

**DATE:** July 22, 2021

**SUBJECT:** New Academic Program  
University of Memphis  
Applied Physiology and Neuromechanics, PhD  
CIP Code: 26.0908 (Exercise Physiology and Kinesiology)

**ACTION RECOMMENDED:** Approval

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**PROGRAM DESCRIPTION**

The University of Memphis proposes a Doctor of Philosophy (PhD) in Applied Physiology and Neuromechanics with two concentrations: Applied Physiology and Nutrition and Applied Biomechanics. The proposed PhD program will train degree candidates to both independently and collaboratively provide focused conceptual and scientific analyses within these two concentrations. Overall, the proposed program will focus on the function and structure of the human body related to its health, nutrition, and movement.

The addition of a PhD program will provide a pathway for existing graduate students in the College of Health Sciences at the University of Memphis that wish to pursue advanced research in these areas. Additionally, the Applied Physiology and Neuromechanics, PhD will strongly support the University of Memphis’s pursuit and eventual maintenance of a Carnegie classification of R1- Very high research activity due to its strong research focus and STEM designation. Faculty in the College of Health Sciences have a strong reputation in securing external funding over the past five years while the number of peer-reviewed publications has been close to 20 each year.

**INSTITUTIONAL GOVERNING BOARD APPROVAL**

The proposed Applied Physiology and Neuromechanics, PhD program was approved by the University of Memphis Board of Trustees on March 4, 2020. Final approval of new academic programs has been delegated to the Provost. On June 7, 2021, Provost Thomas Nenon requested the proposed PhD program be considered for approval by THEC.

**PROPOSED IMPLEMENTATION DATE**

August 2022

**RELEVANCE TO INSTITUTIONAL MISSION AND STRATEGIC PLAN**

The proposed PhD program aligns with the 2015-25 Master Plan for Tennessee Postsecondary Education with a focus on student success, family prosperity, and future workforce. Graduates will have opportunity to pursue academic positions including research or post-doctoral training in clinical research sites.

The proposed program addresses three of the University of Memphis' strategic priorities: investing in people, enhancing image and reputation, and developing new resources. They anticipate recruiting a global, diverse student population, enhancing interdisciplinary initiatives, and increasing external funding and partnerships to align with the priorities.

## **CURRICULUM**

The proposed program has two possible entry points: post-bachelor's degree (requires a minimum of 81 credit hours) and post-master's degree (requires a minimum of 45 credit hours). Students that enter the program on the post-master's degree track will be able to complete the program in three years. Students that enroll in the post-bachelor's degree tracks will be eligible for the Master of Science in Health Studies degree upon successful completion of master level courses. The proposed program will have two available concentrations: Applied Physiology and Nutrition (APAN) and Applied Biomechanics (BIOM). The APAN concentration will focus on the effects of aging, environment, and exercise on physiological systems. The BIOM concentration will focus on the body mechanics and structure on human movement applications.

Upon completion of the proposed PhD in Applied Physiology and Neuromechanics, graduates will be able to:

- Exhibit an integrated understanding of biological, physiological, and physical sciences
- Demonstrate professional conduct and behaviors consistent with legal and ethical practice in teaching and/or research
- Display cultural sensitivity, compassion, and respect in all interactions with fellow professionals, administrators, students, clients, and others;
- Promote a preventative health and wellness mindset for clients/students to reduce and prevent disease within the scope of APAN or BIOM;
- Use evidence together with quantitative and qualitative reasoning to systematically solve problems and develop interventions relevant to APAN or BIOM;
- Collect and critically evaluate data and published scientific literature to apply in instructional and research settings;
- Demonstrate appropriate levels of independence and judgment necessary for successful engagement in teaching and research settings;
- Critically evaluate a focused line of human movement research to design and implement research activities to confirm/generate disciplinary knowledge;
- Effectively contribute to a focused line of research inquiry both as a leader and collaborator; and
- Incorporate meticulous and ethical practices during data collection and analysis activities.

## **PROGRAM PRODUCTIVITY**

The proposed program projects an initial enrollment of seven students increasing to a consistent 14 students by year six. Five students will be supported as graduate research/teaching assistantships. Additionally, the proposed program projects two graduates in year three and six graduates by year seven.

	2022	2023	2024	2025	2026	2027	2028
<b>Enrollment</b>	7	12	13	13	13	14	14
<b>Graduates</b>	-	-	2	3	4	5	6

### **PROGRAM DUPLICATION**

Currently, there are no other PhD programs in Tennessee with the CIP code of 26.0908 - Exercise Physiology and Kinesiology. However, related programs exist at East Tennessee State University (Sport Physiology and Performance, PhD), Middle Tennessee State University (Human Performance, PhD), and University of Tennessee, Knoxville (Nutrition, PhD and Kinesiology, PhD). The proposed Applied Physiology and Neuromechanics, PhD program will differentiate from these programs through concentrations in Applied Physiology and Nutrition and Performance Biomechanics. Additionally, East Tennessee State University provided a letter of support for the proposed PhD program.

### **EXTERNAL JUDGEMENT**

An external review of the proposed program was conducted during a virtual site visit on March 4-5, 2021. Dr. Peter Grandjean, Dean of the School of Applied Sciences and Professor in the Department of Health, Exercise Science and Recreation Management at the University of Mississippi and Dr. Rachael D. Seidler, Full Professor in the Department of Applied Physiology and Kinesiology at the University of Florida served as the external reviewers. The site visit included meetings with campus administrators, faculty, prospective students, and community partners.

Dr. Grandjean and Dr. Seidler recommended approval of the proposed Applied Physiology and Neuromechanics, PhD and stated: "We believe that the doctoral program in Applied Physiology and Neuromechanics within the College of Health Sciences at the University of Memphis will successfully recruit outstanding doctoral students, based on the resources available and the outstanding reputation and success of the college's existing faculty. The program is well thought out and has strong faculty commitment. Furthermore, we believe this doctoral program will aid in the college's retention of its best faculty and the achievement of the University of Memphis's goal for Carnegie R1 classification."

### **STUDENT DEMAND**

An external EAB feasibility study found growth in regional doctoral completions (average 27 percent per year) that outpaced program growth (average 14 percent per year) suggesting potential student demand. Additionally, the University of Memphis surveyed 151 undergraduate students in the College of Health Studies which demonstrated that 56 percent of participants were planning to enroll in a graduate program after graduation. Of those who were interested in continuing to graduate school, 57 percent stated that they would be interested in a PhD in Applied Physiology and Neuromechanics.

To further demonstrate student interest, a fall 2020 survey of graduate students in the College of Health Sciences was conducted. This survey of 76 students indicated that 72

percent wanted to pursue an academic or clinical doctorate with 82 percent who would prefer to pursue doctoral studies at the University of Memphis. Letters of support are provided by current and former students that illustrate research projects conducted with existing University of Memphis faculty.

### **OPPORTUNITIES FOR PROGRAM GRADUATES**

Program graduates will be qualified for academic positions including both teaching and research faculty positions. According to the US Bureau of Labor Statistics, employment options for graduates of the proposed program are projected to increase by 11-15 percent between 2014 - 2024. In 2019, 82 percent of national and 83 percent of regional job postings in Applied Physiology and Neuromechanics were in academic or educational services. Letters of support were submitted by St. Jude Children's Research Hospital and the University of Tennessee Health Science Center.

### **INSTITUTIONAL CAPACITY TO DELIVER THE PROGRAM**

The proposed PhD in Applied Physiology and Neuromechanics will be housed in the College of Health Sciences. This will be the first PhD program in the College which currently offers two undergraduate programs, one graduate certificate, two master's-level programs, and a proposed Doctor of Physical Therapy program. The proposed program will leverage existing research facilities and graduate faculty expertise in the college and will not require any new faculty positions. Additionally, nine faculty will be available to serve on dissertation committees. It is anticipated that an individual faculty mentor will concurrently have a maximum of three full-time doctoral students at different points in their respective programs of study. Appendix A outlines the seven-year financial projections for the proposed program.

### **ASSESSMENT AND POST-APPROVAL MONITORING**

An annual performance review of the proposed program will be conducted for the first seven years following program approval. The review will be based on benchmarks established in the approved proposal. At the end of this period, the campus, institutional governing board, and THEC staff will perform a summative evaluation. The benchmarks include, but are not limited to, enrollment and graduation, program cost, progress toward accreditation, and other metrics set by the institution and THEC staff. If benchmarks are not met during the monitoring period, the Commission may recommend that the institutional governing board terminate the program. If additional time is needed and requested by the institutional governing board, the Commission may choose to extend the monitoring period.

APPENDIX A							
THEC Financial Projections Form							
University of Memphis							
Ph.D. in Applied Physiology & Neuromechanics							
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>I. Expenditures</b>							
<b>A. One-time Expenditures</b>							
New/Renovated Space <sup>1</sup>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Library	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Consultants	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Travel	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Sub-Total One-time</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>B. Recurring Expenditures</b>							
<b>Personnel (no new faculty lines needed)</b>							
<b>Administration</b>							
Salary							
Benefits							
<b>Sub-Total Administration</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Faculty</b>							
Salary							
Benefits							
<b>Sub-Total Faculty</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Support Staff</b>							
Salary			\$ 35,000	\$ 35,700	\$ 36,414	\$ 37,142	\$ 37,885
Benefits			\$ 13,000	\$ 13,260	\$ 13,525	\$ 13,796	\$ 14,072
<b>Sub-Total Support Staff</b>	\$ -	\$ -	\$ 48,000	\$ 48,960	\$ 49,939	\$ 50,938	\$ 51,957
<b>Graduate Assistants</b>							
Salary (\$18,000 x5)	\$ 90,000	\$ 91,800	\$ 93,636	\$ 95,509	\$ 97,419	\$ 99,367	\$ 101,355
Benefits	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Tuition and Fees* (See Below)	\$ 60,000	\$ 60,600	\$ 61,206	\$ 61,818	\$ 62,436	\$ 63,061	\$ 63,691
<b>Sub-Total Graduate Assistants</b>	\$ 150,000	\$ 152,400	\$ 154,842	\$ 157,327	\$ 159,855	\$ 162,428	\$ 165,046
<b>Operating</b>							
Travel							
Printing, office supplies, etc.							
Equipment							
Other (marketing)	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
<b>Sub-Total Operating</b>	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
<b>Total Recurring</b>	\$ 160,000	\$ 162,400	\$ 212,842	\$ 216,287	\$ 219,794	\$ 223,366	\$ 227,003
<b>TOTAL EXPENDITURES (A + B)</b>	\$ 160,000	\$ 162,400	\$ 212,842	\$ 216,287	\$ 219,794	\$ 223,366	\$ 227,003
<b>*If tuition and fees for Graduate Assistants are included, please provide the following information.</b>							
GA salary/stipend (12 month)	\$ 18,000	\$ 18,360	\$ 18,727	\$ 19,102	\$ 19,484	\$ 19,873	\$ 20,271
Base Tuition and Fees Rate	\$ 12,000.00	\$ 12,120.00	\$ 12,241.20	\$ 12,363.61	\$ 12,487.25	\$ 12,612.12	\$ 12,738.24
Number of Graduate Assistants	5	5	5	5	5	5	5
<b>*Additional students should be funded from external grants and contracts. Facilities &amp; Administrative (F&amp;A) income should contribute to revenue.</b>							
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>II. Revenue</b>	1 paid FTE	5.5 paid FTE	6.5 paid FTE	6.5 paid FTE	6.5 paid FTE	7 paid FTE	7 paid FTE
Tuition and Fees <sup>2</sup>	\$ 12,000	\$ 66,660	\$ 79,566	\$ 80,359	\$ 81,165	\$ 88,284	\$ 89,166
Institutional Reallocations <sup>3</sup>	\$ 148,000	\$ 95,740	\$ 133,276	\$ 135,928	\$ 138,629	\$ 135,082	\$ 137,837
Federal Grants <sup>4</sup>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Private Grants or Gifts <sup>5</sup>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other <sup>6</sup>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>BALANCED BUDGET LINE</b>	\$ 160,000	\$ 162,400	\$ 212,842	\$ 216,287	\$ 219,794	\$ 223,366	\$ 227,003

<b>Notes:</b>
<b>(1) Provide the funding source(s) for the new or renovated space.</b>
NA
<b>(2) In what year is tuition and fee revenue expected to be generated? Tuition and fees include maintenance fees, out-of-state tuition, and any applicable earmarked fees for the program. Explain any differential fees.</b>
Starting in year 1, with 1 FTE or 2 part time students; this amount increases each year with additional full time and part time students; values indicate only in-state tuition rates but any out-of-state students would increase the revenue projections.
<b>(3) Identify the source(s) of the institutional reallocations, and grant matching requirements if applicable.</b>
GA support will be provided from the College of Health Sciences GA pool, which is partly funded from central administration and partly funded from F&A generated from external grants and contracts. Additional GAs beyond the noted 5 per year will be funded from external research grants and contracts.
<b>(4) Provide the source(s) of the Federal Grant including the granting department and CFDA(Catalog of Federal Domestic Assistance) number.</b>
NA
<b>(5) Provide the name of the organization(s) or individual(s) providing grant(s) or gift(s).</b>
External grants and contracts will be specific to faculty research activities and can be federal (e.g., NIH) or private (e.g., industry).
<b>(6) Provide information regarding other sources of the funding.</b>
As noted above, additional GAs will be funded from external research grants and contracts.