

Contact: Rachel Boon

REQUEST FOR NEW PROGRAM AT THE UNIVERSITY OF IOWA:
MASTER OF CLINICAL ANATOMY

Action Requested: Consider approval of the request by the University of Iowa to establish a Master of Clinical Anatomy (MCA) in the Carver College of Medicine.

Executive Summary: The proposed Masters of Clinical Anatomy degree provides clinically relevant post-baccalaureate content coupled with experiential learning activities to develop skills in teaching and educational research. The proposed degree offers Iowans a unique opportunity for study that is focused on directly linking content to medical/healthcare education. The proposed program addresses the Board of Regents Strategic Plan objective 1.1; "The Regent institutions provide clear pathways for students to enter, move through and complete their education and career goals." The Council of Provosts and the Board office reviewed this proposal and recommend approval.

Background:

Description of proposed program. The Department of Anatomy and Cell Biology (ACB) is proposing to expand its graduate offering to include a Master of Clinical Anatomy. This 32 semester-hour program will be in the Carver College of Medicine (CCOM) and administered through ACB. The program provides clinically relevant post-baccalaureate content coupled with experiential learning activities to develop skills in teaching and educational research. Graduates of the program will be prepared for a variety of anatomical sciences education settings that include advanced professional study, faculty/lectureship positions in medicine and allied healthcare fields at community colleges. Moreover, the proposed program offers a pathway for post-baccalaureate study with the potential to enhance a student's experience for entrance into a healthcare related professional program. In addition to providing educational experiences for students, it will promote faculty development within ACB in the areas of student mentoring, opportunities for educational research, and will be a source of teaching assistants for courses in the current CCOM curriculum.

Academic objectives. The mission of the Master of Clinical Anatomy (MCA) program is to provide clinically relevant post-baccalaureate content knowledge coupled with experiential learning activities to develop skills for teaching, educational research, and advancement to professional healthcare related programs. Graduates from this program will be able to:

- Demonstrate knowledge of the anatomical sciences (neuroanatomy, gross anatomy and histology) at a level necessary for instruction within a professional program.
- Design and deliver effective instructional activities appropriate for a cadaveric dissection course.
- Design and deliver effective instructional activities appropriate for individual, small group, large group and laboratory settings.
- Evaluate the effectiveness of educational instruction using both formative and summative methods.
- Practice effective methods of self-reflection on the nature, quality and impact of instructional activities for learning.

Need for proposed program. The need for individuals with breadth and depth of knowledge in the anatomical sciences continues to grow. There are currently 53 programs in USA and Canada that offer advanced study in anatomy, but only 38 offer concentrated studies in the anatomical sciences that focus on healthcare curricula and teaching. Although a number of potential solutions for the problem exist, a major determinant for success is a regional opportunity with relevant

exposure for interested students. Moreover, with the current and forecasted trend of research funding streams from National Institutes of Health, National Science Foundation, and other agencies, current and future graduate students seeking academic careers will likely be required to more actively participate in the teaching mission of health professional schools. Rigorous training in the underlying (i.e., regional and systematic) concepts related to the anatomical sciences and the ability to provide structured educational experiences that are linked to clinically relevant situations are the primary goals of this program. To this end, the faculty of the Department of Anatomy and Cell Biology determined that there was a sufficient need to extend CCOM offerings to student groups whose educational plan is directed more toward professional development, enhanced area of study, or advanced study in the anatomical sciences. It is these students that will most likely be competing for placement within areas of the healthcare professions, where projections for job growth are strong both locally and nationally. The goals of this program can be met by the continued efforts of current (and future) faculty by restructuring existing course offerings and developing new opportunities for distance/online learning.

Link to institutional strategic plan. This program proposal complements a Master's program option within ACB. Many of the teaching-intensive courses suggested in this curriculum currently exist within the course offerings of the department. In particular, the laboratory based course work (e.g., Human Anatomy for Graduate Students) has historically paralleled courses that are offered to the professional programs served by ACB. Additionally, the focus and content of the program will fill a gap in the current graduate programs offered by institutions governed by the Iowa Board of Regents and provide an additional opportunity for students to reach their professional goals within the state of Iowa. The program advances the educational mission of the CCOM and ACB by promoting scholarly work of educator emphasis faculty through MCA-student mentoring and research. In addition, the program has the potential to enhance the pipeline of anatomical educators within the state, regional and abroad.

Relationship to existing programs. The proposed program is unique to the UI CCOM as no other institution of the Iowa Board of Regents offers such an advanced degree. Current programs at the University of Iowa do offer exposure to some of the content of the proposed degree. The Department of Health and Human Physiology (HHP) offers an advanced level undergraduate course (HHP:4110) that is primarily focused on musculoskeletal anatomy. HHP also offers a graduate education sub-track through a non-thesis Masters in Athletic Training. The content and focus of the program provides training in the area of sports medicine, wellness, and pediatric/adolescent health. Completion of the program serves as a terminal degree for certification as an entry-level athletic trainer.

The CCOM has established many collaborative agreements with neighboring institutions, which have appropriate laboratories, to study human anatomy. However, the proposed degree offers Iowans a unique opportunity for study that is focused on directly linking content to medical/healthcare education. Students interested in the program will likely be diverse in their educational goals. Some students will be interested in such a program because they have a strong desire to continue their studies within a healthcare profession; others may want to prepare for college level teaching. This program will provide the necessary exposure and academic rigor to help better prepare these students. Similar programs are offered across the country, but only a few exist through neighboring institutions (e.g., Iowa State, Des Moines University and University of Nebraska).

The newly launched program at Iowa State University offers opportunities to explore graduate study and develop skills in bench science research. Whereas undergraduate programs offered at Regent's Institutions (e.g., UI Health and Human Physiology, ISU Kinesiology, or UNI Athletic

Training) might parallel certain aspects of the proposed program, we believe that the proposed MCA degree curriculum increases the opportunity for faculty mentoring of students within ACB and is more focused on preparing students for the CCOM curriculum in healthcare and/or advanced experiences to prepare for teaching/research in the anatomical sciences. In fact, the program has been intentionally designed so that post-baccalaureate students from a wide background may benefit from the experience. The proposed MCA degree is designed to meet the needs of a variety of students with distinct career aspirations.

Unique features. The University of Iowa offers a number of highly ranked healthcare professional programs (e.g., Physician Assistant, Physical Therapy, Medicine) that attract many talented students. Application to these programs is competitive and successful applicants to these programs have strong experiences in the health sciences, leadership roles, volunteerism, and academic studies. Students who may have struggled with aspects of their academic career or have extensive experience in other (non-science or non-healthcare) academic pursuits could strengthen their application by participating in the proposed program. Students also interested in pursuing further teaching/research in the anatomical sciences would benefit from this program.

Resources to establish a high-quality program.

Personnel: Core ACB faculty members who will mentor and work with students in the proposed program offer outstanding educational experiences. Members of this group have collectively received numerous teaching awards, participated in curricular design and reforms, practiced effective learning/teaching strategies, mentored students, and have published scholarly works in national and international journals. High quality teaching and effective educational activities, coupled with teaching and research opportunities, will be the hallmark of the program. We anticipate that the financial model of the program will permit the addition of a lecturer to the faculty ranks. This lecturer will participate in the teaching, research, and service associated with the MCA and other service teaching required of the ACB department.

Administrative support from ACB that aligns with the separate, but similarly organized graduate program, will be provided. This support will be partially subsidized through the proposed financial model. The financial model suggests that \$15,000 would be available to support general expenses associated with the program.

Facilities and Equipment: Current facilities are sufficient to accommodate the proposed program. Recent updates to the Gross Anatomy Laboratory and Teaching Faculty suite provide adequate space for faculty/student interaction. There is also room for graduate student office/study.

Student demand. Addressing the demand for such a program is multifaceted, given that the program may appeal to different students groups. For students using the program to gain additional coursework with direct application to healthcare to strengthen their application for a professional program, the demand is great. Recent data from the CCOM Admissions Office indicates that (as of May 2017) of the 177 meetings with students not admitted (for the 2017 school year), 69 students received the recommendation to pursue post-baccalaureate or special masters work to strengthen their GPA. Of those 69 students, 29 were Iowa residents. This represents the potential from only one professional program. Students with interests in programs from other healthcare fields (e.g., Physical Therapy, Dentistry, Physician Assistant, and Nursing) may benefit equally from the proposed program – increasing the potential demand.

Anecdotally, CCOM receives four to seven requests per year about the availability of such a program at UI from students wishing to pursue teaching/research in the anatomical sciences. A small number of these students are requesting transfer from other programs/institutions,

requesting opportunities to alter the trajectory of their studies. CCOM has provided courses of study and appropriate teaching opportunities for graduate students interested in strengthening their teaching experiences; however, with no formal program, it is difficult to accommodate these students.

Workforce need/demand. Employment advertisements from sources such as the Chronicle of Higher Education (CHE) and the American Association of Anatomists (AAA) demonstrate a continued workforce need. Data from the U.S. Bureau of Labor Statistics, as reported by Study.com, indicated a 16% projected job growth for post-secondary instructors in the area of biological sciences (including anatomy and physiology). A detailed sample of employment opportunities is provided in the proposal, but recent postings (May 2017) from the CHE and AAA outlined 93 employment opportunities related to anatomical sciences. Long-term occupational potential for students seeking various career paths is outlined in the following table:

	Long Term Occupational Projections: 2014-2024			
	Iowa		USA	
	Avg. Ann. Open.*	Projected Growth %	Avg. Ann. Open.*	Projected Growth %
Professional Programs				
Dentist	50	14.4	4960	18.0
Athletic Trainers	10	17.3	1040	21.1
Physical Therapy	100	29.2	12830	34.0
Physician Assistant	40	24.4	5000	30.4
Physicians and Surgeons	100	13.3	14510	14.9
Education Related Careers				
Health Care Practitioners	30	19.7	1490	13.8
Health Educators	20	12.8	1950	12.2
Education, Teachers Postsecondary	20	10.9	2030	9.1

*Average Annual Openings

Revenue. The proposed financial model assumes a starting class of 10 students that gradually builds, over a 5-year period, to a capacity of 20 incoming students. The gradual increased enrollment allows for participation in the required coursework and distributes students across faculty mentors. The model also assumes an enrollment distribution that is in line with the CCOM medical student admissions (i.e., 70% in state, 30% out of state). The model assumes an attrition rate of 50%.

With the projected enrollment analysis, and a starting cohort of 10 students, the potential tuition generation in year-1 is anticipated at \$163K. With continued enrollment and progressive increases in cohort size, the anticipated tuition generation would approach \$551K by Y7 with a total projected tuition generation of over \$2.8M. Although these values represent the total tuition generated for UI, the distribution to CCOM/ACB would represent 60% of the total (e.g., Year-1 = \$98K). The model assumes a 2% annual growth for both revenue and expenses.

Cost. ACB intends to eventually expand the number of teaching-emphasis faculty within the department. Costs borne for this additional faculty member would reside departmentally. The proposed program has the potential to offset some of the cost of this position while providing

existing faculty with opportunities for student mentoring and protected time to engage in educational research. Using historical data, the projected costs for sustaining this position includes a base salary (\$70,000) and benefits. Additional expenses to administer the program have been included in the pro forma analysis presented in the proposal to include administrative support and scholarships.

	TOTAL COSTS	TOTAL NEW COSTS
Year 1	\$110,000	\$110,000
Year 2	\$132,000	\$22,000
Year 3	\$135,000	\$3,000
Year 4	\$138,000	\$3,000
Year 5	\$142,000	\$4,000
Year 6	\$145,000	\$3,000
Year 7	\$148,000	\$3,000

Projected enrollment.

Graduate	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Majors	10	17	22	26	29	30	30
Non-Majors	0	0	0	0	0	0	0

Anticipated sources of students. First, CCOM expects to enroll students interested strengthening their applications to health professions programs. The program will enhance their knowledge in the anatomical sciences and give them an academic advantage prior to entering their programs. Numerous pre-med, pre-PT and other pre-health professions students have requested this sort of training prior to starting their programs of study, but these opportunities were not available. Moreover, this program may serve students from non-traditional backgrounds (for instance, those transferring from non-medical careers), and from groups who are underrepresented in medicine/healthcare. A third student group is smaller, but still significant – the student who wishes to pursue a career as an anatomical educator. This group may also include individuals with a terminal degree seeking to expand their knowledge/skills to be better prepared for participating in healthcare related curricula. There are typically at least two requests per year from students who have this career goal in mind, but current programs cannot provide that type of training.

Off-campus delivery. Currently, nine semester hours of credit are planned that students may complete online to complement the classroom and laboratory learning. The remaining course work requires on-campus, face-to-face interactions given the heavy use of group work, laboratory exploration, and faculty interaction.

Accreditation. There is no programmatic accreditor for this type of program. The program will be covered under the university’s standing with the Higher Learning Commission.

Opportunities for internships. Although internships will not be available, the proposal includes opportunities for students in strong standing to participate as part of the instructional team for a number of courses that are offered through the program. The financial model proposed includes the potential for assistantships of various levels for students ready to take on such assignments. Given the nature of the proposal, we also anticipate that students will be able to participate as paid assistants in research projects that have grant support.

Date of implementation. The anticipated implementation date is August 2018.

Office of the Provost and Executive Vice
President for Academic Affairs



DATE: November 1, 2017

TO: John Keller, Associate Provost for Graduate and Professional Education and Dean,
Graduate College, University of Iowa

FROM: Patrick Pease, Interim Associate Provost for Academic Affairs and Dean, Graduate
College, University of Northern Iowa

RE: Master of Clinical Anatomy, Master of Clinical Nutrition, Master of Science in Business
Analytics

Dear Dr. Keller,

Thank you for sharing your new program plans with University of Northern Iowa. Your proposed masters programs in Clinical Anatomy and Clinical Nutrition are of clear benefit to the state and to your existing healthcare curricula. UNI has no similar programs or significant areas of overlap. The Master of Science in Business Analytics has some overlap with course offerings at UNI but your program is unique and is an on-campus offering of an established program.

I've shared these with the Provost and Deans and we support your proposals and wish you best success.

Sincerely,

A handwritten signature in blue ink that reads "Patrick Pease". The signature is fluid and cursive, with the first name "Patrick" and last name "Pease" clearly legible.

Patrick Pease



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October 31, 2017

Dear Dr. Keller,

Thank you for consulting with Iowa State University regarding the proposed Master of Clinical Anatomy, Master of Clinical Nutrition within the Carver College of Medicine, and the Master of Science in Business Analytics.

We have reviewed the proposals and consulted with ISU leadership in the programs related to the three proposals. We do not see the Masters of Clinical Anatomy or Clinical Nutrition as duplicative of existing ISU majors/programs. The proposed University of Iowa Master of Science in Business Analytics has a different focus and is situated in a different academic department than our program at ISU. We are supportive of the three proposals.

Sincerely,

A handwritten signature in black ink that reads "Ann Marie VanderZanden".

Ann Marie VanderZanden
Associate Provost for Academic Programs