Request from the Department of Physiology and Biophysics of Case Western Reserve University for the Off-Site Delivery of the current Master of Science in Medical Physiology Degree Program

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Objectives of the Proposed Degree Program

The primary objective of the proposed program is to provide a means for individuals to complete our existing Plan B Master of Science in Medical Physiology degree program, in part or in total, through an on-line mechanism of course delivery. Currently, 21 of the 30 required hours of course work for the degree are available online. We will encourage the development of additional online basic science courses, both inside and outside the department, so that students can eventually satisfy all the course requirements of the MS degree via the off-site, Internet mechanism. The Plan B MS program also requires that the students take and pass a qualifying exam that is taken the first week of May after the first two semesters of study. We use the computer-based National Board of Medical Examiners (NBME) shelf exam in Physiology and Neurophysiology as this exam. Students enrolled in the Internet option will take the exam at a qualified testing center close to their residence during the same week as the resident students.

The academic standards of admission and performance of the current resident degree option will also apply to the off-site option, ensuring that the quality of the degree is maintained. Expanding our Plan B MS program to include an on-line delivery mechanism will enable us to extend the Master of Science in Medical Physiology degree program to a student audience for whom regular travel to campus would be difficult or impossible. The off-site, Internet delivery option is of particular interest to students who are working full time, who must live some distance from campus, and/or who have time schedule limitations.

When we began the Plan B MS in Medical Physiology program in the fall semester of 2011, we began video recording all the lectures. We placed these recordings, along with all course materials (Learning Objectives, PowerPoint files used in class, reading materials, etc.) online through Blackboard for the following courses: Medical Physiology

I and II - PHOL 481 and 482 - (a total of 12 credit hours), Translational Physiology I and II - PHOL 483 and 484 - (a total of 4 credit hours), Physiology Seminar I and II - PHOL 498 - (a total of 2 credit hours), and Independent Study in Physiology - PHOL 451 - (a total of 3 credit hours). Survey's showed that students in these classes find these on-line resources, particularly the video recordings of lectures, very valuable, particularly when students are unable to attend class for one reason or another. From these survey results, we realized the potential to offer these classes totally online and will offer them all as on-line courses beginning fall semester 2013.

One first year student was out of town for family reasons for an extended time fall semester 2012. During that time, she relied on the on-line resources to keep up with the fall courses and we were able to successfully deliver secure quizzes and block exams through a testing center in New Mexico. Thus, we have had experience making learning resources available online for nearly two years and experience delivering secure quizzes and exams at a distance. Each student who requests to take a course via the Internet will be given permission to do so upon the condition that an adequate testing center is identified.

Because we recognize the potential of reaching more students with our program via the Internet, we request permission for the off-site delivery of the established Plan B Master of Science in Medical Physiology degree program.

Response to program standards:

le and mission.

The approved MS in Medical Physiology program in the Graduate School of Case Western Reserve University is designed to provide advanced training in physiology to students who wish to apply to health-science professional programs (Ph.D., MD, DO, dental, pharmacy, veterinary, physician assistant programs, etc.) or to students who wish to seek or advance their employment in biotechnology companies. The proposed program facilitates our ability to achieve this mission by making it easier for students to overcome the logistical and financial barriers imposed by commuting to campus, and allows students outside the Cleveland area to pursue the Master of Science in Medical Physiology degree.

ppreciably affected by offering the program, especially via alternative delivery mechanisms.

The proposed distance learning courses and degree programs are identical to our current on-campus degree program. Student performance assessments are the same regardless of the delivery mechanism, as required by our university accreditation agency: The Higher Learning Commission. Grades on the block exams in the current PHOL481, 482, 483, and 483 are set at A = 100% - 85%, B = 84%, and C <70%. On each block exam, if the median score is less than 85%, points (termed the Difficulty Factor) are added to make

the median = 85%. The Difficulty Factor for students taking these courses either on-site or off-site will be determined by the performance of the on-site students. Immediately after each quiz and block exam, resident students have the opportunity to review their quizzes and exams with the teaching assistants and faculty making up the quiz or exam. Because this is a valuable learning experience, these sessions can be streamed over the Internet to students who have taken the quiz or exam at a distance at exactly the same time. Since most students in the Internet option will not take the quizzes and exams at exactly the same time, they will be assigned a teaching assistant who will personally review each quiz and secure exam with them after the administration of the quiz or exam via Skype.

The passing mark on the qualifying exam has been set at 2 standard deviations below the mean of all students taking the NBME Physiology and Neurophysiology shelf exam = 760 for the last administration in May of 2013 (the 3rd percentile or higher).

selected cohort to complete the program in a reasonable amount of time.

Because the infrastructure for providing internet delivery of lectures and course materials is already in place, the resources required for expanding the program to off-site delivery are incremental and are covered by the university and school budgets. We also expect increased enrollment as a result of this offering, thus increasing the financial resources available to the department.

Furthermore, the 21 credit hours of coursework that are currently available online are all part of our standard curricula

4. The institution has in place sufficient technical infrastructure and staff to support offering the program, especially via alternative delivery mechanisms.

Technical support is available through the CWRU office of Instructional Technology and Academic Computing (ITAC) which currently provides us support for Blackboard and and MediaVision. The MediaVision team is responsible for providing traditional audio-visual services; technology enhanced classrooms as well as a set of "video-centric" technologies that are designed to take advantage of the university's world-class, gigabit-to-the-desktop network, and is responsible for placing lectures on-line for distance student access, and for maintaining dedicated classrooms with lecture recording facilities. Pedagogical support for faculty is provided through the University Center for Innovation in Teaching and Education, UCITE.

Dr. Walter Boron, Chair of the Department of Physiology and Biophysics, has appointed Dr. Thomas M. Nosek, Professor of Physiology and Biophysics and Director of Graduate Education for the department, to oversee the distance education program. Dr. Nosek oversees a staff member who is responsible for processing applications, enrollment, and

5. The institution has in place sufficient protocols for ensuring instructional commitments are met, including instructor/staff training, compliance with copyright law, and quality instruction among other variables.

All of the courses to be offered off-site via the Internet are part of the standard curriculum. Faculty members who teach these courses are familiar with having their lectures recorded and with having their teaching materials placed on-line via Blackboard. The requirement to comply with copyright laws is well understood and actively promoted. There will be no difference between the on-site and off-site teaching and assessment.

6. The institution has in place a relevant and tested method of assessing learning outcomes, especially in the case of alternative delivery mechanisms.

Assessment of our graduate programs is a continual process and is required to maintain our accreditation.

9. The faculty offering the program maintains the same standards and qualifications as for on-campus programs.

The course offerings using a distance mechanism are taught by the same faculty who teach our on-campus courses and the same standards and qualifications are applied uniformly to all on-campus and off-campus students enrolled in a course.

10. The institutions assures that, for all off-site and alternative programs, students will have access to necessary services for registration, appeals, and other functions associated with on-campus programs.

The CWRU School of Graduate Studies has extensive experience with off-site students and mechanisms are already in place for handling transactions for registration, appeals, etc.

Advising for students in graduate programs that use distance education will be the responsibility of the department or school offering the program. Students pursuing a Master of Science in Medical Physiology degree through the distance education program will have access to faculty through video conferencing, phone, and e-mail. We currently have 16 faculty who serve as Academic Advisors and 2 who serve as Career Advisors. It is difficult to predict how many students will eventually enroll in the off-site MS program. We do not anticipate that any faculty member will have to advise more than 10 students at any one time.

11. In those instances where program elements are supplied by consortia partners or outsourced to other organizations, the university accepts responsibility for the overall content and academic integrity of the program.

Not applicable.

Appendix A

Required Courses: The required core courses and the semesters when they are offered on-site are listed below. Appendixes B - E contain sample curricula for students desiring to complete the program in four different time frames. Other combinations are possible with the approval of the student's Academic Advisor. Each student will meet with their Academic Advisor prior to beginning the program to determine their customized course of study to achieve the degree. Students taking these courses off-site do not have to take them in the same semester as on-site students, greatly increasing the flexibility of the program. Part time student should follow the sample curriculum in Appendix E, taking 6 credit hours/semester. After the first year of studies, the course load could be as little as 3 credit hours/semester. It is anticipated that part time students will take no more than 8 semesters (including summer semesters) to complete the program.

Fall Semester

PHOL 481 -

Appendix B

There are many combinations of courses/term that a student can make to graduate with 30 credits in as few as 2 terms (9 months). However, it is highly recommended that the curriculum be decompressed over a longer time frame. Four examples of specific curricula are provided in Appendixes B – E.

Sample Curriculum #1

Completing the curriculum in 9 months (2 terms, Fall and Spring). This curriculum is VERY intense and is recommended for only very well prepared students and requires the permission of the MS in Medical Physiology Administration Committee.

Fall

PHOL 481	- Medical Physiology I	6 Credits
PHOL 483	- Translational Physiology I	2 Credits
PHOL 499	- Physiology seminar	1 Credit
Elective #1	-	3 Credits
Elective #2	-	3 Credits

Spring

PHOL 482	- Medical Physiology II	6 Credits
PHOL 484	- Translational Physiology II	2 Credits

Appendix C

Sample Curriculum #2
Completing the curriculum in 12 months (3 terms; Fall, Spring, and Summer).

Fall

PHOL 481	- Medical Physiology I	6 Credits
PHOL 483	- Translational Physiology	2 Credits
PHOL 499	- Physiology seminar	1 Credit
Elective #1	-	3 Credits

Spring

PHOL 482	- Medical Physiology II	6 Credits
PHOL 484	- Translational Physiology II	2 Credits
PHOL 499	- Physiology Seminar	1 Credit
Elective #2	-	3 Credits

Elective #4	-	3 Credits
	Total	30 Credits

Appendix E

Sample Curriculum #4

A laboratory technician working full time at Case Western Reserve University has as a fringe benefit free tuition for up to 6 credit hours of course work/semester at CWRU. If the student takes 6 credit hours/semester, it would take at least 5 semesters (including summer semesters) to complete the program. If the student takes fewer hours each semester, the duration of the program would be extended. This curriculum may also be desirable for other students who cannot take a course load of more than 6 hours of courses/semester.

Fall #1		
PHOL 481	- Medical Physiology I	6 Credits
Spring #1		
PHOL 482	- Medical Physiology II	6 Credits
Summer #1		
Elective #1	-	3 Credits
Elective #2	-	3 Credits
Fall #2		
PHOL 483	- Translational Physiology I	2 Credit
PHOL 499	- Physiology seminar	1 Credit
Elective #3	-	3 Credits
Spring #2		
PHOL 484	- Translational Physiology II	2 Credit
PHOL 499	- Physiology seminar	1 Credit
	Total	30 Credits