

October 11, 2021

**RECEIVED**

OCT 12 2021

Michael Baumgartner, Ph.D.  
Executive Director  
Coordinating Commission for Postsecondary Education  
140 N. 8<sup>th</sup> Street, Suite 300  
Lincoln, NE 68509  
[mike.baumgartner@nebraska.gov](mailto:mike.baumgartner@nebraska.gov)

**Coordinating Commission  
for Postsecondary Ed.**

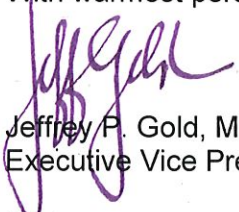
*new program - Dec meeting*

Dear Dr. Baumgartner:

Enclosed is a copy of the proposal to create a **Master of Science in Medical Physiology** to be administered by the Office of Graduate Studies and the **Department of Cellular and Integrative Physiology** in the College of Medicine at the **University of Nebraska Medical Center**. The proposal was approved by the Board of Regents at the October 8, 2021 meeting. Also enclosed is the Proposal for New Instructional Program Form 92-40.

Please do not hesitate to contact me if you should have any questions.

With warmest personal regards,

  
Jeffrey P. Gold, M.D.  
Executive Vice President and Provost

Enclosures

JPG/cr

cc: Jeffrey P. Gold, M.D., Chancellor  
H. Dele Davies, M.D., Senior Vice Chancellor for Academic Affairs  
Bradley Britigan, M.D., College of Medicine  
David Jackson, Ph.D., Vice Provost

**COORDINATING COMMISSION  
FOR POSTSECONDARY EDUCATION**

140 N. 8<sup>th</sup> Street, Suite 300  
Lincoln, NE 68508

Telephone: (402) 471-2847  
FAX: (402) 471-2886

**PROPOSAL FOR NEW INSTRUCTIONAL PROGRAM**

Form 92-40

**SECTION I**

Institution Submitting Proposal: University of Nebraska Medical Center

Title of Program: Medical Physiology

CIP Code: 26.0901

Organizational Unit in which program will be located:

Office of Graduate Studies  
Department of Cellular and Integrative Physiology, College of Medicine

Name of contact person in the event additional information is needed: David S. Jackson, Ph.D., Vice Provost

Telephone: 402-472-5242

Degree, Diploma, or Certificate to be offered (use separate submittal for each level):

Master of Science in Medical Physiology

Proposed date to initiate program: When approved by the Coordinating Commission

List the location(s) where this program will be offered: UNMC

If the program has a projected ending date, please so indicate:

Date approved by Governing Board: October 8, 2021

(Attach all documents related to this proposal upon which the Governing Board made its decision to approve the proposal.)

Chief Executive Officer's or other Authorized Officer's signature: \_\_\_\_\_

  
Jeffrey P. Gold, M.D.

TO: The Board of Regents Addendum XI-A-4  
Academic Affairs Committee

MEETING DATE: October 8, 2021

SUBJECT: Creation of the Master of Science in Medical Physiology to be administered by the Office of Graduate Studies and the Department of Cellular and Integrative Physiology in the College of Medicine at the University of Nebraska Medical Center

RECOMMENDED ACTION: Approval to create the Master of Science (MS) in Medical Physiology to be administered by the Office of Graduate Studies and the Department of Cellular and Integrative Physiology in the College of Medicine at the University of Nebraska Medical Center (UNMC)

PREVIOUS ACTIONS: October 9, 2015 – The Board approved the integration of six UNMC PhD-granting programs in the College of Medicine into one PhD training program creating the Interdisciplinary Graduate Program in Biomedical Sciences with six subprograms: 1) Integrative Physiology and Molecular Medicine; 2) Immunology, Pathology and Infectious Disease; 3) Biochemistry and Molecular Biology; 4) Molecular Genetics and Cell Biology; 5) Cancer Research; and 6) Neuroscience.

August 7, 2004 – The name changes of the MS and PhD degrees in Physiology to the MS and PhD degrees in Cellular and Integrative Physiology at UNMC were approved by President Smith and reported to the Board.

June 5, 2004 – The Board approved the renaming of the Department of Physiology and Biophysics to the Department of Cellular and Integrative Physiology in the College of Medicine at UNMC.

EXPLANATION: The UNMC College of Medicine proposes to establish an online 30-credit hour non-thesis MS degree in Medical Physiology. The proposed degree is designed to meet the needs of several student populations. These include students seeking adjunct teaching positions in physiology or those seeking improved employment and earning opportunities in basic science and/or clinical research laboratories. In addition, the program is designed for students wishing to improve their competitiveness for admission into a physiology PhD program or health professions school. The proposed curriculum includes coursework focused on medical physiology, cell physiology, cardiovascular pathophysiology, advanced topics in physiology, and pharmacology for the physiologists. The curriculum is enhanced by coursework in scientific writing, biostatistics, and two courses focused on the foundation and instructional design of health professions education.

This proposal has been approved by the Executive Graduate Council. It also has been reviewed by the Council of Academic Officers and the Academic Affairs Committee.


PROGRAM COST: \$217,400 for Year 1; \$1,270,130 over five years

SOURCE OF FUNDS: Tuition and fees, and College of Medicine funds

SPONSORS: H. Dele Davies  
Senior Vice Chancellor for Academic Affairs

Jeffrey P. Gold, Chancellor  
University of Nebraska Medical Center

RECOMMENDED:

  
\_\_\_\_\_  
Jeffrey P. Gold, M.D.  
Executive Vice President and Provost

DATE: September 10, 2021



April 1, 2021

Susan Fritz, Executive Vice President and Provost  
University of Nebraska  
3835 Holdrege Street  
Lincoln, NE 68583

Dear Provost Fritz:

We are forwarding you the materials relating to the creation of a Master of Science in Medical Physiology at UNMC, administered by Graduate Studies and the Department of Cellular and Integrative Physiology. This new online, distance-only program will focus on educating students in all aspects of physiology, with a particular focus on medical physiology. This degree is designed to meet the needs of several prospective student populations, including: students seeking undergraduate college or junior college teaching positions; students seeking to enhance their knowledge in physiology to improve their rank and earning potential in physiology-based, basic-science and/or clinical research laboratories; and students seeking to broaden and deepen their physiology knowledge base in their pursuit of medical, dental, physician assistant, pharmacy or graduate (PhD) school admission. The online option will expand our reach to train individuals outside of Nebraska in an important subject matter.

This proposal has been reviewed by us, and it has our approval. We are requesting your review and approval, that of the Chief Academic Officers, and that it be reported to the Board of Regents at an upcoming meeting.

Sincerely,

A handwritten signature in black ink, appearing to read 'H. Dele Davies'.

H. Dele Davies, MD, MS, MHCM  
Senior Vice Chancellor

A handwritten signature in black ink, appearing to read 'Jeffrey P. Gold'.

Jeffrey P. Gold, M.D.  
Chancellor

Enc: Proposal MS Medical Physiology

# University of Nebraska Medical Center New Graduate Major or Degree

## I. Descriptive Information

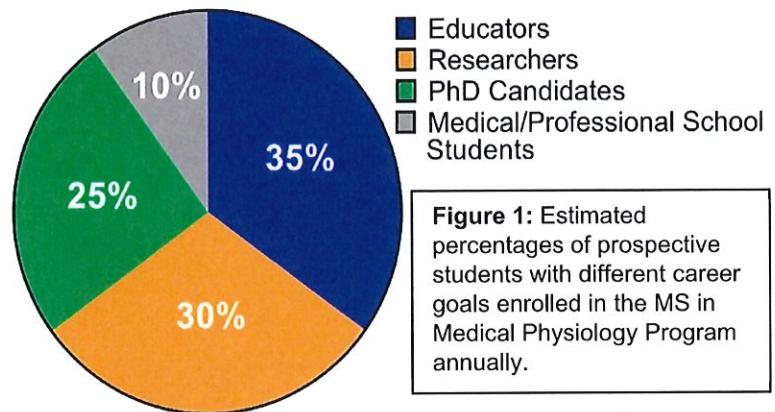
<b>Name of Institution Proposing New Major or Degree</b>
University of Nebraska Medical Center
<b>Name of Proposed Major or Degree</b>
Medical Physiology
<b>Degree to be Awarded to Graduates of the Major</b>
MS
<b>Other Majors or Degrees Offered in this Field by Institution</b>
PhD in Integrative Physiology and Molecular Medicine
<b>CIP Code</b> [ <i>browse here: <a href="http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55">http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55</a></i> ]
26.0901
<b>Subject Code</b>
<b>Administrative Units for the Major or Degree</b>
Graduate College College of Medicine, Department of Cellular and Integrative Physiology
<b>Proposed Delivery Site</b>
University of Nebraska Medical Center (UNMC)
<b>Program will be Offered</b> [ <i>full program, not individual courses</i> ]
<input type="checkbox"/> On-campus only <input checked="" type="checkbox"/> Distance only <input type="checkbox"/> Both (on-campus and distance)
<b>Date Approved by the Governing Board</b>
Pending
<b>Proposed Date the New Major or Degree will be Initiated</b>
Once approved by the Coordinating Commission.

## II. Details

### A. Purpose of the Proposed Major or Degree:

The Department of Cellular and Integrative Physiology at the University of Nebraska Medical Center (UNMC) proposes to establish a Master of Science (MS) degree in Medical Physiology (MEP). This new online, distance learning-only program will focus on educating students in all aspects of physiology, with a particular focus on medical physiology. The MEP MS degree is designed to meet the needs of several prospective student populations (Figure 1), including: 1) students seeking undergraduate college and university adjunct teaching positions, as well as junior/community college teaching positions in physiology; 2) students seeking to improve their competitiveness for admission into a physiology (or physiology-related) PhD program; 3) students seeking

to enhance their knowledge in physiology to improve their rank and earning potential in physiology-based, basic science and/or clinical research laboratories; and, 4) students seeking to broaden and deepen their physiology knowledge base in their pursuit of medical school or health professional school admission. The program curriculum includes coursework focused on medical physiology, cell physiology, cardiovascular pathophysiology, advanced topics in physiology, and pharmacology for the physiologists. The curriculum is enhanced by coursework in scientific writing, biostatistics, and two courses focused on the foundation and instructional design of health professions education. The goal of this program is to provide this unique curriculum in an online, distance learning-only format to the student populations described above and all other individuals who wish to enrich and extend their understanding of physiology, and apply their new knowledge to their chosen career path.



**Figure 1:** Estimated percentages of prospective students with different career goals enrolled in the MS in Medical Physiology Program annually.

**B. Description of the Proposed Major or Degree:**

Structure, objectives and plans to regularly review/revise the program:

The new MEP Master of Science degree will be a 30-credit hour, non-thesis, distance learning-only program that is designed to be completed in two academic semesters (i.e. approximately nine months). The online, distance learning-only program will include courses taught both synchronously and asynchronously. Students will enroll in four courses worth 16 credits in the fall semester and five courses worth 14 credits in the spring semester. Students will be required to pass a Comprehensive Exam near the end of the second semester (see Comprehensive Exam details below).

Leadership of the MEP MS program will include a program director and committee. Dr. Matthew Zimmerman, associate professor in UNMC’s Department of Cellular and Integrative Physiology, will be the program’s inaugural director. The MEP Program Committee, which will also serve as the program’s curriculum committee, will consist of Dr. Zimmerman (chair) and four additional graduate faculty in the Department of Cellular and Integrative Physiology. Members of the first MEP Program Committee include, Drs. Erika Boesen (associate professor), Paras Mishra (associate professor), Harold Schultz (professor), and Irving Zucker (professor). The Program Committee will be responsible for the program’s overall strategy, developing policies, and formulating general requirements for the program. As chair of the MEP MS Program Committee, Dr. Zimmerman will report the progress, successes, and challenges of the MEP MS program to Dr. Merry Lindsey, Chair of the Department of Cellular and Integrative Physiology. The program will receive administrative support from a full-time administrative assistant in the Department of Cellular and Integrative Physiology.

The overall objective of the MEP program is to provide students from Nebraska and elsewhere an opportunity to broaden and deepen their knowledge in medical physiology to advance their individual career goals. As discussed above (Figure 1), the individual goals of students enrolled in the MEP MS program may include being an educator at an undergraduate college/university or junior/community college, or earning admission into a physiology (or physiology-related) PhD program, or working in a basic- or clinical-science research laboratory focused on physiology, health, and/or human disease, or improving ones preparedness for enrolling in medical or health professional school.

During the first five years, the program will be reviewed annually and revised, as needed, by the MEP Program Committee. This annual review is necessary to ensure the program is meeting the needs of enrolled and prospective students, and to reflect new developments in the discipline. The following categories will be reviewed: curriculum, faculty, leadership, and infrastructure required to maintain and enhance the online, distance learning-only learning experience for students. Of note, potential future online electives that already exist at UNMC and other University of Nebraska campuses may be added to the curriculum to meet the needs of

students. In addition to the annual review during the first five years, the MEP Program Committee will continue to periodically review and revise the program thereafter. Further, the program will be reviewed and revised, as needed, every five to seven years by UNMC's Graduate Council. The Graduate Council review will include the categories listed above, and will also include review of the following: students (prospective, enrolled, and graduated); program reputation; and sustainability of the program.

The MEP Program Committee will receive guidance from an External Advisory Board (EAB). Members of the EAB will include directors of similar master's programs at peer institutions and potential employers of graduates from the program. These potential employers likely will include CEOs/presidents of biotech companies, deans and department chairs of undergraduate universities and community colleges, and members of medical and/or professional school admission committees. The EAB will meet with the MEP Program Committee annually to discuss successes and challenges to ensure the program continues to serve students' career goals.

Primary student learning outcomes (SLOs) of the proposed major or degree:

1. **Knowledge of the Discipline:** Graduates demonstrate broad knowledge and deep knowledge of physiology.
2. **Critical Thinking:** Graduates are able to critically analyze and synthesize new and complex information from diverse sources.
3. **Professional Behavior:** Graduates are committed to integrity within all aspects of their chosen profession and abide by existing professional standards. They are able to work in teams and assume responsibility for their actions and their career aspirations.
4. **Communication Skills:** Graduates demonstrate effective oral, written, and visual communication skills.

Admission criteria and selection procedures for students seeking admission to the major or degree:

Students applying to the MEP MS program will be required to follow the formal procedures established for admission to graduate programs at UNMC. Admitted students will matriculate only in the fall semester.

Admission to the MEP MS Program requires a bachelor's degree, preferably in a science-related field, from an accredited undergraduate institution with a recommended minimum GPA of 3.0 on a 4.0 grading scale. Official transcripts from all colleges/universities attended and three (3) letters of recommendation are also required. It is recommended that students should have completed the following undergraduate courses (or their equivalents): biochemistry; calculus; physics; two semesters of Biology. A one-page personal statement describing the applicant's career goals and interests in the field of physiology is required. Admissions requirements may need to be adjusted for students depending on career goals; this will be assessed as part of the Program's annual review.

For applicants whose native language is not English and whose undergraduate degree is not from a college or university where courses are predominantly taught in English, a minimum Test of English as a Foreign Language (TOEFL) score of 95, or an International English Language Testing System (IELTS) minimum overall score of 6.5, is recommended. International students must also have their transcripts evaluated by a credential evaluation service, such as World Education Services (WES), for translation. The transcript evaluation must be course-by-course and identify and describe each diploma or certificate.

Identify new courses that will be needed to implement the program:

All of the online, distance learning-only courses needed to implement the program (see table below) have been approved by UNMC's Graduate Council and the Executive Associate Dean of UNMC's Graduate Studies.



Identify collaborative agreements with other postsecondary institutions to expand the curriculum, if applicable:

Although no collaborative agreements with other postsecondary institutions to expand the curriculum are currently in place, it should be noted that students in the MEP MS program will be required to enroll in one course offered by the College of Public Health at UNMC, and two courses offered by the College of Allied Health Professions at UNMC. Additionally, the recently approved online Master of Science Degree in Health Sciences at the University of Nebraska at Kearney (UNK) opens the door for future potential collaborations to expand the curriculum. For example, students enrolled in UNK's program may be interested in taking a course offered by the MS in Medical Physiology Program, and vice-versa. Please see letter of support (Appendix C) from Dr. Janet Steele, Director of UNK's MS in Health Sciences Program).

Credit hour and course requirements, program of study, and other academic requirements:

The Program of Study for students enrolled in the MEP MS program consists of 30 credit hours of coursework designed to be completed in two consecutive semesters (i.e. approximately 9 months) by full-time students. Part-time students will be allowed to complete the MS in Medical Physiology degree over a maximum of five consecutive years, which is the maximum time frame to complete a master's degree, as established by UNMC's Graduate Studies. Students will be required to pass Comprehensive Exam (see below for details) near the end of the second semester. To receive the MS degree, students are required to pass the Comprehensive Exam and maintain a minimum 3.0 GPA on the required curriculum. The proposed program consists of the following existing courses:

<i>Required courses for the Medical Physiology Master of Science Degree</i>	
<b>Course Number*</b>	<b># Credit Hours</b>
MEP 803: Cell Physiology & Signaling <sup>1</sup>	3 credit hours
MEP 806: Medical Physiology <sup>1</sup>	7 credit hours
MEP 810: Basic Concepts in Scientific Writing <sup>1</sup>	3 credit hours
HPME 801: Foundations in Health Professions Education <sup>1</sup>	3 credit hours
BIOS 806: Biostatistics <sup>2</sup>	3 credit hours
MEP 807: Medical Pharmacology for the Physiologist <sup>2</sup>	3 credit hours
MEP 901: Advanced Topics in Physiology <sup>2</sup>	2 credit hours
MEP 916: Molecular Mechanisms of Cardiovascular Pathophysiology <sup>2</sup>	3 credit hours
HPME 802: Instructional Design for Health Professions Education <sup>2</sup>	3 credit hours
<b>Total</b>	<b>30 credit hours</b>
* All required courses are offered online. <sup>1</sup> Required courses in the 1 <sup>st</sup> semester (fall); <sup>2</sup> Required courses in the 2 <sup>nd</sup> semester (spring)	

It should be noted that these required courses would be applicable and transferable to a physiology PhD program, particularly the Integrative Physiology and Molecular Medicine (IPMM) Doctoral Program hosted by the Department of Cellular and Integrative Physiology at UNMC.

Further, as mentioned above, the MEP Program Committee may decide to add electives to the curriculum in future years to meet the needs and demands of students. It is likely that these electives would be selected from current online courses offered by the UNMC or other University of Nebraska campus, including UNK.

### *Comprehensive Exam:*

Students are required to pass a Comprehensive Exam covering topics from all coursework within the MEP MS curriculum. The Comprehensive Exam must be completed six to seven weeks prior to commencement/graduation. This deadline is within that set by UNMC's Graduate Studies for non-thesis master's students. The student's Advisory Committee serves as the Comprehensive Exam Committee.

The Comprehensive Exam will be a two-part exam with students having two options for the second part. All students will complete the same Part 1 of the Comprehensive Exam. For Part 1, students will be given two consecutive hours to complete an exam consisting of multiple choice and short answer questions designed to evaluate the student's knowledge of all of the course objectives of the Program's required courses. Part 1 of the exam will be a closed book/closed note/closed resource exam and will be proctored virtually. For the second part of the Comprehensive Exam, students will select either Part 2A or Part 2B based on their career goals. The student's Advisory Committee will provide input as to which Part 2 of the exam a student should complete. Students with a career goal of becoming an educator at a community college or undergraduate institution will complete Part 2A of the exam. For Part 2A, students will give a 45-50 minute lecture on a physiology-related topic selected by the Comprehensive Exam Committee. Students with a goal of entering a PhD program, being a researcher, or enrolling in medical or health professional school will complete Part 2B of the exam. For Part 2B, students will be given two consecutive hours to complete an exam consisting of all essay questions designed to evaluate the student's in-depth knowledge of physiology and ability to integrate physiology and pathophysiology concepts. Part 2B of the exam will be an open book/open note/open resources exam with a two-hour time limit. Notably, as described above, the MEP MS program will be reviewed annually and revised, as needed, by the MEP Program Committee. This review will include evaluation of the Comprehensive Exam format to ensure the exam is a proper assessment tool for all students. If needed, revisions to Part 2 of the exam will be made to meet the specific needs of students with different career goals.

To pass the comprehensive exam, students must earn a score of 70% or higher on both Part 1 and Part 2. If a student fails to earn a 70% or higher on either Part 1 or Part 2 on his/her first attempt, the student is allowed a second attempt on the Part(s) he/she failed the first time. Students must wait at least one month before retaking a failed comprehensive exam. The second attempt must be completed at least two weeks prior to commencement/graduation per the UNMC Graduate Studies' policy. Failure to earn a score of at least 70% on both Part 1 and Part 2 on the second attempt will result in the student being dismissed from the program.

### *How and when advisors are assigned for students in the major or degree:*

In the first two years of the program, when the number of enrolled students is expected to be less than 10 per year, the MEP MS Program Director will serve as each student's faculty advisor (i.e. mentor). After the second year, or when the number of incoming students is greater than ten, whichever comes first, each student will be appointed a faculty advisor, who is a member of UNMC's graduate faculty and holds a primary faculty appointment in the Department of Cellular and Integrative Physiology. The faculty advisor and student will meet at least monthly to discuss the student's progress toward earning the MS degree.

In addition to the faculty advisor, students in the MEP MS program will be mentored by an Advisory Committee. The Advisory Committee for every student will be the MEP MS Program Committee (see above for description of MEP MS Program Committee). The Advisory Committee along with the faculty advisor will meet with the student twice per semester (approximately every two months); once at mid-term and once at the end of the semester. The Advisory Committee will administer the Comprehensive Exam. The Advisory Committee will also advise part-time students on the order of courses that each part-time student should follow based on the student's planned length of time to complete the degree.

All students will be required to complete an Individual Development Plan (IDP) by their first advisory committee meeting (i.e. midterm of first semester). It is recommended that students use [myIDP](#). Based on the student's IDP, the Advisory Committee will invite an expert in the student's planned career path to be an ad hoc member

of the advisory committee. This ad hoc member will not be a voting member of the committee, but would provide advice and networking opportunities to the student. At the end of each fall semester, ad hoc members of the students' advisory committees will be invited to participate on an expert panel at a synchronous "career fair," in which all students will be able to gain insight from experts in multiple career paths.

Impact on Course Subject Codes; will any subject codes need to be created, modified, or deleted:

In June 2020, UNMC's Registrar's office created the "MEP" course subject code. At this time, no additional subject codes need to be created, modified or deleted for the MEP MS program.

### III. Review Criteria

#### A. Centrality to UNMC Role and Mission:

UNMC's mission is "to lead the world in transforming lives to create a healthy future for all individuals and communities through premier educational programs, innovative research and extraordinary patient care." The proposed MEP MS program directly addresses this important mission by providing a new, unique and premier educational program to students in Nebraska and elsewhere who seek to broaden and deepen their knowledge in medical physiology. By achieving the program's objective, students who complete and graduate from the MEP MS will undoubtedly be able to, in their own chosen career path, contribute to "premier educational programs, innovative research, and extraordinary patient care." As such, the proposed MEP MS program creates this perpetual feed-forward cycle in which the program itself directly aligns with and supports UNMC's mission, followed by graduates of the program who subsequently contribute to the "healthy future for all individuals and communities" by participating in health (i.e. physiology) education, research, and/or patient care.

#### B. Relationship of the proposal to the NU Strategic Framework

In August 2020, the University of Nebraska published a new five-year strategy for growth and success across the University of Nebraska system, including UNMC (<https://nebraska.edu/-/media/unca/docs/offices-and-policies/documents/strategic-plans/university-of-nebraska-five-year-strategy.pdf?la=en>). The proposed MEP MS program will directly contribute to the strategic theme to ensure that higher education is accessible, affordable, and attainable to Nebraskans. In particular, our deliberate and intentional plan to develop a completely online, distance learning-only MS degree program with a focus on medical physiology will provide an opportunity for Nebraskans living in rural communities to obtain the same robust education as those Nebraskans living within miles of UNMC. Further, the MEP MS degree program includes a unique curriculum with achievable student learning outcomes that will prepare students for success in their chosen career path.

The MEP MS program also directly addresses the workforce development theme described in the University of Nebraska's five-year strategy. As briefly discussed previously in this document, the MEP MS program is designed to meet the needs of several populations of prospective students, who upon completion of the MEP MS degree will certainly contribute to Nebraska's workforce in multiple industries. First, the MEP MS program will be of great interest to prospective students who are seeking a career in science/healthcare education. In particular, Nebraskans interested in adjunct faculty positions teaching physiology and physiology-related topics in undergraduate colleges and universities, as well as teaching positions at junior/community colleges will have great interest in the MEP MS program. Second, Nebraskans wanting to earn their PhD in physiology, or a physiology-related field will improve their competitiveness for admission into such a program by obtaining a MS degree in MEP. As indicated above, it is worth noting that the required courses for the MS in MEP Program will be applicable and transferable to a physiology PhD program, particularly the Integrative Physiology and Molecular Medicine (IPMM) Doctoral Program hosted by the Department of Cellular and Integrative Physiology at UNMC. Third, Nebraskans wanting to work as researchers in basic science and/or clinical research laboratories focused on physiology and human disease in either in academia or industry will be able to enhance their earning potential by obtaining a MS degree in MEP. Lastly, Nebraskans with a desire to pursue further

education in medical school or health professional schools will benefit tremendously by completing the MEP MS degree.

### **C. Consistency with the Comprehensive Statewide Plan for Post-Secondary Education**

The proposed MEP MS program is consistent with the Comprehensive Statewide Plan for Post-Secondary Education (<https://ccpe.nebraska.gov/sites/ccpe.nebraska.gov/files/CompPlan.pdf>). The MEP MS directly aligns with the vision statement for Nebraska Postsecondary Education as it will provide “accessible and high-quality postsecondary education” to Nebraskans. In addition, and as described elsewhere in this document, the MEP MS program is an educational opportunity for Nebraskans with diverse needs and career goals.

Meeting the Needs of Students: The MEP MS program will meet the needs of students by providing broad and in-depth knowledge of all aspects of physiology, particularly medical physiology. In addition, the inclusion of coursework focused on the foundation and instructional design for health professions education provides a diverse educational opportunity for students who wish to pursue a career in health/physiology education.

Importantly, the online, distance learning-only feature of the MEP MS program directly addresses one of the sub-themes under the “Meeting the Needs of Students” umbrella, that is, Use of Instructional Technology to Broaden Access. There are no geographical barriers with an online program and students can access the courses from nearly anywhere. As such, this new online program will ensure that all Nebraskans, particularly those living in rural communities, are able to access this post-secondary educational program. The MEP MS Director and Program Committee will work with Dr. Shirley Delair, UNMC’s College of Medicine’s Associate Dean of Diversity, Equity, and Inclusion to develop strategies to recruit all Nebraskans interested in expanding their knowledge in physiology regardless of age, culture, disabilities, religion, race, ethnicity, gender, sexual orientation, gender identity, nationality, socioeconomic status, or geographic location.

Meeting the Needs of the State: The MEP MS program will contribute to the State’s Workforce Development by producing knowledgeable, trained, and skilled graduates who will contribute to the State’s workforce in multiple industries, particularly education, biomedical research, and patient care. As discussed previously in this document, the MEP MS program will be reviewed annually by the MEP Program Committee to ensure the program continues to meet the evolving needs and priorities of prospective students. The MEP Program Committee will receive guidance from an External Advisory Board (EAB). Members of the EAB will include directors of similar master’s programs at peer institutions and potential employers of graduates from the program. These potential employers likely will include CEOs/presidents of biotech companies, deans and department chairs of undergraduate universities and community colleges, and members of medical and/or professional school admission committees. The EAB will meet with the MEP Program Committee annually to discuss successes and challenges to ensure the program continues to serve students’ career goals. The MEP MS Program Committee has the ability to adopt new strategies and utilize new technologies to address the changing needs of the students. See Section D: Evidence of Need and Demand below for details on how the MEP MS Program will meet the needs and demands of education and health service positions in Nebraska.

Meeting Needs by Building Exemplary Institutions: The MEP MS program will be efficient in its expenditure of the State’s resources by leveraging existing resources in UNMC’s Department of Cellular and Integrative Physiology to minimize program expenses. Funding required to sustain the program’s long-term success will come directly from tuition dollars collected by the program.

Statewide Facilities Plan: The MEP MS program is offered entirely online, and thus will not require the use of additional statewide facilities.

### **D. Evidence of Need and Demand**

The MEP MS program will meet the increasing need for: 1) physiology educators at the undergraduate/junior college level; 2) students seeking to improve their competitiveness for admission into a physiology (or

physiology-related) PhD program; 3) research technologists and/or coordinators with expertise in medical physiology; and 4) students preparing for admission into medical or health professional school.

According to the U.S. Bureau of Labor Statistics (<https://www.bls.gov/oes/current/oes251042.htm>), in January 2021, there were 155,300 education and health service jobs in Nebraska. Although this was a slight decrease from January 2020, likely due to COVID-19, the preliminary data for March 2021 shows that the upward trend is continuing with a total of 157,500 jobs. Additionally, in regards to the highest concentration of jobs and location quotient in “Biological Science Teachers, Postsecondary”, Nebraska is ranked 4<sup>th</sup> highest in the country. Of note, the annual mean wage of “Biological Science Teachers, Postsecondary” in Nebraska is \$81,760-\$87,910. See Appendix D for more information on education and health service positions, and teaching opportunities in the biological sciences in Nebraska.

In addition to information provided by the U.S. Bureau of Labor Statistics, evidence of need and demand for an online, distance learning MEP MS program is provided in a market assessment performed by the University of Nebraska Online (NU Online). Notably, NU Online commented that the proposed MEP MS program is “unique to the NU Online portfolio” (please see Appendix D). Further, the NU Online market assessment revealed that “few schools appear to be offering equivalent online programs and completions overall appear to be trending positively. UNMC has opportunity to market the Medical Physiology, MS program nationally.” The University of Florida, College of Medicine offers an online MS degree in Medical Physiology and Pharmacology. This program markets itself as “for individuals who want to enhance their medical school application”, and students enrolled in this program take 15 credits of courses focused on physiology and 15 credits focused on pharmacology. The Medical College of Wisconsin (MCW) also offers a one-year Master’s in Medical Physiology. But, similar to Florida’s program, the MCW program is “designed for a college graduate looking to strengthen their academic credentials in preparation for applying to U.S. medical schools.” Case Western Reserve University also offers an online master’s degree in physiology; however, tuition is more than three times the tuition of the MEP MS program. Importantly, the occupational outlook for numerous education and health service positions in Nebraska, including Medical Scientists, Exercise Physiologists, and Health Educators are projected to increase 7.5-9.98% from 2018-2028 (see Appendix D: NU Online Market Assessment for details).

Clearly, the quantitative analyses provided by the U.S. Bureau of Labor Statistics and NU Online demonstrate the need and demand for an online MEP MS program. There is also qualitative information that provides strong evidence of need and demand for this program. For example, numerous community colleges and undergraduate institutions in Nebraska frequently reach out to faculty in UNMC’s Department of Cellular and Integrative Physiology to gauge their interest in accepting an adjunct position at their institution to teach physiology to their undergraduate students. However, UNMC faculty are often too busy with their own teaching, research, and/or administrative responsibilities to accept the adjunct position. When alternative options are presented to the undergraduate colleges/universities, such as having a senior graduate student in the Integrative Physiology and Molecular Medicine (IPMM) Doctoral Program serve as an adjunct instructor, the undergraduate institutions decline because they require the adjunct instructor/professor to have at least a master’s degree. Most of the PhD students enrolled in the IPMM Doctoral Program enter the program directly from their undergraduate training, and without a master’s degree. As such, the undergraduate colleges/universities are unable to fill their open positions. The MEP MS program is designed to directly meet the need for physiology educators at the undergraduate level. See letters of support (Appendix C) from Wayne State College (Wayne, Nebraska) and Metropolitan Community College (Omaha, NE).

As mentioned throughout this proposal, the Department of Cellular and Integrative Physiology at UNMC will be the “home” department for this new MEP MS program. This department is also “home” to the Integrative Physiology and Molecular Medicine (IPMM) Doctoral Program. Dr. Matt Zimmerman, the inaugural director of the proposed MEP MS program, is currently the director of the IPMM doctoral program and chair of its admissions committee. As such, he is familiar with the qualifications of applicants to the doctoral program that get accepted, and those that do not. Each year, the IPMM doctoral program denies admission to multiple applicants because there is some concern regarding the student’s previous academic performance. For example, perhaps the student struggled for one to two semesters as an undergraduate student resulting in their

GPA being at, or slightly below, the recommended minimum of 3.0. These students, who have or are about to complete their undergraduate degree, often ask Dr. Zimmerman and the IPMM admissions committee what they can do to demonstrate their academic ability. Ideally, these students would complete an MS degree in physiology to demonstrate their ability to successfully complete graduate-level coursework. Until now, the IPMM program admissions committee could only recommend students enroll in an MS in physiology program outside of Nebraska. It is expected that the proposed online MEP MS program will be of great interest to those students who are on the border of admission to a PhD program. By successfully completing the MEP MS program, these students will clearly demonstrate their academic aptitude, which will undoubtedly improve the likelihood of their admission to the IPMM doctoral program (or other physiology PhD programs).

Many biomedical research laboratories in industry and academia focused on pathophysiology and human disease seek research technologists and/or research coordinators with a strong educational background in physiology. Research laboratories in UNMC's Department of Cellular and Integrative Physiology as well as those in the recently established Center for Heart and Vascular Research, among many other labs in Nebraska and across the country, often examine physiological and pathophysiological responses in animal models and human patients to better understand the pathogenesis of human disease. Individuals interested in working as research technologists and/or coordinators in such labs can improve their competitiveness for these positions, and their earning potential, by completing the MEP MS degree. See letters of support (Appendix C) from two current research technologists who have expressed interest in the MEP MS program.

The fourth group of individuals that the MEP MS program fulfills a need for are students seeking enrollment in medical school or health professional school. Many students across Nebraska and the country apply to medical school or health professions programs each year, but are denied admission for a variety of reasons. One common reason is that the student's undergraduate academic record does not meet the minimum requirement of the desired program. To enhance their competitiveness for admission into their desired program and to demonstrate their academic ability, these students seek additional short-term academic opportunities such as post-baccalaureate or certificate programs. We believe the MEP MS program will be a desirable educational opportunity for these students as it is designed to be short-term (i.e. completed in two consecutive academic semesters), and its educational focus is physiology, "a branch of biology that deals with the functions and activities of life" (as defined by Merriam-Webster). Undoubtedly students seeking enrollment in medical and health professional schools will benefit from the broad and in-depth knowledge of physiology they will gain by completing the MEP MS program. See letters of support (Appendix C) from two students who believe that, if already available, the MEP MS program would have helped them gain admission to medical school more quickly and would have prepared them well for medical school courses.

Based on the needs described above, job opportunities and NU Online market assessment (Appendix D), and letters of support (Appendix C), we predict the following number of students to enroll in the MEP MS program in each of the first five years:

- Year 1: 5 students
- Year 2: 10 students
- Year 3: 15 students
- Year 4: 25 students
- Year 5: 40 students

These estimates are also supported by conversations with directors of other MS programs at UNMC. For example, the one-year, in-person MS in Medical Anatomy (Dr. Karen Gould, director; see letter of support) program receives 60-80 applications per year. However, this program can only admit 16-18 students per year, and thus, denies admission to many strong applicants each year. Further, these estimates are supported by the fact that each year the IPMM doctoral program denies admission to 5-10 applicants due to mediocre academic performance as an undergraduate student. It is anticipated that some, perhaps many, of these students will enroll in and complete the MEP MS program to improve their chances of being accepted into IPMM (or another physiology PhD program). It should be noted that the relatively small number of students in Year 1 will likely be due to the limited amount of time between approval of the MEP MS program and the start of the 2022

academic year. By Year 3, we expect to enroll at least 15 students, which is approximately the minimum number of students required to make the program viable and sustainable.

During the first five years, there will be an enrollment cap of 40 students to ensure program quality and to protect faculty workload. If, after the fifth year, it is apparent that the program has the resources to enroll more than 40 students, the cap may be lifted. The decision to remove the cap will be made collectively by the MEP Program Committee, Chair of the Department of Cellular and Integrative Physiology, and MEP course directors.

#### **E. Avoidance of Unnecessary Duplication**

Currently, there is no MS in Medical Physiology degree offered in the State of Nebraska. As home to the University of Nebraska's College of Medicine and the State's only PhD program focused on human physiology (Integrative Physiology and Molecular Medicine), the UNMC campus is the ideal location for the MEP MS program.

There are other MS programs in health and natural sciences in Nebraska. In fact, UNMC offers a one-year Master in Medical Anatomy that is frequently used by students to improve their competitiveness for acceptance into medical or professional school. However, this program, as its name suggests, is focused on anatomy. Due to the hands-on nature of many of the courses in this program, this program is an on-campus only program. Additionally, enrollment in this program is capped at 16-18 students per year. Creighton University also offers one-year master's programs in health and natural sciences. Although these programs may include one physiology-related course, none of these programs have an intentional and deliberate focus on medical physiology. Additionally, and of particular importance, none of these other programs are online, distance learning-only programs. As such, the unique structure and curriculum of the MEP MS program ensures avoidance of unnecessary duplication.

The University of Nebraska at Kearney (UNK) recently received approval for a new one-year, online MS degree in Health Sciences. This UNK program is specifically designed to serve students preparing for a professional program in health sciences. The educational content between the UNK program and the MEP MS program is distinct. For example, the UNK program will require students to take only one course (three credits) in human physiology. Although the MEP MS program as described herein will also be able to serve pre-professional health science students, it is anticipated that these students will make up only 10% of the accepted students per year (Figure 1). It should be noted that there is potential future collaboration between UNK's MS in Health Sciences Program and the proposed MEP MS Program. As described in a letter of support (Appendix C) from Dr. Janet Steele's, director of UNK's MS in Health Sciences Program, students enrolled in UNK's program may be interested in taking a course offered by the MES MP Program, and vice-versa.

UNK also offers an online Master of Science Degree in Biology. As indicated on their website, the Master in Biology program is "is designed for high school and middle school teachers to expand their breadth of biology knowledge for the classroom, scientists and researchers pursuing advanced expertise, or individuals who are preparing for professional schools or doctoral studies in biology fields." Students usually complete this program in two and one-half to three years, which is unlike the proposed MEP MS program that can be complete in two consecutive semesters (i.e. approximately nine months). Students in the Master in Biology program complete 12 credit hours of required coursework and 24 credit hours of electives. Of the required courses, only one is similar to the required courses for the MEP MS program, that is, biostatistics. Of the 79 elective courses (some of which have undergraduate counterparts) students in the Master in Biology program can take, only one appears to be focused on general human physiology, that is BIOL 839 – Human Physiological Systems (three credits). Although there are few other physiology-related courses, such as Reproductive Physiology (BIOL 830P; three credits) and Plant Physiology (BIOL 803P; three credits), it is clear that the Master in Biology Program at UNK is designed to serve students with broad interests in science and biology. In contrast, the proposed MEP MS Program is designed to provide students with focused and in-depth knowledge of human physiology as it relates to health and disease.

## **F. Adequacy of Resources:**

The MEP MS program will be administered and operated by the Department of Cellular and Integrative Physiology in the College of Medicine at UNMC. Adequate resources to develop, implement, review/revise the program are available:

### **1. Faculty/Staff:**

The Department of Cellular and Integrative Physiology has 12 full-time graduate faculty, three instructors, 12 courtesy-appointed graduate faculty, three full-time administrative staff members, and one part-time administrative assistant. The department is the “host” department of the Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS) – Integrative Physiology and Molecular Medicine (IPMM) Doctoral (PhD) Program. The proposed MEP MS curriculum was largely developed based on the successful courses of the IPMM doctoral program, with a major difference being all of the MS courses will be online. Within the first year of the MEP MS program, it is expected that a new assistant professor dedicated to the implementation and maintenance of this program will be hired by the Department of Cellular and Integrative Physiology. As detailed in the budget projections below, the College of Medicine’s Dean’s office has committed support for the new assistant professor’s salary for the first two years. No additional faculty resources are needed to implement and administer the MEP MS program.

### **2. Library/Information Resources:**

In fall 2020, an extraordinary renovation of the Leon S. McGoogan Health Science Library on the UNMC campus was completed. The newly renovated space includes individual study rooms, small conference rooms, as well as a writing and e-learning center. The Leon S. McGoogan Health Science Library provides access to over 27,000 journals, including 6,100 health care and research-related e-journals, more than 40 databases, and 100,000 books and e-books. Services provided by the library to all UNMC students include how to search online for published literature and how to appropriately cite references and avoid plagiarism. Considering the MEP MS program will be an online, distance learning-only program, it is particularly important that the electronic services offered by the library can be assessed remotely. Remote students are able to access full-text biomedical research publications, databases, and tutorials via the library’s website and their secured login credentials. Also of note, support from UNMC’s Chancellor’s Office ensures that each academic year all UNMC students are able to receive up to 50 free digitally delivered or interlibrary loaned books and/or journal articles.

To deliver the online, distance only learning material/content, the MEP MS program will utilize the Canvas Learning Management System, which is widely used on the UNMC campus and by the MEP MS program graduate faculty. Access to all Canvas course pages require secure logins, and are only accessible to students (and faculty/staff) enrolled in the courses.

### **3. Physical Facilities and Equipment:**

The Department of Cellular and Integrative Physiology is housed in the Durham Research Center (DRC) building located on the UNMC campus. The DRC is a state of the art 10-story, 285,000 square feet building, and the Department of Cellular and Integrative Physiology occupies 27,000 square feet of space on the fifth and sixth floors of the building. Graduate faculty in the Department of Cellular and Integrative Physiology have individual office space. The Department of Cellular and Integrative Physiology administrative offices, located on the fifth floor of DRC, houses program support functions (mail, copying, printing, etc.). Just outside of the administrative offices on the fifth floor of DRC are two small conference rooms that were recently (fall 2020) equipped with state-of-the-art audio/visual technology. If needed, faculty in the MEP MS program can utilize these conference room to teach their online synchronous classes.



4. *Instructional Equipment and Informational Resources:*

The MEP MS program is a completely online, distance learning program. Graduate faculty who teach in the MEP MS program will use their office computers and/or laptops and/or tablets equipped with two-way video conferencing and streaming internet video to deliver their lecture content. If needed, the MEP MS program will provide faculty with web cameras to interact online with students and to create their audio/video lecture recordings. As noted above, small conference rooms on the 5<sup>th</sup> floor of DRC are equipped with state-of-the-art audio/visual technology. Graduate faculty participating in the coursework may choose to use these conference rooms, instead of their individual offices, to deliver their lecture content if a larger space is needed; for example, for a demonstration.

5. *Budget Projections see Table 1 and Table 2].*

## IV. Appendices

### APPENDIX A: Additional Details for Distance Programs Only

#### About the Program

##### 1. Program Description

The Department of Cellular and Integrative Physiology at the University of Nebraska Medical Center (UNMC) proposes to establish a Master of Science (MS) degree in Medical Physiology (MEP). This new online, distance learning-only program will focus on educating students in all aspects of physiology, with a particular focus on medical physiology. The new MEP Master of Science degree will be a 30-credit hour, non-thesis, distance learning-only program that is designed to be completed in two academic semesters (i.e. approximately 9 months). The online, distance learning-only program will include courses taught both synchronously and asynchronously. Students will enroll in four courses totaling 16 credits in the fall semester and five courses totaling 14 credits in the spring semester. Students will be required to pass a Comprehensive Exam near the end of the second semester.

##### 2. Licensure and Accreditation

The program is a MS degree program that will not lead to licensure. The program will not be accredited by a specialized accrediting agency.

##### 3. Marketability and Duplication

Currently, there is no online MS in Medical Physiology degree offered in the State of Nebraska. As home to the University of Nebraska's College of Medicine and the State's only PhD program focused on human physiology (Integrative Physiology and Molecular Medicine), the UNMC campus is the ideal location for the MEP MS program.

The University of Nebraska at Kearney (UNK) recently received approval for a new one-year, online MS degree in Health Sciences. This UNK program is specifically designed to serve students preparing for a professional program in health sciences. The educational content between the UNK program and the MEP MS program is distinct. For example, the UNK program will require students to take only one course (three credits) in human physiology. Although the MEP MS program as described herein will also be able to serve pre-professional health science students, it is anticipated that these students will make up only 10% of the accepted students per year (Figure 1). It should be noted that there is potential future collaboration between UNK's MS in Health Sciences Program and the proposed MEP MS Program. As described in a letter of support (Appendix C) from Dr. Janet Steele's, director of UNK's MS in Health Sciences Program, students enrolled in UNK's program may be interested in taking a course offered by the MES MP Program, and vice-versa.

UNK also offers an online Master of Science Degree in Biology. As indicated on their website, the Master's in Biology program is "is designed for high school and middle school teachers to expand their

breadth of biology knowledge for the classroom, scientists and researchers pursuing advanced expertise, or individuals who are preparing for professional schools or doctoral studies in biology fields.” Students usually complete this program in two and one-half to three years, which is unlike the proposed MEP MS program that can be complete in two consecutive semesters (i.e. approximately 9 months). Students in the Master in Biology program complete 12 credit hours of required coursework and 24 credit hours of electives. Of the required courses, only one is similar to the required courses for the MEP MS program, that is, biostatistics. Of the 79 elective courses (some of which have undergraduate counterparts) students in the Master in Biology program can take, only one appears to be focused on general human physiology, that is BIOL 839 – Human Physiological Systems (three credits). Although there are few other physiology-related courses, such as Reproductive Physiology (BIOL 830P; three credits) and Plant Physiology (BIOL 803P; three credits), it is clear that the Master in Biology Program at UNK is designed to serve students with broad interests in science and biology. In contrast, the proposed MEP MS Program is designed to provide students with focused and in-depth knowledge of human physiology as it relates to human health and disease.

### Curriculum:

#### 1. Faculty and Instruction

The proposed MEP MS program consists of the following existing courses which will be delivered in the traditional semester format:

Course Title & Number	Faculty member developing	Required/Elective	Has been developed in online format (yes/no)	Has been offered in online format (Semester/Year)	Semester/Year course to be developed in online format (if applicable)	Semester/Year course is to be first taught online
MEP 803: Cell Physiology & Signaling <sup>1</sup>	Dr. Matthew Zimmerman	Required	Yes	No		Fall 2021
MEP 806: Medical Physiology <sup>1</sup>	Dr. Erika Boesen	Required	Yes	No		Fall 2021
MEP 810: Basic Concepts in Scientific Writing <sup>1</sup>	Dr. Harold Schultz	Required	Yes	No		Fall 2021
HPME 801: Foundations in Health Professions Education <sup>1</sup>	Dr. Tanya Custer	Required	Yes	Fall 2019		
BIOS 806: Biostatistics <sup>2</sup>	Dr. Megan Tesar	Required	Yes	Spring 2020		
MEP 807: Medical Pharmacology for the Physiologist <sup>2</sup>	Dr. Merry Lindsey	Required	Yes	No		Spring 2022
MEP 901: Advanced Topics in Physiology <sup>2</sup>	Dr. Irving Zucker	Required	Yes	No		Spring 2022
MEP 916: Molecular Mechanisms of Cardiovascular Pathophysiology <sup>2</sup>	Dr. Paras Mishra	Required	Yes	No		Spring 2022
HPME 802: Instructional Design for Health Professions Education <sup>2</sup>	Dr. Tanya Custer	Required	Yes	Spring 2019		

<sup>1</sup> Required courses in the 1<sup>st</sup> semester (fall); <sup>2</sup> Required courses in the 2<sup>nd</sup> semester (spring)

In the first one to two years of the program, we plan to enroll 5-10 students. In years 3-4, we expect to enroll 15-25 students. In year 5, we expect to enroll up to 40 students. During the first five years, there will be an enrollment cap of 40 students to ensure program quality and to protect faculty workload. If, after the fifth year, it is apparent that the program has the resources to enroll more than 40 students, the cap may be lifted. The decision to remove the cap will be made collectively by the MEP Program Committee, Chair of the Department of Cellular and Integrative Physiology, and MEP course directors. If we matriculate more than 40 students after the fifth year, we will create additional course sections.

Senior graduate students (i.e. PhD candidates) in the Integrative Physiology and Molecular Medicine (IPMM) Doctoral Program at UNMC may serve as teaching assistants.

BIOS 806 will be offered by the Department of Biostatistics in the College of Public Health at UNMC. HPME 801/802 will be offered by the College of Allied Health Professions at UNMC. These are required courses for students enrolled in the MEP MS program and will be offered either every fall semester (HMPE 801) or spring semester (BIOS 806, HPME 802). Dr. Merry Lindsey, Chair of the Department of Cellular and Integrative Physiology at UNMC will establish agreements for tuition sharing with the Dean of the College of Public Health and the Dean of the College of Allied Health Professions.

## **2. Program Requirements**

To receive the MEP MS degree, students are required to pass the Comprehensive Exam and maintain a minimum 3.0 GPA on the required curriculum.

## **3. Completion Plan**

The MEP MS degree will be a 30-credit hour, non-thesis, distance learning-only program that is designed to be completed in two consecutive semesters (i.e. approximately nine months) by full-time students. Part-time students will be allowed to complete the MS in Medical Physiology degree over a maximum of five consecutive years, which is the maximum time frame to complete a master's degree, as established by UNMC's Graduate Studies. The online, distance learning-only program will include courses taught both synchronously and asynchronously. Students will enroll in four courses worth 16 credits in the fall semester and five courses worth 14 credits in the spring semester. See table above for which courses are taught the fall versus spring semester. Students will also be required to pass Comprehensive Exam near the end of the second semester.

## **4. Accessibility**

Due to the synchronous learning activities in some of the required courses, the MEP MS program may not be suitable for all distance learners. The synchronous learning activities will take place during 9am-5pm central standard time Monday - Friday. As such, distance learners in time zones outside of the United States may find it difficult to attend the synchronous learning activities and thus may not be able to enroll in the program. It should be noted that the MEP MS program initial goal is to provide an educational opportunity for Nebraskans, including those in rural communities, who are interested in expanding their physiology knowledge base for the advancement of their chosen career. If, after a few years, the program gains significant interest from prospective students outside of the United States, the required courses can be revised to be completely asynchronous.

All courses will follow campus policies and will be ADA (Americans with Disabilities Act) compliant. Students with disabilities who are in need of accommodations will contact the Student Disability Services office at UNMC. In order to be eligible for accommodations, the student is responsible for registering with this office and providing documentation of disability. The student must register and provide documentation well in advance of the semester for which the accommodation is needed (six weeks is suggested). Once the request has been approved, an individualized accommodation plan will be formulated, and an official "Letter of Disability Accommodation" will be issued to the student. The student must deliver the letter to the instructor before accommodations can be made.

## **Recruitment and Admissions**

Students applying to the MEP MS program will be required to follow the formal procedures established for admission to graduate programs at UNMC. Admitted students will matriculate only in the fall semester.

Admission to the MEP MS program requires a bachelor's degree, preferably in a science-related field, from an accredited undergraduate institution with a recommended minimum GPA of 3.0 on a 4.0 grading scale. Official transcripts from all colleges/universities attended and three (3) letters of recommendation are also

required. It is recommended that students should have completed the following undergraduate courses (or their equivalents): biochemistry; calculus; physics; two semesters of biology. A one-page personal statement describing the applicant's career goals and interests in the field of physiology is required. Admissions requirements may need to be adjusted for students depending on career goals; this will be assessed as part of the Program's annual review. The MEP MS program will follow the credit transfer policy as set-forth by UNMC's Graduate Studies.

We predict the following number of full-time students to enroll in the MEP MS program in each of the first five years:

- Year 1: 5 students
- Year 2: 10 students
- Year 3: 15 students
- Year 4: 25 students
- Year 5: 40 students

It should be noted that the relatively small number of students in Year 1 will likely be due to the limited amount of time between approval of the MEP MS program and the start of the 2021 academic year. By Year 3, we expect to enroll at least 15 students, which is approximately the minimum number of students required to make the program viable and sustainable. During the first five years, there will be an enrollment cap of 40 students to ensure program quality and to protect faculty workload. If, after the fifth year, it is apparent that the program has the resources to enroll more than 40 students, the cap may be lifted. The decision to remove the cap will be made collectively by the MEP Program Committee, Chair of the Department of Cellular and Integrative Physiology, and MEP course directors. Within the first year of the MEP MS program, it is expected that a new assistant professor dedicated to the implementation and maintenance of this program will be hired by the Department of Cellular and Integrative Physiology. In addition, a full-time administrative assistant fully dedicated to the MEP MS program will help manage the growth of the program. The current 12 graduate faculty members in the Department of Cellular and Integrative Physiology will serve as course directors and members of the MEP MS Program Committee. The Department of Cellular and Integrative Physiology Recruitment Committee will recruit additional graduate faculty to help accommodate and manage the program's growth.

### **Student Support Services**

#### **1. Learner Orientation**

All incoming MEP MS students will participate in a three-day online orientation during the first week in August. All faculty who are involved in the MEP MS program will participate in the new student orientation. In addition, Dr. Analisa McMillan, Director of Distance Learning at UNMC, and administrators involved in NU Online will be invited to participate in orientation to provide their insight and guidance to all incoming MEP MS students. Further, the professional staff from UNMC's Academic Success Program will be invited to participate in orientation to ensure students are fully aware of the services they provide.

#### **2. Advising**

In the first two years of the program, when the number of enrolled students is expected to be less than 10 per year, the MEP MS Program Director will serve as each student's faculty advisor. After the second year, or when the number of incoming students is greater than ten, whichever comes first, each student will be appointed a faculty advisor, who is a member of UNMC's graduate faculty and holds a primary faculty appointment in the Department of Cellular and Integrative Physiology. The faculty advisor and student will meet virtually at least monthly to discuss the student's career goals and his/her progress toward earning the MS degree.

In addition to the faculty advisor, students in the MEP MS program will be mentored by an Advisory Committee. The Advisory Committee for every student will be the MEP MS Program Committee. The

Advisory Committee along with the faculty advisor will meet with the student twice per semester (approximately every two months), once at mid-term and once at the end of the semester, to provide career guidance and support towards completing the MEP MS degree. The Advisory Committee will also administer the Comprehensive Exam. Further, the Advisory Committee will advise part-time students on the order of courses that each part-time student should follow based on the student's planned length of time to complete the degree. Graduation outcomes will be tracked by the full-time administrative assistant in the Department of Cellular and Integrative Physiology who is fully dedicated to the coordination and management of the program.

All students will be required to complete an Individual Development Plan (IDP) by their first advisory committee meeting (i.e. midterm of first semester). It is recommended that students use [myIDP](#). Based on the student's IDP, the Advisory Committee will invite an expert in the student's planned career path to be an ad hoc member of the advisory committee. This ad hoc member will not be a voting member of the committee, but would provide advice and networking opportunities to the student. At the end of each fall semester, ad hoc members of the students' advisory committees will be invited to participate on an expert panel at a synchronous "career fair", in which all students will be able to gain insight from experts in multiple career paths.

### **3. Program Coordination**

The program coordinator will be the administrative assistant in the Department of Cellular and Integrative Physiology who is fully dedicated to the coordination and management of the program. The role of the program coordinator will include: 1) initial communication contact for prospective and enrolled students; 2) recruitment and attendance at career fairs, etc.; 3) assist faculty, as needed, with the Canvas Learning Management System and Exemplify/Examsoft testing software; and 4) report final semester grades to UNMC Graduate Studies.

### **Evaluation/Assessment**

During the first five years, the program will be reviewed annually and revised, as needed, by the MEP MS Program Committee. The MEP Program Committee, which will also serve as the program's curriculum committee, will consist of the MEP MS Program Director (Dr. Matthew Zimmerman) and four additional graduate faculty in the Department of Cellular and Integrative Physiology. Members of the first MEP Program Committee include, Drs. Erika Boesen (associate professor), Paras Mishra (associate professor), Harold Schultz (professor), and Irving Zucker (professor). The annual review is necessary to ensure the program is meeting the needs of enrolled and prospective students, and to reflect new developments in the discipline. The following categories will be reviewed: curriculum, faculty, leadership, and infrastructure required to maintain and enhance the online, distance learning-only learning experience for students. Of note, potential future online electives that already exist at UNMC and other University of Nebraska campuses may be added to the curriculum to meet the needs of students. In addition to the annual review during the first five years, the MEP Program Committee will continue to periodically review and revise the program thereafter. Further, the program will be reviewed and revised, as needed, every five to seven years by UNMC's Graduate Council. The Graduate Council review will include the categories listed above, and will also include review of the following: students (prospective, enrolled, and graduated); program reputation; and sustainability of the program.

The MEP Program Committee will receive guidance from an External Advisory Board (EAB). Members of the EAB will include directors of similar master's programs at peer institutions and potential employers of graduates from the program. These potential employers likely will include CEOs/presidents of biotech companies, deans and department chairs of undergraduate universities and community colleges, and members of medical and/or professional school admission committees. The EAB will meet with the MEP Program Committee annually to discuss successes and challenges to ensure the program continues to serve students' career goals.

## **Resources**

To get this new program online, the program director and committee will need help from NU Online and from the Director of Distance Learning at UNMC. We anticipate NU Online and the Director of Distance Learning at UNMC can provide insight on marketing and student recruitment strategies. In addition, some of the course directors may need help to improve the online instructional design of their course. All of the required courses for the MEP MS program have been reviewed and approved by UNMC's Graduate Council and the Executive Associate Dean of UNMC's Graduate Studies. However, as indicated in the table above, some of the courses will be taught for the first time online when the program goes live for the first time in fall 2022.

## **APPENDIX B: Abstract of Proposal (1-2 page summary of the proposed degree program):**

The Department of Cellular and Integrative Physiology at the University of Nebraska Medical Center (UNMC) proposes to establish a Master of Science (MS) degree in Medical Physiology (MEP). This new online, distance learning-only program will focus on educating students in all aspects of physiology, with a particular focus on medical physiology. The MEP MS degree is designed to meet the needs of several prospective student populations, including: 1) students seeking undergraduate college and university adjunct teaching positions, as well as junior/community college teaching positions in physiology; 2) students seeking to improve their competitiveness for admission into a physiology (or physiology-related) PhD program; 3) students seeking to enhance their knowledge in physiology to improve their rank and earning potential in physiology-based, basic-science and/or clinical research laboratories; and, 4) students seeking to broaden and deepen their physiology knowledge base in their pursuit of medical school or health professional school admission. The program curriculum includes coursework focused on medical physiology, cell physiology, cardiovascular pathophysiology, advanced topics in physiology, and pharmacology for the physiologists. The curriculum is enhanced by coursework in scientific writing, biostatistics, and two courses focused on the foundation and instructional design of health professions education. The goal of this program is to provide this unique curriculum in an online, distance learning-only format to the student populations described above and all other individuals who wish to enrich and extend their understanding of physiology, and apply their new knowledge to their chosen career path.

The new MEP Master of Science degree will be a 30-credit hour, non-thesis, distance learning-only program that is designed to be completed in two academic semesters (i.e. approximately nine months). The online, distance learning-only program will include courses taught both synchronously and asynchronously. Students will enroll in four courses worth 16 credits in the fall semester and five courses worth 14 credits in the spring semester (see table below). Students will also be required to pass a Comprehensive Exam near the end of the second semester.

<i>Required courses for the MEP MS degree</i>	
<b>Course Number*</b>	<b># Credit Hours</b>
MEP 803: Cell Physiology & Signaling <sup>1</sup>	3 credit hours
MEP 806: Medical Physiology <sup>1</sup>	7 credit hours
MEP 810: Basic Concepts in Scientific Writing <sup>1</sup>	3 credit hours
HPME 801: Foundations in Health Professions Education <sup>1</sup>	3 credit hours
BIOS 806: Biostatistics <sup>2</sup>	3 credit hours
MEP 807: Medical Pharmacology for the Physiologist <sup>2</sup>	3 credit hours
MEP 901: Advanced Topics in Physiology <sup>2</sup>	2 credit hours
MEP 916: Molecular Mechanisms of Cardiovascular Pathophysiology <sup>2</sup>	3 credit hours
HPME 802: Instructional Design for Health Professions Education <sup>2</sup>	3 credit hours
<b>Total</b>	<b>30 credit hours</b>
* All required courses are offered online. <sup>1</sup> Required courses in the 1 <sup>st</sup> semester (fall); <sup>2</sup> Required courses in the 2 <sup>nd</sup> semester (spring)	

Graduates of the MEP MS program will achieve the following student learning outcomes:

1. **Knowledge of the Discipline:** Graduates demonstrate broad knowledge and deep knowledge of physiology.
2. **Critical Thinking:** Graduates are able to critically analyze and synthesize new and complex information from diverse sources.
3. **Professional Behavior:** Graduates are committed to integrity within all aspects of their chosen profession and abide by existing professional standards. They are able to work in teams and assume responsibility for their actions and their career aspirations.
4. **Communication Skills:** Graduates demonstrate effective oral, written, and visual communication skills.

Leadership of the MEP MS program will include a program director and committee. Dr. Matthew Zimmerman, associate professor in UNMC's Department of Cellular and Integrative Physiology, will be the program's inaugural director. The MEP Program Committee, which will also serve as the program's curriculum committee, will consist of Dr. Zimmerman (chair) and four additional graduate faculty in the Department of Cellular and Integrative Physiology. Members of the first MEP Program Committee include, Drs. Erika Boesen (associate professor), Paras Mishra (associate professor), Harold Schultz (professor), and Irving Zucker (professor). The Program Committee will be responsible for the program's overall strategy, developing policies, and formulating general requirements for the program. As chair of the MEP MS Program Committee, Dr. Zimmerman will report the progress, successes, and challenges of the MEP MS program to Dr. Merry Lindsey, Chair of the Department of Cellular and Integrative Physiology. The program will receive administrative support from a full-time administrative assistant in the Department of Cellular and Integrative Physiology.

#### **APPENDIX C: Letters of Support**

Please see the attached letters of support.

#### **APPENDIX D: Job Opportunities and Market Assessment**

Please see the attached data on job opportunities (provided by the US Bureau of Labor Statistics), and market assessment (provided by NU Online).

**APPENDIX C: Letters of Support for the Master of Science degree in Medical Physiology**



May 11, 2021

Matthew C Zimmerman, Ph.D.  
Associate Professor  
Director, Integrative Physiology & Molecular Medicine Doctoral Program  
Department of Cellular & Integrative Physiology  
University of Nebraska Medical Center  
Omaha, NE 68198

**RE: New online MS in Medical Physiology at UNMC**

Dear Dr. Zimmerman,

Thank you for reaching out to me and sharing the curriculum for the new online M.S. Degree in Medical Physiology being proposed by your department of Cellular and Integrative Physiology at the University of Nebraska Medical Center. As you know, the University of Nebraska at Kearney's (UNK) Biology Department, in collaboration with the Office of Health Sciences, recently received approval for an online M.S. Degree in Health Sciences. I am the director of this new online program. The M.S. in Health Sciences at UNK is specifically designed to serve pre-professional health science students preparing for a professional program in health sciences. After learning more about your proposed program in medical physiology, it is clear to me that your program will mostly serve different groups of students. Although your program may attract some pre-professional students, your program's specific concentration on physiology is much different than our program in health sciences at UNK. In addition, I noticed your program requires two courses in health education, which is certainly unique and different than our program. Due to these differences, taken together with our program's maximum enrollment of 24 students per year, I highly doubt our programs will compete for the same prospective students. In the future, I think our programs can work together to offer electives that students in the other program may be interested in taking. For example, I noticed you have a course on cell physiology and signaling, which might be of interest to students in our program. Additionally, we have an essential human anatomy course that may complement your students' coursework in physiology. These possibilities are a "win-win" for students enrolled in each of our programs. I look forward to discussing these and other collaborations with you after your program gets approved and you start recruiting your first class of students.

Sincerely,



Dr. Janet E. Steele, Professor  
Director, Master of Science in Health Sciences  
Director, Master of Science in STEM Education  
Acting Co-chair, Department of English

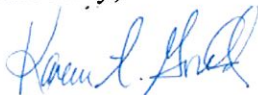
May 11, 2021

Matt Zimmerman, PhD  
Associate Professor  
Department of Cellular & Integrative Physiology  
University of Nebraska Medical Center  
Omaha, NE 68130

Dear Matt,

It is my pleasure to write this letter of support for your proposed online Masters of Science Degree Program in Medical Physiology at UNMC. Having experience as the current director of the M.S. in Medical Anatomy Program at UNMC, I am confident you and your colleagues will be able to develop and maintain a successful and well-respected program that will be sought after by many students. From our numerous conversations, you are well-aware that the M.S. in Medical Anatomy Program at UNMC receives 60-80 applications each year. We currently cap our enrollment at 16-18 student per year; thus, leaving many strong applicants looking for other options. I fully anticipate that some of these strong applicants will be quite interested in your new medical physiology program. That being said, considering that your program is 100% online, is focused on physiology, and requires courses in education, I suspect your program will also appeal to additional prospective students that may not be interested in or able to participate in our medical anatomy program. Because your program is fully online, I believe that, by and large, our two programs will not be competing for the same applicants. In fact, I anticipate collaboration between our two programs that will help to strengthen each of them. If I can be of any help as your new program proposal moves through the approval process, or once you are ready to recruit students, please do not hesitate to ask. I am happy to help.

Sincerely,



Karen Gould, Ph.D.  
Professor and Vice-Chair for Graduate Education  
Co-Director, Interdisciplinary Graduate Program in Biomedical Sciences  
Director, MS Medical Anatomy Program  
Department of Genetics, Cell Biology and Anatomy  
University of Nebraska Medical Center  
Durham Research Center I  
985805 Nebraska Medical Center  
Omaha, NE 68198-5805  
Tel: 402-559-2456

February 1, 2021

Matthew C. Zimmerman, Ph.D.  
Associate Professor  
Director, Integrative Physiology & Molecular Medicine Doctoral Program  
Director, Masters of Science in Medical Physiology Program  
Department of Cellular & Integrative Physiology  
University of Nebraska Medical Center  
985850 Nebraska Medical Center  
Omaha, NE 68198-5850

Dear Matt,

It is my pleasure to write this letter of support for the Masters of Science in Medical Physiology Program that you are developing at the University of Nebraska Medical Center (UNMC). For decades the physiology faculty here at Wayne State College have collaborated with many of the faculty in your department at the UNMC, particularly through the Nebraska Physiological Society (now known as the Midlands Society of Physiological Sciences). Additionally, Wayne State and UNMC work closely together for the Rural Health Opportunities Program, a cooperative program between our two institutions that recruits and educates students from rural Nebraska to become health care providers and return to a rural community.

After reviewing the Program of Study for your proposed Medical Physiology Master's Program, I believe this will be another opportunity for collaboration. As you know, here at Wayne State we offer bachelor degrees (B.A. or B.S) in Applied Human and Sport Physiology, Exercise Science, and Life Sciences. I anticipate graduates from your Medical Physiology Master's Program will likely be strong candidates for adjunct faculty positions at Wayne State to teach physiology and/or a related field in these degree programs. I applaud and support your efforts in developing a new, completely online Medical Physiology Master's Program, and I look forward to yet another opportunity for collaboration between the UNMC and Wayne State College.

Sincerely,



Ron Loggins, Ph.D.  
Dean, School of Science, Health, and Criminal Justice  
Wayne State College  
402.375.7030



January 25, 2021

Matthew C. Zimmerman, Ph.D.  
Associate Professor  
Director, Integrative Physiology & Molecular Medicine Doctoral Program  
Director, Masters of Science in Medical Physiology Program  
Department of Cellular & Integrative Physiology  
University of Nebraska Medical Center  
985850 Nebraska Medical Center  
Omaha, NE 68198-5850

RE: Masters of Science Degree in Medical Physiology at UNMC

Dear Matt,

I am excited to learn about the new online Masters of Science Degree in Medical Physiology that you and your colleagues in the Department of Cellular and Integrative Physiology at UNMC are developing. I am delighted to write this letter expressing my full support for this new program. Here at the Metropolitan Community College (MCC), we hire individuals with Master's degrees to educate our students. As you and I have discussed, our largest area of need is often in biology, anatomy & physiology, and microbiology. As such, I believe students who graduate from your Medical Physiology Program with a M.S. degree have the potential to be great candidates for teaching positions at MCC.

Thank you for making me aware of your plans to develop this new, and much needed, online degree program in physiology. I hope graduates from your program will consider applying for open positions at MCC as they become available in the future.

Best regards,

*Michael A. Flesch*

*Michael A. Flesch*  
Dean of Math and Natural Sciences  
Metropolitan Community College  
P.O. Box 3777  
Omaha NE 68103  
Phone: 531-622-1307 Cell: 402-214-5776 Email: [mflesch@mccneb.edu](mailto:mflesch@mccneb.edu)

January 13, 2021

Matt Zimmerman, Ph.D.  
Associate Professor  
Cellular & Integrative Physiology  
University of Nebraska Medical Center  
Omaha, NE 68198

**RE: New online Master's degree in Medical Physiology at UNMC**

Dear Dr. Zimmerman,

I am thrilled to write this letter in support of the new, online Master's in Medical Physiology Program you are creating at the University of Nebraska Medical Center. As you know, I graduated in the Class of 2018 from Rockhurst University in Kansas City. My career goal at that time was to enroll in medical school. Unfortunately, I was not immediately accepted after my undergraduate career and decided to look for opportunities to improve my medical school application. I spent time volunteering in the emergency department and in a research laboratory at UNMC. Then, I was hired as a research technologist in a lab. I looked into post-baccalaureate and master's programs; however, I could not find one that could be completed in a timely manner and allowed me to continue my volunteer work. When you told me about your planned online Master's in Medical Physiology Program, I immediately thought to myself, "where was this two years ago?". The flexibility of your new program would have allowed me to earn a Master's degree in Medical Physiology in 1-2 years while continuing to volunteer and improve my medical school application in other areas.

I was accepted into the College of Medicine Class of 2024 at Kansas City University. I am having a great time and enjoying this learning process. I have no doubt that the required courses in your program would have prepared me to be more comfortable with and have better success in my current medical school courses.

I hope you are able to get your new program approved soon, and I expect you will have great interest from prospective students.

Sincerely,

*Jake*

Jacob Walker  
Kansas City University | College of Medicine  
D.O. Candidate | Class of 2024  
[Jacob.Walker@kansascity.edu](mailto:Jacob.Walker@kansascity.edu)  
(402)312-7782

February 22, 2021

Dear Dr. Zimmerman,

I am more than happy to write this letter of support for the Master's in medical Physiology Program at UNMC that you are developing. I currently work in a biomedical research laboratory at UNMC, but my immediate career goal is to be accepted into medical school at UNMC. I graduated with B.S. degree in Biological Sciences from the University of Missouri - Columbia in December of 2019. To improve my medical school application, I decided to get some biomedical research experience and strongly considered joining a Master's program. I decided against joining a Master's program due to the length of time these programs take. I started working at UNMC in September and I will be applying to medical school beginning in May. Since I was only planning on working in biomedical research for only a little over one year, I did not believe that I could finish a Master's program before my plans to apply and hopefully begin medical school. However, if the Master's program you are creating would have already been offered, I would have been very much interested in enrolling as this would have fit my career schedule much better. I think that this is a phenomenal idea and the courses you have included in the curriculum would have prepared me for the courses I will take in my first 1-2 years of medical school, significantly increasing my chance of acceptance and success in the beginning of medical school. The online aspect of your program would have also been great for me, as I could have enrolled in the program while still spending some time in a research laboratory.

I wish you all the best in finalizing the details of your new program. I anticipate future students who ultimately want to attend medical school, like me, or other health-related professional schools will be very interested in completing your program.

Sincerely,

Chase Castro

Research Technician

**University of Nebraska Medical Center**

9867605 Nebraska Medical Center

Omaha, NE 68198-7605

402.836.9798

January 27, 2021

Matthew C. Zimmerman, PhD  
Associate Professor  
Cellular and Integrative Physiology  
University of Nebraska Medical Center  
Omaha, NE 68198

Dear Dr. Zimmerman,

I am extremely excited to hear about the Master's in Medical Physiology Program. From the sounds of it, this program would be an ideal fit for me. As you know, I graduated from the University of Nebraska – Lincoln (UNL) in 2018 with a B.S. in Biological Sciences. After graduating, I worked for about one year as a research technician in a biomedical research lab at UNL. Currently, I am a Research Technologist I in the Department of Cellular and Integrative Physiology at UNMC. I really enjoy doing physiology- and pathophysiology-related research. However, I am still a bit undecided what I want to do for my long-term career path. I am very interested in the potential of enrolling in your Master's in Medical Physiology Program for numerous reasons. First, if I decide to continue as a research technologist, having a stronger background in physiology would help me have a greater impact in the lab. Second, with a Master's degree, I would have a higher earning potential. I know that at UNMC, if I had my Master's, I could apply for Research Coordinator or Research Manager position, both of which have a much higher salary than my current research technologist position. Third, I have thought about applying to doctoral programs and earning my PhD. Certainly, having a Master's in Medical Physiology would make me a more competitive applicant. Plus, I predict some of my Master's courses could be transferred to my PhD program of study. Lastly, I am very interested in the online aspect of your program. I like the idea of being able to work while enrolled in the program. I understand that with a full-time job it may take me 2 or more years to complete the program, but I am okay with that, as I would need the flexibility to continue to work. Please keep me updated on your plans for this new program. I am excited about the possibility of enrolling.

Sincerely,



Taylor Bruett  
Research Technologist I  
Cellular and Integrative Physiology  
University of Nebraska Medical Center  
985850 Nebraska Medical Center  
Omaha, NE 68198-5850  
402-559-7843  
[tbruett@unmc.edu](mailto:tbruett@unmc.edu)



January 25, 2021

Matthew C. Zimmerman, Ph.D.

Associate Professor

Chair, Integrative Physiology & Molecular Medicine Doctoral Program

Director, Free Radicals in Medicine Program

Department of Cellular and Integrative Physiology

University of Nebraska Medical Center

985850 Nebraska Medical Center

Omaha, NE 68198-5850

**Re: Online Masters Program in Medical Physiology**

Dear Dr. Zimmerman:

I am sending you this letter as a follow up to our discussion about the online masters program in medical physiology being developed by you and the Department of Cellular and Integrative Physiology here at UNMC. I graduated with a bachelor's degree in Biochemistry in May 2018 from Simpson College and have been working as a research technologist in the physiology department since February of 2019. I would potentially be interested in enrolling in this program to earn a masters, which would enhance my physiology knowledge and increase my earning potential as a research technician. Please let me know when the program starts.

Sincerely,

A handwritten signature in black ink, appearing to read 'Shelby Konfrst', written over a light blue horizontal line.

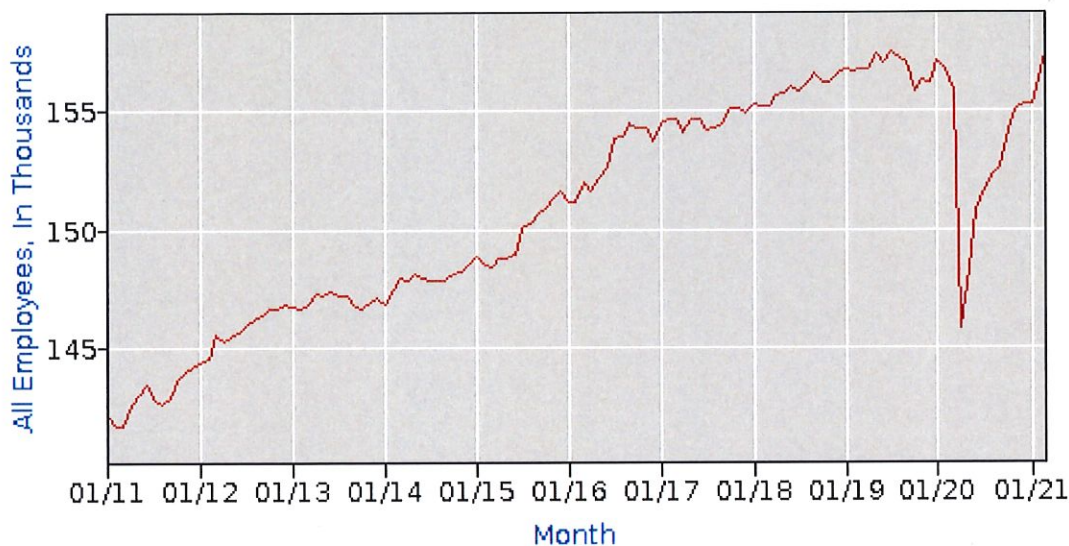
Shelby Konfrst, B.A.

Research Technologist II

Department of Cellular and Integrative Physiology



## Education & Health Services Positions in Nebraska



Data Series	Jan 2016	Jan 2017	Jan 2018	Jan 2019	Jan 2020	Jan 2021
Education & Health Services	151.2	154.4	155.3	156.7	157.1	155.3
# jobs in thousands						

- In January 2021, there were 155,300 education and health service jobs in Nebraska. The preliminary data for March 2021 shows that the upward trend is continuing with a total of 157,500 jobs.
- The Omaha-Council Bluffs metropolitan area had an average (mean) hourly wage for these positions of \$26.59 in May 2019.
- The Lincoln metropolitan area has the highest concentration of Biological Science teacher jobs in Nebraska with an annual mean wage of \$90,130.

**Source: US Bureau of Labor Statistics**

Midwest Information Office-Nebraska

Occupational Employment and Wage Statistics, May 2020 – Postsecondary

Occupational Employment and Wage in Omaha-Council Bluffs, May 2019

# Teaching Opportunities

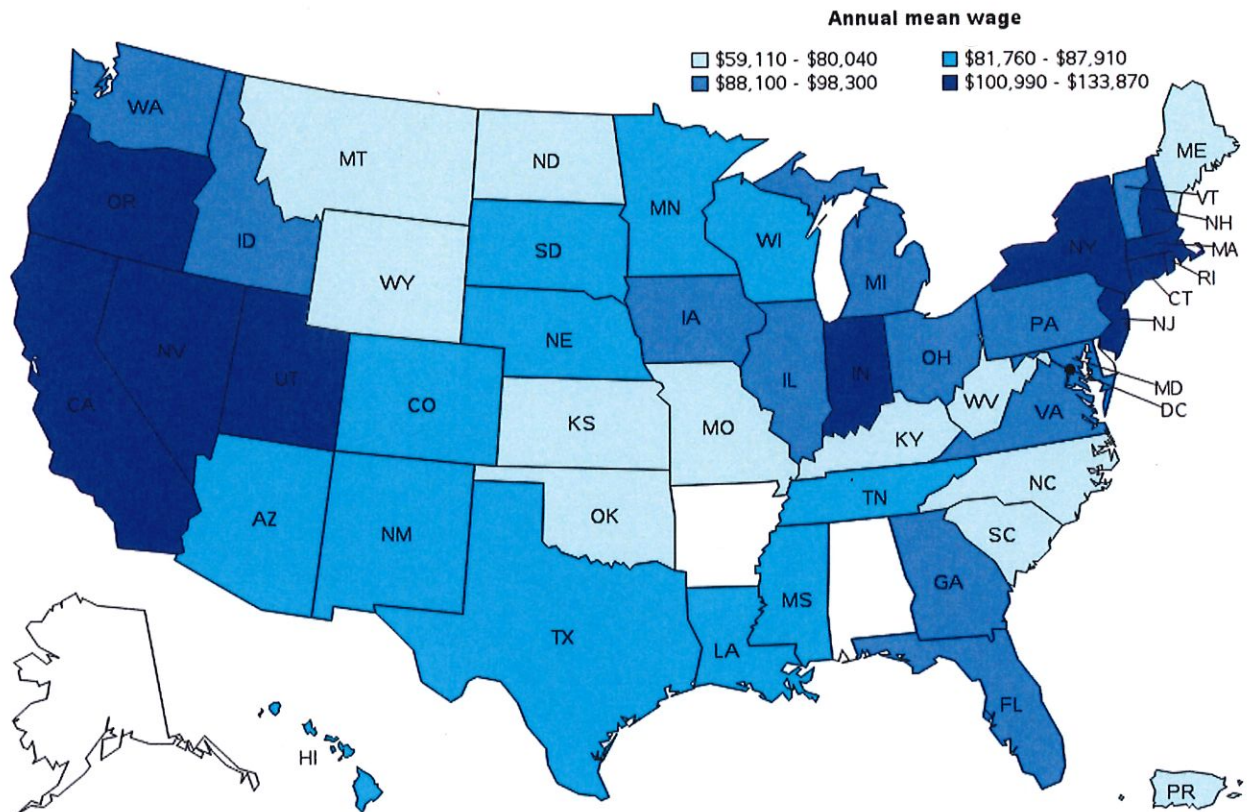
**Biological Science Teachers, Postsecondary** (Includes both teachers primarily engaged in teaching and those who do a combination of teaching and research)

- Industries with the highest level of employment: Colleges/Universities, Junior Colleges, Scientific Research, and Technical/Trade Schools
- Annual Wage estimates: \$46,430 - \$179,450; Median is \$85,600

**Secondary School Teachers**

- Industries with the highest level of employment: Elementary & Secondary schools, Educational Support Services, Religious Organizations, Local Government
- Annual Wage estimates: \$41,330 - \$102,130; Median is \$62,870

Annual mean wage of biological science teachers, postsecondary, by state, May 2020



Blank areas indicate data not available.

The **Master of Science in Medical Physiology** program will focus on educating students in all aspects of physiology with a particular focus on medical physiology. This program is designed for those seeking teaching positions in physiology, those looking to broaden their knowledge of physiology and those in pursuit of a doctorate degree.

### Market Assessment Key Insights:

- ▶ Demand for **medical professionals** in relevant areas is projected to grow both in Nebraska and nationally.
- ▶ **Employment** in medical professions in Nebraska is **about equal** to the national average.
- ▶ Few schools appear to be offering equivalent online programs and completions overall appear to be **trending positively**. UNMC has opportunity to market the Medical Physiology, MS program **nationally**.

### Program Contributions to NU Online Portfolio

The **Medical Physiology, MS** program is **unique to the NU Online portfolio** offering working professionals the opportunity to advance their degree in areas related to physiology.

## Nebraska Projections

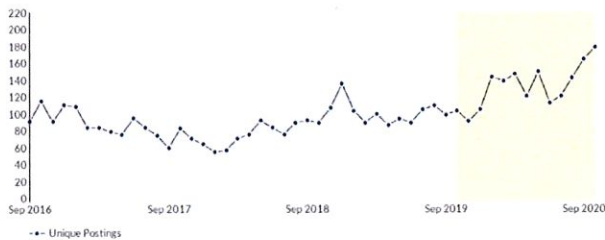
Source [NDOL](#), % Change 2018-2028

(in descending order)

- Physician Assistants **+29.57%**
- Nurse Practitioners **+19.56%**
- Dental Hygienists **+11.51%**
- Registered Nurses **+11.12%**
- Family & General Practitioners **+10.64%**
- Health Educators **+9.98%**
- Orthodontists **+9.80%**
- Exercise Physiologists **+8.33%**
- Dentists, General **+8.23%**
- Medical Scientists, Except Epidemiologists **+7.50%**
- Pharmacy Technicians **+6.62%**
- Pharmacists **+1.93%**

### Nebraska Unique Job Posting Trends. Source: Emsi

Filtered by job postings with the skill 'physiology' listed.



## National Projections

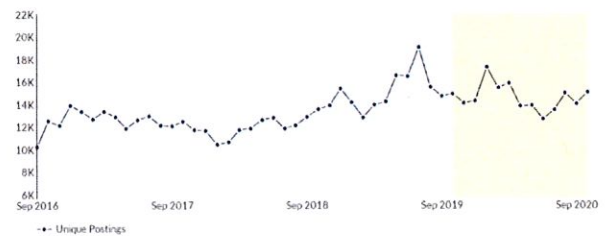
Source [US BLS](#), % Change 2019-2029

(in descending order)

- Nurse Practitioners **+52.4%**
- Physician Assistants **+31.3%**
- Health Education Specialists **+11.4%**
- Exercise Physiologists **+11.3%**
- Registered Nurses **+7.2%**
- Family Medicine Physicians **+6.1%**
- Medical Scientists, Except Epidemiologists **+6.1%**
- Dental Hygienists **+5.9%**
- Pharmacy Technicians **+3.6%**
- Dentists, General **+2.8%**
- Orthodontists **+2.4%**
- Pharmacists **-3.3%**

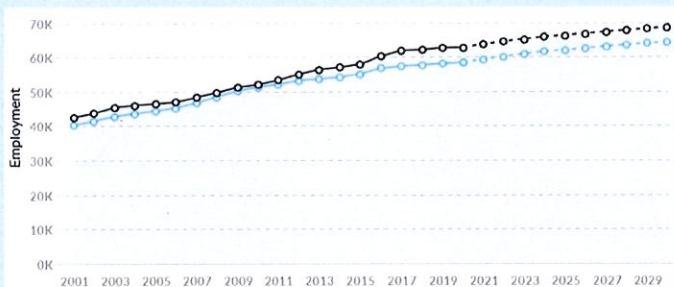
### USA Unique Job Posting Trends. Source: Emsi

Filtered by job postings with the skill 'physiology' listed.



## Nebraska Workforce Demand

Filtered by Healthcare Practitioners & Technical Operations Occupations. Source: Emsi.



Region	2018 Jobs	2019 Jobs	Change	% Change
● Nebraska	62,163	62,752	589	0.9%
● National Average	57,708	58,121	413	0.7%

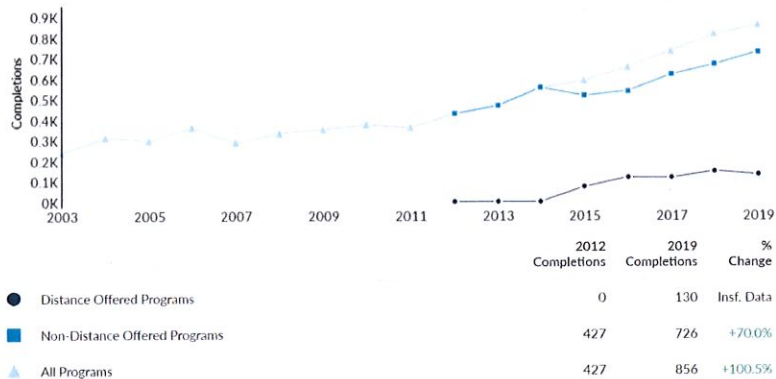
- ▶ Employment in medical fields in Nebraska is **about equal** to the national average.
- ▶ Top 5 in-demand skills in Nebraska job postings are **Nursing, Basic Life Support, Advanced Cardiovascular Life Support (ACLS), Intensive Care Unit and Pediatrics.**
- ▶ The median advertised salary for medical professions in Nebraska is **\$62,302**

## Degree Completion Trends

► Based off CIP Code 26.0901 Physiology, General

### National Completion Trends

Filtered by master's online completions. Source: Emsi



### 2019 Online Completions

Data: Emsi, IPEDS. 2019 completions compared to 2018.

Case Western Reserve University: **130** **-11.6%**

## Tuition Scan

Online master's degrees in physiology

University	Degree / Certificate	Degree	Credit Hours	Resident Tuition Per Credit Hour 2020-2021	Non-Resident Tuition Per Credit Hour 2020-2021	Distance/ Online/ Digital Fee*	Tech Fee*	Library Fee*	Other Fees*	Resident Tuition & Fee Totals 2020-2021	Non-Resident Tuition & Fee Totals 2020-2021	Website
University of Florida	Medical Physiology & Pharmacology	MS	30	\$550.00	\$550.00					\$550.00	\$550.00	<a href="#">UFL Tuition</a>
University of Nebraska Medical Center	Medical Physiology	MS	30	\$597.00	\$597.00	\$35.00		\$6.25		\$638.25	\$638.25	<a href="#">UNMC Tuition</a>
Case Western Reserve University	Medical Physiology	MS	32	\$1,997.00	\$1,997.00					\$1,997.00	\$1,997.00	<a href="#">CWRU Tuition</a>

### Specialized Accreditation

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According to the submitted proposal, all courses already exist within the College of Medicine, Department of Cellular and Integrative Physiology and are currently part of existing degree programs. There is no indication that specialized accreditation is required for this proposed Master of Science degree.

### State Authorization

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Since the proposed program relies upon existing courses within the College of Medicine, Department of Cellular and Integrative Physiology, the program should be authorized in the same states as other programs within the College of Medicine.

Per the proposal, there is no indication that the proposed program includes any experiential learning placements. However, should the program determine that the proposed Medical Physiology, Master of Science degree does include experiential learning placements, the program must comply with NC-SARA reporting requirements per the NC-SARA Manual and the NC-SARA Data Reporting Handbook.

### Licensure/Certification

---

As the proposal is written, there is no indication that the proposed program leads to a professional license or certification. However, should the program determine that the proposed Medical Physiology, Master of Science degree does lead to a professional license or certification, the program must comply with Federal and NC-SARA public and direct notification regulations.

Information on the Federal regulations and NC-SARA policies is available upon request.

**TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM**  
UNMC MS in Medical Physiology

	(FY2021) Year 1		(FY2022) Year 2		(FY2023) Year 3		(FY2024) Year 4		(FY2025) Year 5		Total Cost
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	
Personnel											
Faculty <sup>1</sup>	1.0	\$128,800	1.0	\$130,560	1.00	\$133,171	1.00	\$135,835	1.00	\$138,551	\$666,917
Professional											
Graduate Assistants											
Support Staff <sup>2</sup>	1.00	\$57,600	1.00	\$58,752	1.00	\$59,927	1.00	\$61,126	1.00	\$62,348	\$299,753
Subtotal	2.0	\$186,400	2.0	\$189,312	2.00	\$193,098	2.00	\$196,961	2.00	\$200,899	\$966,670
<b>Operating</b>											
General Operating <sup>3</sup>		\$5,000		\$5,000		\$5,000		\$5,000		\$5,000	\$25,000
Equipment <sup>4</sup>		\$3,000		\$0		\$0		\$3,000		\$0	\$6,000
Software/Access to online modules <sup>5</sup>		\$20,000		\$20,000		\$30,000		\$40,000		\$40,000	\$150,000
Library/Information Resources <sup>6</sup>		\$3,000		\$3,000		\$3,000		\$3,000		\$3,000	\$15,000
Other <sup>7</sup>		\$31,000		\$17,910		\$17,910		\$35,820		\$35,820	\$107,460
Subtotal		\$217,400		\$235,222		\$249,008		\$283,781		\$284,719	\$1,270,130
<b>Total Expenses</b>											

<sup>1</sup> One new Assistant Professor dedicated to the program is needed to implement and maintain the program. Fringe benefits included as is a 2% salary increase/year.

<sup>2</sup> One dedicated support staff is needed to implement and maintain the program. Fringe benefits included as is a 2% salary increase/year.

<sup>3</sup> Includes allowances for faculty development, memberships, communications, data processing, etc.

<sup>4</sup> Laptops, web cameras, etc for Assistant Professor, other faculty and support staff.

<sup>5</sup> Software and access to online modules for all students, faculty and support staff. Expenses will increase as the number of enrolled students increases.

<sup>6</sup> Online learning management system expenses

<sup>7</sup> One student scholarship in Year 2 and Year 3; two student scholarships in Year 4 and Year 5.

**TABLE 2: PROJECTED REVENUES - NEW INSTRUCTIONAL PROGRAM**  
UNMC MS in Medical Physiology

	(FY2021) Year 1		(FY2022) Year 2		(FY2023) Year 3		(FY2024) Year 4		(FY2025) Year 5		Total
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	
Reallocation of Existing Funds											
Required New Public Funds											
1. State Funds											
2. Local Tax Funds (community colleges)											
Tuition and Fees <sup>1</sup>		\$89,550		\$179,100		\$268,650		\$447,750		\$716,400	\$1,701,450
Other Funding <sup>2</sup>		\$186,400		\$189,312		\$0		\$0		\$0	\$375,712
<b>Total Revenue</b> <sup>3</sup>		\$275,950		\$368,412		\$268,650		\$447,750		\$716,400	\$2,077,162

<sup>1</sup> See table below for calculation of tuition revenue.

<sup>2</sup> College of Medicine Dean's Office will support faculty and staff salaries for two years. Thereafter, tuition revenue generated by the program will be used to support faculty and staff salaries.

<sup>3</sup> Revenues are not expected to match expenses.

Year	Number of Students	Number of Credits/Student	Tuition Rate Per Credit Hour	Total Revenue Per Year
Year 1 Tuition and Fees	5	30	\$597.00	\$89,550
Year 2 Tuition and Fees	10	30	\$597.00	\$179,100
Year 3 Tuition and Fees	15	30	\$597.00	\$268,650
Year 4 Tuition and Fees	25	30	\$597.00	\$447,750
Year 5 Tuition and Fees	40	30	\$597.00	\$716,400
				<b>\$1,701,450</b>