral programs coming before the Board of Governors have met the requirements of the regulation. The following is an assessment of the university review process to ensure that all criteria set forth have been considered by the university prior to submission to the Board of Governors office.

ACCOUNTABILITY

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

1. *Overall –* *The proposal is in the correct format, includes all necessary signatures, and contains complete and accurate tables for enrollment projections, faculty effort, and the proposed budget.*

YES NO

☒ ☐ **The proposal has been approved by the university board of trustees and includes all required signatures.**

The proposal was approved by the University of Florida's Board of Trustees on December 7, 2018.

☒ ☐ **The university has provided a proposal written in the standard SUS format which addresses new academic program approval criteria outlined in BOG Regulation 8.011.**

The new academic program proposal was written in the standard SUS format and in accordance with the criteria set forth in Board Regulation 8.011.

☒ ☐ **The pre-proposal was reviewed by the Council of Academic Vice Presidents (CAVP) workgroup, and any concerns identified by the group have been listed and addressed in the proposal.**

The Ph.D. pre-proposals was presented to the CAVP in October of 2017, and no formal concerns were present. However, the CAVP asked about the value the educational component would add to the degree (p. 3). The proposal claims that the value of including the educational component is to produce anatomy educators who can teach all aspects of anatomical disciplines including cell biology, histology, and gross anatomy as well as research pedagogical aspects of teaching the sciences.

☒ ☐ **The university has provided data that supports the need for an additional program in the State University System as well as letters of support or concern from the provosts of other state universities with substantially similar programs.**

The proposed degree program would be the first doctoral program in the State University System under this CIP code. While there are other programs under CIP 26.9999, which is Biological/Biomedical Sciences, these other programs are designed to prepare individuals for health-care professions.

☒ ☐ **The university has provided complete and accurate projected enrollment, faculty effort, and budget tables that are in alignment with each other.**

Apendix A, Tables 1-4 reflect the enrollment growth, faculty effort, and budget.

☒ ☐ **The university has included a statement in the proposal signed by the equity officer as to how this proposal will meet the goals of the university's equity accountability plan.**

The University of Florida's Equal Opportunity Officer reviewed and signed the proposal on February 6, 2018.

☒ ☐ **The program does not substantially duplicate programs at FAMU or FIU or, if it does, evidence was provided that consultations have occurred with the affected university on the impact of the new program on existing programs.**

The program does not duplicate programs at Florida Agricultural and Mechanical University or Florida International University.

2. Budget – *The proposal presents a complete and realistic budget for the program consistent with university and BOG policy, and shows that any redirection of funding will not have an unjustified negative impact on other needed programs.*

YES NO

☒ ☐ **The University Board of Trustees has approved the most recent budget for this proposal.**

The current budget was approved by the University Board of Trustees on December 7, 2018.

☒ ☐ **The university has reviewed the budget for the program to ensure that it is complete and reasonable, and the budget appears in alignment with expenditures by similar programs at other SUS institutions.**

The projected E&G cost per FTE in year one is $14,547, and in year five is $15,341. The projected costs for the program corresponds with the calculated average cost per FTE of $13,285.44 for CIP 26, as provided in the 2016-2017 expenditure analysis report.

☐ ☒ **The proposal indicates that the program will follow the cost-recovery or**

market-rate funding models. If so, details and timelines for getting approvals for these funding models are included in the proposal.

The program will operate as a traditional graduate program.

☒ ☐ **In the event that resources within the institution are redirected to support the new program, the university has identified this redirection and determined that it will not have a negative impact on undergraduate education, or the university has provided a reasonable explanation for any impact of this redirection.**

Present course offerings will absorb doctorate students. The program is looking for support from the University of Florida Graduate Office, College of Medicine's Dean Education Office, and from the department through a redirection of funding to secure financial support for the Ph.D. students. At the department level, one possible funding source is the currently ongoing certificate and future online master's program.

READINESS

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

3. Program Quality *– The proposal provides evidence that the university planning activities have been sufficient, and responses to any recommendations to program reviews or accreditation activities in the discipline pertinent to the proposed program have been addressed.*

YES NO

☒ ☐ **The university has followed a collaborative planning process for the proposed program in accordance with policies and procedures adopted by the University Board of Trustees.**

The proposal describes a collaborative planning process involving faculty from both colleges, administrators, and external consultants. A chronological table outlining the collaborative planning process is included in the proposal (p. 14).

☒ ☐ **An external consultant has reviewed the proposal and supports the department's capability of successfully implementing this new program.**

Dr. Michael Lehman, Professor and Chair of the Department of Neurobiology and Anatomical Sciences at the University of Mississippi Medical Center; Pawlina Wojciech M.D., Professor and Chair of Anatomy at Mayo Clinic; and Dr. James J. Brokaw, Professor and Vice Chair for Education of the Department of Anatomy and Cell Biology at Indiana

University School of Medicine, reviewed the University of Florida's proposal for the Ph.D. in Anatomical Sciences Education. While all three consultants discussed the innovative nature of the program and need for more educators in the anatomical sciences, all three expressed concern regarding faculty and graduate student funding. Dr. Lehman and Dr. Wojciech suggested faculty development for current and new faculty, and Dr. Lehman added that the program should consider adding junior faculty in the future. Lastly, Dr. Lehman and Dr. Wojciech noted the importance of stable graduate student funding for stipends and conference travel. Specifically, Dr. Lehman noted that there are limited external funding sources for an educational scholarship (p. 252).

☒ ☐ **The university has found the level of progress that the department has made in implementing the recommendations from program reviews or accreditation activities in the discipline pertinent to the proposed program to be satisfactory.**

Both Colleges are individually accredited and no additional concerns were expressed.

☒ ☐ **The university has analyzed the feasibility of providing all or a portion of the proposed program through distance learning.**

According to the proposal, all courses will be offered on-site.

☒ ☐ **If necessary, the university has made allowances for licensure and legislative approval to be obtained in a timely manner.**

N/A

4. Curriculum *- The proposal provides evidence that the university has evaluated the proposed curriculum and found that it describes an appropriate and sequenced course of study, and that the university has evaluated the appropriateness of specialized accreditation for the program.*

YES NO

☒ ☐ **The university has reviewed the curriculum and found that the course of study presented is appropriate to meet specific learning outcomes and industry driven competencies discussed in the proposal.**

The program proposal identifies specific program outcomes in areas of teaching, anatomical sciences research, and educational research (p. 13). The program requires a student to complete a minimum of 90 credit hours including core courses in anatomy and biomedical sciences (24 credit hours),

curriculum and instruction courses (6 credit hours), educational research courses (7-10 credit hours), dissertation hours (15 credit hours), and additional electives in anatomy and biomedical sciences or education research. Students are also expected to complete written and oral comprehensive exams before continuing to the dissertation.

☒ ☐ **The university anticipates seeking accreditation for the proposed doctoral program, or provides a reasonable explanation as to why accreditation is not being sought.**

The colleges are accredited separately. The College of Medicine was fully accredited by the Liaison Committee on Medical Education (LCME) in 2015 (p. 19). The next review will be in 2022-2023. The university is accredited through Southern Association of Colleges and Schools Commission on Colleges, and the accreditation was reaffirmed in 2014 (p. 19). It is possible that there is not an accrediting agency specifically for anatomical sciences education. The College of Education has been fully accredited through the Council for the Accreditation of Educator Preparation (CAEP).

5. Faculty *– The proposal provides evidence that the university is prepared to ensure a critical mass of faculty will be available to initiate the program based on estimated enrollments, and that faculty in the aggregate have the necessary experience and research activity to sustain a doctoral program.*

YES NO

☒ ☐ **The university has reviewed the evidence provided and found that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

According to Appendix A, Table 4, sixteen current faculty members will participate in the doctoral program. The faculty includes nine professors, five associate professors, one assistant professor, and one assistant lecturer. The external consultants noted that the program should consider hiring junior faculty in the future, specifically in the area of Anatomical Sciences Education (p. 252).

☒ ☐ **The university has reviewed the evidence provided and found that the faculty in aggregate has the necessary experience and research activity to sustain the program.**

Appendix A, Table 4 of the proposal identifies the academic discipline for current faculty. Eight faculty members are from the College of Medicine,

and eight faculty members are from the College of Education. Two of the faculty members from the College of Medicine possess Medical Doctorate degrees.

While members of the faculty have participated in research and teaching, few have researched science pedagogy. One noted exception is Dr. Alyson Adams who has researched educating in professional settings.

☒ ☐ **The university has reviewed the evidence provided and found the academic unit(s) associated with this new degree to be productive in teaching, research, and service.**

Faculty in both colleges are active in research, education, and local/national service. Some faculty members are more experienced in aspects than others. There are faculty members from both colleges who have experience leading doctoral committees and dissertations. Faculty teaching in the molecular and Cellular Biology (MCB) concentration in Biomedical Sciences have chaired/directed 59 Ph.D. dissertations (p. 21). Thirteen more dissertations are in progress. Faculty members also serve on committees for graduate students in other concentrations. The proposal primarily focuses on the College of Medicine and Science faculty, but the vitas from the College of Education demonstrate a strong history of publications, research, and teaching.

☐ ☒ **If appropriate, the university has committed to hiring additional faculty in later years, based on estimated enrollments.**

No new faculty members are anticipated.

6. Resources *– The proposal provides evidence that the university has ensured the available library volumes and serials; classroom, teaching laboratory, research laboratory, office space, equipment, clinical and internship sites, fellowships, scholarships, and graduate assistantships will be sufficient to initiate the program, and that if applicable, funding has been secured to make more resources available as students proceed through the program..*

YES NO

☒ ☐ **The university has provided a signed statement from the Library Director verifying that the library volumes and serials available are sufficient to initiate the program.**

Per the proposal, no additional databases, journals, or books are needed to support the implementation of the program. It is possible that additional materials (e.g., hard-copy of journals and other collections) will be needed to

sustain the program through year 5 (p. 23); however, according to Appendix A, Table 2, no funds are budgeted for these expenses. The Library Director signed the proposal on February 4, 2018 (Appendix B of the proposal).

☒ ☐ **The university has ensured that the physical space necessary for the proposed program, including classrooms, laboratories and office space, is sufficient to initiate the program.**

According to the proposal, students will be absorbed into already existing courses, so additional facilities, classrooms, laboratories, or office space are not needed at this time (p. 24).

☒ ☐ **The university has ensured that necessary equipment is available to initiate the program.**

Per the proposal, no additional or specialized equipment is needed for the proposed program.

☒ ☐ **The university has ensured that fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

Ph.D. students will be offered teaching assistantships.

☐ ☐ **If applicable, the university has ensured that the department has arranged a suitable number of clinical and internship sites.**

N/A