UNIVERSITY OF TORONTO SCARBOROUGH

OFFICE OF THE CAMPUS COUNCIL

FOR APPROVAL **PUBLIC** **OPEN SESSION**

TO: UTSC Academic Affairs Committee

SPONSOR: Prof. William Gough, Vice-Principal Academic and Dean
CONTACT INFO: 416-208-7027, vpdean@utsc.utoronto.ca

PRESENTER: Prof. Mark Schmuckler, Vice-Dean Undergraduate
CONTACT INFO: 416-208-2978, vdundergrad@utsc.utoronto.ca

DATE: May 20, 2020 for May 27, 2020

AGENDA ITEM: 2

ITEM IDENTIFICATION:

Proposal to introduce a new Certificate in Evolutionary Anatomy (Category 1)

JURISDICTIONAL INFORMATION:

University of Toronto Scarborough Academic Affairs Committee (AAC) "is concerned with matters affecting the teaching, learning and research functions of the Campus" (*AAC Terms of Reference, Section 4*). Under section 5.6 of its terms of reference, the Committee is responsible for approval of "Major and minor modifications to existing degree programs." The AAC has responsibility for the approval of Major and Minor modifications to existing programs as defined by the University of Toronto Quality Assurance Process (*UTQAP, Section 3.1*). Category 1 Certificates follow the protocols for the approval and closure of major modifications [*Policy on Certificates (For Credit and Not-for-Credit), February 25, 2016)*].

GOVERNANCE PATH:

1. **UTSC Academic Affairs Committee [For Approval] (May 27, 2020)**

PREVIOUS ACTION TAKEN:

No previous action in governance has been taken on this item.

HIGHLIGHTS:

The Department of Anthropology at the University of Toronto Scarborough (UTSC) is proposing a new Category 1 Certificate: Certificate in Evolutionary Anatomy.

Category 1 Certificates are for-credit and post-baccalaureat. They are stand-alone and direct entry, requiring applicants to already have earned an undergraduate degree in order to apply. Completion of the Certificate is recorded on the students' academic transcript.

In the study of Evolutionary Anthropology the focus is centred on humans and our relatives. Through that focus, experts in the discipline have a unique body of knowledge related to the nature and causes of variation in the human skeleton. Unlike other science disciplines, Evolutionary Anthropology has retained a strong whole-organismal emphasis, and the study of anatomical form in an evolutionary context (i.e., evolutionary anatomy) remains a major thrust of leading-edge research in Anthropology.

Many of the day to day tasks undertaken by health professionals are centred on the physical form of their patients, and many students starting even elite programs can be lacking the most basic knowledge of the skeleton. The aim of the proposed Certificate is to fill that gap by providing students with a framework to learn this material in advance, and give them a detailed knowledge of skeletal and dental anatomy in humans and related taxa from diverse perspectives.

Students who complete the Certificate will have a thorough understanding of modern human skeletal variation from the perspectives of age, sex and disease, as well as a familiarity with human and non-human primate dental anatomy. Students will also gain a solid grasp of the evolutionary context of human skeletal and dental form through courses that focus on our deep and proximate ancestors.

The main audience for the proposed Certificate will be students who have completed degrees in other science disciplines (particularly Biological Sciences) who are seeking entrance to programs in the Health Sciences, including Medicine, Dentistry, Radiography, Respiratory Therapy, etc. Mature students interested in learning about human evolution are expected to make up a secondary audience.

Discussions with the Curriculum Committee, faculty and students in Anthropology and with the Dean's Office were supportive of the proposal. At UTSC, the proposal was sent for comment to the chairs of all the science departments, and the Campus Curriculum Committee; at the wider University, the proposal was sent to the chair of the Division of Anatomy in the Department of Surgery, Faculty of Medicine, the Council of Health Sciences, and the Office of the Vice-Provost, Academic Programs. Where appropriate, their feedback has been incorporated into the proposal.

FINANCIAL IMPLICATIONS:

There are no net implications to the campus operating budget.

RECOMMENDATION:

Be It Resolved,

THAT the proposal to introduce a new Certificate in Evolutionary Anatomy (Category 1), as described in the proposal dated May 11, 2020 and recommended by the Vice-Principal Academic and Dean, Professor William Gough, be approved to be effective as of Fall 2020 for the 2020-21 academic year.

DOCUMENTATION PROVIDED:

1. Proposal to introduce a new Category 1 Certificate in Evolutionary Anatomy, dated May 11, 2020.

University of Toronto Proposal to Create a Post-Baccalaureate Certificate

Post-baccalaureate certificates are stand-alone, for-credit undergraduate certificates governed by the *Policy for Certificates (For-Credit and Not-For-Credit).*

Creation and closure of post-baccalaureate certificates follow the protocols for major modifications; are subject to periodic reviews; and are reported to the Provost through the Office of the Vice-Dean, Academic Programs. Successful completion of the certificate is recorded on the academic transcript. Students are registered as University of Toronto undergraduate students and receive a parchment at Convocation.

Proposed certificate name:	Certificate in Evolutionary Anatomy
Department/unit:	Department of Anthropology
Faculty/academic division:	University of Toronto Scarborough (UTSC)
Dean's office contact:	Annette Knott annette.knott@utoronto.ca
Proponent:	Professor Mary Silcox
Version date: Please change as you edit this proposal.	May 11, 2020

Summary

The Department of Anthropology at the University of Toronto Scarborough (UTSC) is proposing a new Category 1 Certificate program in Evolutionary Anatomy. This category of certificate is a standalone and direct-entry, and requires that applicants already have an undergraduate degree in order to apply. Certificate types are defined by the U of T *Policy for Certificates (For-Credit and Not-For-Credit).*

The proposed Certificate will provide students with very detailed knowledge of skeletal and dental anatomy in humans and related taxa from diverse perspectives. Students who complete the Certificate will have a thorough understanding of modern human skeletal variation from the perspectives of age, sex and disease, as well as a familiarity with human and non-human primate dental anatomy. Students will also gain a solid grasp of the evolutionary context of human skeletal and dental form through courses that focus on our deep and proximate ancestors.

The main audience for the proposed Certificate will be students who have completed degrees in other science disciplines (particularly Biological Sciences) who are seeking

entrance to programs in the Health Sciences, including Medicine, Dentistry, Radiography, Respiratory Therapy, etc. Mature students interested in learning about human evolution are expected to make up a secondary audience.

This Certificate accords with departmental aspirations to increase connections to other science departments at the University of Toronto and more broadly, and to allow students from those departments to benefit from the unique focus on humans and our ancestors that Anthropology offers.

Effective Date

September 2020

Academic Rationale

Evolutionary Anthropology as a discipline is distinct from other science disciplines in two ways. First , its focus is centred on humans and our relatives. Through that focus, experts in the discipline have a unique body of knowledge related to the nature and causes of variation in the human skeleton. Second, unlike other science disciplines, it has retained a strong whole-organismal emphasis. While many Biology departments are de-emphasizing the study of morphology in favour of cellular and molecular scale analysis, the study of anatomical form in an evolutionary context (i.e., evolutionary anatomy) remains a major thrust of leading-edge research in Anthropology.

Although students seeking to enter health studies programs certainly need a thorough grounding in topics such as Molecular Biology and Organic Chemistry, many of the day to day tasks undertaken by health professionals are centred on the physical form of their patients. Based on experience teaching human anatomy in a leading medical school, many students starting even elite programs can be lacking the most basic knowledge of the skeleton. The aim of the proposed Certificate is to fill that gap by providing students with a framework to learn this material in advance.

One of the goals of the Evolutionary Anthropology group at UTSC is to expand connections to other science departments at UTSC, the wider University of Toronto, and more broadly as well. Although the topics covered in many of our upper level courses have direct relevance to students interested in the health sciences, we have had limited success drawing undergraduate students who are completing their Bachelor's degree to these offerings. The proposed Certificate provides a mechanism to attract these students once they've graduated from not only UTSC programs, but U of T programs more broadly, and programs offered by other universities. In addition, human evolution is a topic of broad general interest, so it is expected that this certificate may also appeal to mature students looking for an opportunity to expand their knowledge of this area.

Need and Demand

The primary target audience of the proposed Certificate will be students who are interested in entering health-related programs, including Medicine, Dentistry, Radiography, Respiratory Therapy, looking to expand their knowledge of Anatomy, and also gain an additional credential that they can use to make their case for admission. It is fairly common for students to have to make more than one application to elite health studies programs before gaining entry. We are looking to provide students in this position with a way of improving their chances of admission by expanding their knowledge of topics directly relevant to the programs they seek to enter. We also hope to help guarantee their success in such programs by giving them a running start with respect to one of the more difficult subjects (Anatomy) that they have to conquer in their early years. A secondary audience is expected to be mature students, looking to enhance their knowledge of humans' evolutionary history.

Initial intake is expected to be 5-10 students a year, with an increase through time if this Certificate proves a successful pathway to help students gain entry to health science programs. It is expected that the audience will primarily be domestic students, seeking Canadian credentials.

Admission Requirements

Successful completion of an undergraduate degree with a CGPA of 3.0 with a Major or Specialist in any science discipline is required to enrol in the certificate program. Students will be registered as non-degree students.

Program Requirements

This Certificate is a standalone, direct entry offering for those who have completed an undergraduate degree. It is distinct from an undergraduate degree and not subject to the 12.0 distinct credits rule that applies to credits within program(s) of study (POSt).

Students will be required to complete 3.0 credits (FCEs) as follows:

1. Core required courses (1.5 credit):
ANTB14H3 Biological Anthropology: Beginnings
ANTC47H3 Human and Primate Comparative Osteology
ANTC48H3 Advanced Topics In Human Osteology

2. Advanced courses (1.5 credits):
Choose 3 from:
ANTC16H3 The Foundation and Theory of Human Origins

ANTC17H3 Human Origins: New Discoveries
ANTC99H3 Primate Evolution
ANTD17H3 Medical Osteology: Public Health Perspectives on Human Skeletal Health
ANTD35H3 Bioarchaeology
ANTD99H3 Advanced Topics in Primate Evolution

Students will be able to complete the 3.0 FCEs required in two sessions (F/W) as full time students. ANTB14H3 and ANTC47H3 are offered every year in the Fall semester; ANTC48H3 is offered every year in the Winter term. Students will take one course from the Advanced courses list in the Fall term, and two in the Winter term. The broad array of courses listed in component 2 of the requirements will ensure that enough courses will be available for students to complete the Certificate in any given year. However, students will also able to complete the Certificate on a part time basis over more than 2 sessions if they so choose.

We are aware that ANTA01H3 is a pre-requisite for ANTB14H3 and [ANTA01H3 and ANTA02H2] are prerequisites for ANTC17H3. Students seeking to complete the certificate, who have not completed these courses, will be assessed for admission to ANTB14 and/or ANTC17 based on their background. In particular, students whose undergraduate degree included Biology courses will normally be permitted to take ANTB14 and ANTC17 without the pre-requisite(s).

Students who have previously completed courses identified as requirements or options in the Certificate can substitute up to 1.0 credit in previously completed courses for the Certificate requirements. Students are not eligible for admission to the Certificate if they have already completed more than 2.0 credits of the included courses (or their equivalents from other universities).

See Appendix B for complete course descriptions.

Calendar Copy

CERTIFICATE IN EVOLUTIONARY ANATOMY

This certificate will provide students with detailed knowledge of skeletal and dental anatomy in humans and related taxa from diverse perspectives, as well as a solid understanding of the evolutionary processes that led to that anatomy.

Enrolment Requirements

Successful completion of an undergraduate degree with a CGPA of 3.0 with a Major or Specialist in any science discipline is required to enrol in the certificate program.

Students who have previously completed courses identified as requirements or options in the Certificate can substitute up to 1.0 credit in previously completed courses for the Certificate requirements. Students are not eligible for admission to the Certificate if they have already completed more than 2.0 FCEs of the included courses (or their equivalents from other universities).

Certificate Requirements

Students must complete 3.0 credits as follows:

1. Core required courses (1.5 credit):
ANTB14H3* Biological Anthropology: Beginnings
ANTC47H3 Human and Primate Comparative Osteology
ANTC48H3 Advanced Topics In Human Osteology

2. Advanced courses (1.5 credits):
Choose 3 from:
ANTC16H3 The Foundation and Theory of Human Origins
ANTC17H3** Human Origins: New Discoveries
ANTC99H3 Primate Evolution
ANTD17H3 Medical Osteology: Public Health Perspectives on Human Skeletal Health
ANTD35H3 Bioarchaeology
ANTD99H3 Advanced Topics in Primate Evolution

Notes:
*ANTA01H3 is a prerequisite for ANTB14H3.
**[ANTA01H3 and ANTA02H3] are prerequisites for ANTC17H3.
Students seeking to complete the certificate who have not completed ANTA01H3 and ANTA02H3 will be assessed for admission to ANTB14H3 and/or ANTC17H3 based on their background. In particular, students whose undergraduate degree included Biology courses will normally be permitted to take ANTB14H3 and ANTC17H3 without the prerequisite(s).

Consultation

Discussions with the Curriculum Committee, faculty and students in Anthropology and with the Dean's Office were supportive of the proposal.

At UTSC, the proposal was sent for comment to the chairs of all the science departments, and the Campus Curriculum Committee; at the wider University, the proposal was sent to the chair of the Division of Anatomy in the Department of Surgery, Faculty of Medicine, the Council of Health Sciences, and the Office of the

Vice-Provost, Academic Programs. Where appropriate, their feedback has been incorporated into the proposal.

Resources

All the courses listed in the program are regularly offered. There is existing capacity in ANTB14H3. For the lab based courses included in the program (i.e., ANTC47H3, ANTC48H3, ANTC17H3, ANTC99H3), no additional resources will be required if enrolments are at anticipated numbers. Should enrolments be significantly higher than anticipated, a request for resources to cover additional lab materials will be submitted to the Dean's Office. A faculty member will oversee the Certificate as part of their departmental service. We are requesting WGU funding for this Certificate as these are courses taken in addition to an undergraduate degree. The proposed Certificate will not affect any existing agreements with other institutions.

Oversight and Accountability: Review

The certificate will be housed in the Department of Anthropology and will therefore be aligned to its cyclical review process.

UTSC Administrative Steps

Administrative Steps Required	**Date**
Departmental Curriculum Committee	March 22, 2019
Campus Curriculum Committee	May 4, 2020

UTQAP/Formal Governance Process

Levels of Approval Required	**Date**
• **Decanal Sign-Off** • **Provost Office Sign-Off**	• April 14, 2020 • December 9, 2019
UTSC Academic Affairs Committee	May 27, 2020
Submission to Provost's Office	
AP&P – reported annually	

Appendix A: Proposed Learning Outcomes

Certificate Expectations	Certificate Learning Outcomes	How the Design/Structure Supports the Certificate Expectations
1. Depth and Breadth of Knowledge Depth of Knowledge: is attained through a progression of introductory, core and specialized courses. Specialized courses will normally be at the C and D levels. Breadth of Knowledge: students will gain an appreciation of the variety of modes of thinking, methods of inquiry and analysis, and ways of understanding the world that underpin different intellectual fields.	Depth and breadth of knowledge is understood in the Certificate in Evolutionary Anatomy as a familiarity with skeletal and dental anatomy, a mastery of the patterns of variation in the human skeleton, and its basis in terms of evolution, age, sex, and disease-process. This is reflected in students who are able to: 1. Identify all the components of the skeleton and their associated features. 2. Demonstrate a solid grounding in human evolution, and how this has shaped the skeleton. 3. Have an awareness of the nature of variation that exists in the skeleton as a result of age, sex and disease. 4. Identify isolated teeth, and name dental features.	The design and requirement elements that ensure these student outcomes for depth and breadth of knowledge are: 1. Detailed, lab-centred study of human skeletal anatomy to permit students to recognize the parts of the skeleton and identify their features (ANTC47, ANTC48). 2. Both lectures and labs on the evidence for human evolution, and the way it has modified the skeleton (ANTB14, ANTC16, ANTC17). 3. Lab exercises which involve making estimates of sex, age and health status from real skeletal material (ANTC47, ANTC48, ANTD17, ANTD35). 4. Lectures on dental anatomy and lab exercises that involve identifying teeth and learning to recognize and name their features (ANTC47, ANTC48, ANTC99, ANTD99).
2. Knowledge of Methodologies Students demonstrate, and expand on, their knowledge	Knowledge of Methodologies are understood in the Certificate in Evolutionary Anatomy as a familiarity with techniques for gathering data about the	The design and requirement elements that ensure these student outcomes for knowledge of methodologies are:

of different methodologies and approaches relevant to their area of study. They are able to apply different methodologies in addressing questions that arise in their area of study.	skeleton. This is reflected in students who are able to: 1. Gather basic observational data about the skeleton e.g., assessing presence or absence, and completeness, of skeletal and dental elements. 2. Make simple measurements that capture skeletal and/or dental form.	1. Lab exercises in ANTC47 on identifying elements of the skeleton. 2. Lab exercises in ANTC17, ANTC48, ANTC99, and ANTD35 that involve taking various measurements of the skeleton and dentition.
3. Awareness of Limits of Knowledge Students demonstrate an awareness of the limits of their own knowledge and their appreciation of the uncertainty, ambiguity, and limits to our collective knowledge and how these might influence analyses and interpretations.	Awareness of Limits of Knowledge is understood in the Certificate in Evolutionary Anatomy as an understanding of the limits on what information can be gleaned from skeletal and dental data.	The design and requirement elements that ensure these student outcomes for Awareness of Limits of knowledge are: 1. In courses on the human skeleton (e.g., ANTC47, ANTC48), the limits on the accuracy of methods for gleaning information from the skeleton (e.g., with respect to accuracy of ageing and sexing) are discussed. 2. In courses about the archaeological and fossil records (e.g., ANTC16, ANTC17, ANTC99, ANTD35, ANTD99) the limits imposed by the imperfect nature of those records are discussed and acknowledged.
4. Communication Skills Students are able to communicate information, arguments and analyses clearly, both orally and in writing.	Communication skills are understood in the Certificate in Evolutionary Anatomy as the ability to critically engage with the primary literature and make a strong written and oral argument.	The design and requirement elements that ensure these student outcomes for Communication skills are: 1. All C and D level courses included in the Certificate require submission of a major piece of written work that involves critically engaging with the primary literature. ANTC48 and ANTC16 include oral presentations of student projects; all D-level courses require students to present

		orally on readings from the primary literature.

Appendix B: Course List

ANTB14H3 - Biological Anthropology: Beginnings
This course surveys humanity's origin. The synthetic theory of evolution, its principles, processes, evidence and application underlie this course. Lecture topics and laboratory projects include: evolutionary theory, human variation, human adaptability, primate biology, and behaviour, taxonomy and classification, paleontological principles and human origins.
Science credit
Prerequisite: ANTA01H3
Exclusion: ANT203Y
Breadth Requirements: Natural Sciences

ANTC16H3 - The Foundation and Theory of Human Origins
The study of human origins in light of recent approaches surrounding human evolution. This course will examine some of these, particularly the process of speciation, with specific reference to the emergence of Homo. Fossils will be examined, but the emphasis will be on the interpretations of the process of hominisation through the thoughts and writings of major workers in the field.
Science credit
Prerequisite: ANTA01H3 or ANTB14H3 or ANTC17H3
Exclusion: (ANT332Y)
Breadth Requirements: Natural Sciences

ANTC17H3 - Human Origins: New Discoveries
The study of human origins in light of recent approaches surrounding human evolution. New fossil finds present new approaches and theory. This course will examine some of these, particularly the process of speciation and hominisation with specific reference to the emergence of Homo. Labs permit contact with fossils in casts.
Science credit
Prerequisite: ANTA01H3 and ANTA02H3
Exclusion: (ANT332Y)
Breadth Requirements: Natural Sciences

ANTC47H3 - Human and Primate Comparative Osteology
A "hands-on" Laboratory course which introduces students to analyzing human and nonhuman primate skeletal remains using a comparative framework. The course will cover the gross anatomy of the skeleton and dentition, as well as the composition and microstructure of bone and teeth. The evolutionary history and processes associated with observed differences in human and primate anatomy will be discussed.
Science credit
Prerequisite: ANTB14H3
Exclusion: ANT334H, ANT334Y

Enrolment Limits: 33
Breadth Requirements: Natural Sciences

ANTC48H3 - Advanced Topics In Human Osteology
A "hands-on" laboratory course which introduces students to the methods of analyzing human skeletal remains. Topics and analytic methods include: (1) the recovery and treatment of skeletal remains from archaeological sites; (2) odontological description, including dental pathology; (3) osteometric description; (4) nonmetric trait description; (5) methods of estimating age at death and sex; (6) quantitative analysis of metric and nonmetric data; and (7) paleopathology.
Science credit
Prerequisite: ANTC47H3
Exclusion: ANT334H, ANT334Y
Enrolment Limits: 33
Breadth Requirements: Natural Sciences

ANTC99H3 - Primate Evolution
This course examines 65 million years of evolutionary history for non-human primates. The primary emphasis will be on the fossil record. Topics covered may include the reconstruction of behaviour from fossil remains, the evolution of modern primate groups, and the origins of the Order.
Prerequisite: ANTA01H3 or ANTB14H3
Enrolment Limits: 60
Breadth Requirements: Natural Sciences

ANTD17H3 - Medical Osteology: Public Health Perspectives on Human Skeletal Health
This seminar course will examine the clinical, epidemiological and public health literature on osteoporosis and other conditions impacting skeletal health. The course will also explore the potential economic impacts of osteoporosis on Canada's health care system given emerging demographic changes.
Science credit
Prerequisite: ANTC47H3 and ANTC48H3
Breadth Requirements: Natural Sciences

ANTD35H3 - Bioarchaeology
This course will focus on a new direction in anthropology, exploring the potential of skeletal remains in reconstructing past lifeways. This seminar style class will build upon concepts introduced in Human Osteology courses. Additionally, more advanced methods of reconstructing patterns of subsistence, diet, disease, demography and physical activity.
Prerequisite: ANTC47H3 and ANTC48H3
Exclusion: ANT434H, ANT441H
Enrolment Limits: 25
Breadth Requirements: Natural Sciences

ANTD99H3 - Advanced Topics in Primate Evolution
This course will examine questions of particular controversy in the study of Primate Evolution. Topics to be covered may include the ecological context of primate origins, species recognition in the fossil record, the identification of the first anthropoids, and the causes of extinction of the subfossil lemurs.
Science credit
Prerequisite: ANTB14H3 and at least one C-level course (1.0 credit) in biological anthropology.
Exclusion: ANTD13H3 if completed in the 2010/2011 academic year
Recommended Preparation: ANTC99H3
Enrolment Limits: 25
Breadth Requirements: Natural Sciences