



PROPOSAL TO ESTABLISH A NEW GRADUATE CERTIFICATE

This form should be used by programs seeking to establish a new graduate certificate. All sections should be completed.

The graduate certificate is a programmatic or linked series of courses in a single field or in one that crosses disciplinary boundaries. The graduate certificate facilitates professional growth for people who already hold the baccalaureate degree. The graduate certificate enables the university to respond to societal needs while promoting university cooperation with corporate, industrial, and professional communities.

This proposal template should be completed in full and submitted to the University Provost's Office [mail to: curriculumplanning@asu.edu]. It must undergo all internal university review and approval steps including those at the unit, college, and university levels. A program **may not** be implemented until the Provost's Office notifies the academic unit that the program may be offered.

GRADUATE CERTIFICATE

College/School: The College of Liberal Arts and Sciences

Note: Program ownership is coded at the College/School level first and may not be a center, department or division apart from it.

Department/Division/School: School of Life Sciences (CLIFESCI)

Proposing faculty group (if applicable): N/A

Name of proposed graduate certificate: Evolutionary Medicine

Is a program fee required? No, a program fee is not required.

Note: for more information about program fee requests, visit <https://provost.asu.edu/curriculum-development/changemaker/form-instructions#fees>

Is the unit willing and able to implement the program if the fee is denied? Not applicable.

Requested effective term and year: Fall 2020

(The first semester and year for which students may begin applying to the certificate)

Delivery method and campus or location options: *select all locations that apply*

Downtown Phoenix Polytechnic Tempe Thunderbird West Other: _____

Both on-campus **and** ASU Online* - (check applicable campus(es) from options listed above)

ASU Online only (all courses online and managed by ASU Online)

Note: Once students elect a campus or Online option, students will not be able to move between the on-campus and the ASU Online options. Approval from the Office of the University Provost and [Philip Regier](#) (Executive Vice Provost and Dean) is required to offer programs through ASU Online. Please complete the ASU Online Offering form in [Curriculum ChangeMaker](#) to begin this request. Prior to completing the online Curriculum ChangeMaker form, please contact EdPlus at asuonline@asu.edu who can provide you with additional information regarding the online request process.

Do Not Fill in this information: Office Use Only	CIP Code:
Plan Code:	

PROPOSAL CONTACT



PROPOSAL TO ESTABLISH A NEW GRADUATE CERTIFICATE

Name: Kenneth Buetow **Title:** Professor
Phone number: 480-727-9413 **Email:** kenneth.buetow@asu.edu

DEAN APPROVAL(S)

This proposal has been approved by all necessary unit and college/school levels of review, and the college/school(s) has the resources to offer this degree program. I recommend implementation of the proposed certificate program.

Note: An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.

College/School/Division Dean name: Fabio Milner

Signature: Fabio Milner

Date: 9/20/19

Please note: Proposals for new certificates also require the review and recommendation of approval from the University Graduate Council, Curriculum and Academic Programs Committee (CAPC), the Academic Senate (two readings), and the Office of the Provost before they can be put into operation.

The final approval notification will come from the Office of the Provost.

1. OVERVIEW

Below, please provide a brief overview of the certificate, including the rationale and need for the program, potential size and nature of the target audience, information on comparable programs (at ASU and/or peer institutions), how this program would relate to existing programs at ASU, and any additional appropriate information.

Evolutionary Medicine is the application of the principles of evolution to the fields of medicine, public health, and other health professions. Inherently interdisciplinary in nature, Evolutionary Medicine integrates basic science – and provides a firm understanding of the core concepts of evolutionary thinking and analysis, and places disease in the context of changing environments, exposures, and the encompassing ecology of life in which an individual is embedded. While evolution is already a foundational basic science of the life sciences, evolutionary medicine is a new way of thinking that integrates perspectives across traditionally siloed disciplines of public health and medicine.

This certificate will give students foundational training in evolutionary medicine and how it is applied to the health of human populations, and then will allow students to specialize further through their electives in the direction of their primary academic interests. These interests could include, but are not limited to: population genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

ASU, as the New American University, is dedicated to the “fusion of intellectual disciplines,” transforming society by “being connected to social needs,” and committed to the “success of each unique student.” These ideas among other key tenets serve to fulfill ASU’s mission “to achieve excellence, access, and impact,” which will define a new era in higher education.

The Certificate in Evolutionary Medicine achieves the aims of the New American University:

- This program bridges traditionally siloed disciplines within the School of Life Sciences and the School for Human Evolution & Social Change as an interdisciplinary endeavor between the two.
- The educational mission of evolutionary medicine to improve human health creates meaningful impact within the fields of biology, medicine, public health, and global health.
- The program guides learners through progressive coursework that leads from competence to proficiency, and then to mastery of the educational objectives within evolutionary medicine. It culminates in an experience that allows learners to explore the unique questions relevant to their lives and interests.



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Public health and medicine are currently taught as separate disciplines and through separate degree programs at the academic level. Evolutionary medicine focuses on health and disease, and social and biological evolution. Medicine focuses on treating individuals with disease, while Public Health operates at a population level. The evolutionary medicine certificate will serve to provide an integrated conceptual framework that can be applied to the problems of public health and medicine in order to produce more holistic outcomes for the improvement of human health. Students in biological or social sciences degrees at ASU including those in biology, anthropology, or sociology may be interested in this certificate program. This program would complement a full-length program, or provide a graduate certificate to those taking a gap year between undergraduate and graduate degrees.

According to the Bureau of Labor Statistics, demand for health science-related careers is expected to grow 18 percent from 2016 to 2022. With an aging population in the United States, there will be an increase in demand for health care services. Health care professional programs have competitive admissions processes and students with a certificate in evolutionary medicine will be able to set themselves apart from their peers with:

- skills in problem-solving that address the integration of basic medical, and public health science and practice.
- working knowledge of how evolutionary thinking influences medical and public health intervention which is not currently outlined in biological, anthropological, or public health-related curriculum within the university.
- an integrated conceptual framework that can be applied to the problems of public health and medicine in order to produce more holistic outcomes for the improvement of human health.

The median annual wage across the U.S. for health care practitioners and technical occupations (such as registered nurses, physicians and surgeons, and dental hygienists) was \$64,770 in May 2017, which was higher than the median annual wage for all occupations in the economy of \$37,690. According to an analysis by Martinaian et al. on the Labor Statistic Projections, more than 400,000 physicians, nurse practitioners, nurses and others will be needed to fill positions between 2014 and 2024. This number does not include careers within the public health arena such as social work, epidemiology, and public policy which also continue to grow at a national average of 16 percent with a median salary near \$47,000. Training well-rounded health professionals with integrative perspectives is essential to the success of improving human health.

Currently, the only graduate certificate program in evolutionary medicine in the United States is offered at Rutgers University. It targets pre-medical and biomedical researchers and the curriculum centers around an “evolutionary framework for understanding human illness and applications to public health planning.” Coursework includes evolution, genetics, bioinformatics, infectious disease, and anthropology.

2. ADMINISTRATION AND RESOURCES

A. Administration

How will the proposed certificate be administered (including recommendations for admissions, student advisement, retention etc.)? Describe the administering body in detail, especially if the proposed certificate is part of a larger interdisciplinary agenda. How will the graduate support staffing needs for this proposed certificate program be met?

The certificate will be coordinated academically by a committee of 2 faculty and the staff program administrator in the Center for Evolution and Medicine, with rotating three-year terms. Faculty will be divided between the social sciences and biological sciences specializations. Duties will include recommendations for admissions, approval of projects and coursework. Academic advising for coursework within the program to meet student needs and interests can be recommended by members of the committee but will be executed and added within the student's graduate school. Plans of Study will be approved by the committee and then placed into the system by the Director of the Center for Evolution and Medicine or by the Center's Instructional Designer at the Director's discretion.

The certificate functions as a collaborative effort between the School of Life Sciences (SoLS) and the School for Human Evolution and Social Change (SHESC), but will be awarded and maintained through SoLS.



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B. Resource requirements needed to launch and sustain the program

Describe any new resources required for this program's success such as new staff, new facilities, new library resources, new technology resources, etc. If multiple units/programs will collaborate in offering this certificate, please discuss the resource contribution of each participating program. Letters of support must be included from all academic units that will commit resources to this certificate program.

The certificate does not have additional projected budget needs beyond what is provided by administration in the School of Life Sciences, The School of Human Evolution and Social Change, and the Center for Evolution and Medicine.

C. Projected Enrollment:

How many new students do you anticipate enrolling in this program each year for the next three years?

3-YEAR PROJECTED ANNUAL ENROLLMENT			
Please utilize the following tabular format	1 st Year	2 nd Year (Yr. 1 continuing + new entering)	3 rd Year (Yr. 1 & 2 continuing + new entering)
Number of students in certificate (Headcount)	5	10	25

3. STUDENT LEARNING OUTCOMES AND ASSESSMENT

- A. **List the knowledge, competencies and skills** students should have attained by graduation from the proposed degree program. (Examples of program Learning Outcomes can be found at <https://uoeee.asu.edu/>. Go to the Assessment accordion dropdown and select Assessment Plan to view sample outcomes.)

Outcome 1. Graduates of the Evolutionary Medicine Certificate will demonstrate an understanding of evolutionary principles with no misconceptions.

Outcome 2. Graduates of the Evolutionary Medicine Certificate will be able to appropriately analyze and interpret data relevant to evolutionary medicine.

Outcome 3. Graduates of the evolutionary medicine certificate will demonstrate how the vast biological and cultural variation across and within human populations informs health differentials and disparities

Outcome 4. Graduates of the evolutionary medicine certificate will be able to formulate relevant questions, hypotheses and predictions about human evolution and health within the context of the current state of knowledge.

- B. **Describe the plans and methods to assess** whether students have achieved the knowledge, competencies and skills identified in the Learning Outcomes listed above. Please list measures and scales for each outcome. (You can find examples of assessment methods at <https://uoeee.asu.edu/>. Go to the Assessment accordion dropdown and select Assessment Plan to view sample measures.)

See Appendix II for full assessment plan approved by UOEEE.



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4. ACADEMIC REQUIREMENTS

A. Minimum credit hours required for certificate (15 credit hour minimum)

15

B. As applicable, please describe culminating experience if required (e.g., applied project, portfolio, capstone course, etc.)

Students will take BIO 571 Evolutionary Medicine Capstone for the culminating experience. The purpose of this course is to provide Evolutionary Medicine Certificate students with a culminating experience in which they bring together the knowledge learned in prior courses in the program in a way that is meaningful and relevant to their professional goals. The focus of the course will be projects that the students carry out to demonstrate their ability to integrate the core concepts of evolutionary thinking and analysis, and place disease in the context of changing environments, exposures, and the encompassing ecology of life in which an individual is embedded. This demonstration will weave perspectives from biology, anthropology, public health, and medicine.

C. Please state the satisfactory student academic progress standards and guidelines (including any time limits for completion). All coursework used to complete an ASU graduate certificate must be completed within a six-year time limit, maintaining continuous enrollment.

Students will be required to have a B average in all courses in the Certificate program. Students must adhere to Graduate College policies and procedures regarding certificates.

D. Will this proposed certificate program allow sharing of credit hours from another ASU degree program to be used as part of this certificate program? (Please note that a maximum of 12 graduate-level credit hours taken as a non-degree student at ASU, including as a part of a certificate program, may be used towards a future graduate degree at ASU. No more than 40% of coursework towards the requirements of a graduate certificate can be completed prior to admission to the certificate program.)

Up to 12 credit hours may be shared if a student is concurrently enrolled in another degree program at ASU.

E. Below, please list all required and elective courses in the appropriate boxes (you may attach additional pages if necessary).

Please ensure that all *new core* course proposals have been submitted to the Provost's office through the Curriculum ChangeMaker online course proposal submission system before this initiative is put on the University Graduate Council and CAPC agendas.

Note: a minimum of 2/3 of the courses required for a graduate certificate must be at the 500-level or above.

Required Core Courses for the Certificate			
Prefix and Number	Course Title	New Course?	Credit Hours
ASB 507/BIO 507 OR ASM 503/BIO 510	Advanced Evolutionary Medicine OR Evolutionary Medicine and Global Health	Yes	3
<i>Section sub-total:</i>			3
Anthropology Restricted Electives Choose one course from the following:			
ASB 510	Health: Social and Biocultural Theories	No	3
ASB 503	Medical Anthropology	No	3
<i>Section sub-total:</i>			3



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Biology Restricted Electives Choose one course from the following:			
BIO 545	BIO 545 Populations: Evolutionary Genetics	No	3
BIO 546/ASM 546	Principles of Human Genetics	No	3
EVO 601	Principles of Evolution	No	3
<i>Section sub-total:</i>			3
Elective or Research Courses			
<i>STUDENTS CHOOSE ONE COURSE FROM AN APPROVED LIST OF ELECTIVE/RESEARCH COURSES. Cannot choose courses already taken for required core coursework. Other courses may be used with approval of the academic unit.</i>			
Prefix and Number	Course Title	New Course?	Credit Hours
ASB 503	Medical Anthropology	No	3
ASB 507/BIO 507	Advanced Evolutionary Medicine	Yes	3
ASB 510	Health: Social and Biocultural Theories	No	3
ASM 401	Health and Human Biology	No	3
ASM 456	Infectious Disease and Human Evolution	No	3
ASM 460	Human Growth and Development: An Evolutionary Perspective	No	3
ASM 503/BIO 510	Evolutionary Medicine and Global Health	Yes	3
ASM 546/BIO 546	Principles of Human Genetics	No	3
ASM 598/BIO 598	Topic: Evolution and Mental Disorders	No	3
BIO 462	Endocrine Physiology	No	3
BIO 522	Populations: Evolutionary Ecology	No	3
BIO 545	Populations: Evolution Genetics	No	3
ASB/BIO 598	Topic: Maternal and Child Health	No	3
EVO 601	Principles of Evolution	No	3
MBB 445	Techniques in Molecular Biology/Genetics	No	3
MCB 540	Functional Genomics	No	3
MIC 425	Advanced Immunology	No	3
<i>Section sub-total:</i>			3
Culminating Experience (if applicable)			Credit Hours
<i>E.g. – Capstone course, portfolio, written comprehensive exam or applied project</i>			
BIO 571 Evolutionary Medicine Capstone			3
<i>Section sub-total:</i>			3
Total required credit hours			15

1. List all required core courses and total credit hours for the core (required courses other than internships, capstone course, etc.).
2. Omnibus numbered courses cannot be used as core courses.
3. Permanent numbers must be requested by submitting a course proposal to Curriculum ChangeMaker for approval.

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F. Current Faculty: Complete the table below for all current faculty members who will teach in the program.

Name	Rank	Highest Degree	Area of Specialization/Expertise	Estimated Level of Involvement
Kenneth Buetow	Professor	PhD	Bioinformatics, Cancer, Genetics, Complex Systems, Molecular Biology	High
C Athena Aktipis	Assistant Professor	PhD	Cancer, Social Psychology	Medium
Katherine Hinde	Associate Professor	PhD	Ecological Behavior, Mammalogy, Physiology, Biomedicine, Women's Health, Evolutionary Anthropology, Global Health, and Medical Anthropology	High
Silvie Huijben	Assistant Professor	PhD	Public Health, Evolution, Molecular Biology, Biomedicine, Ecology, HIV, STI and Infectious, Diseases, Health Policy, Disease Modeling	High
Jeffrey Jensen	Professor	PhD	Genetics, Populations, Evolution	Low
Manfred Laubichler	Professor	PhD	History of Science, Philosophy of Science, Complex systems, Development Biology, Theoretical biology	Low
Randolph Nesse	Professor	MD	Diseases, Emotion, Evolution, Stress, Biomedicine, Psychology	Medium
Krijn Paaijmans	Assistant Professor	PhD	Climate Change, Microclimate, Public Health, Insects, Evolution, Bioengineering, Ecology, HIV, STI and Infectious Diseases, Surveillance	Medium
Anne Stone	Professor	PhD	Genetics, Evolutionary Anthropology, Evolution and Development Biology	High
Jesse Taylor	Associate Professor	PhD	Epidemiology, Ornithology, Invertebrates, Mathematical Biology, Evolutionary and, Population Genetics	Low
Benjamin Trumble	Assistant Professor	PhD	Evolutionary Anthropology, Global Health	High
Melissa Wilson	Assistant Professor	PhD	Population Biology, Bioinformatics, Cancer,	High



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			Genetics, Evolution, Genomics, Reproduction, Theoretical Biology, Evolutionary and Population Genetics, Computational Biology	
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5. COURSES

A. New Courses Required for Proposed Certificate: Provide course prefix, number, title, credit hours and brief description for any new courses required for this certificate program.

ASM 503/BIO 510 Evolutionary Medicine and Global Health: 3 credit hours

Fundamentally, the practice of medicine is applied biology to improve human health and well-being and is embedded within population and global scales. Here we integrate the life and social sciences to tackle the current and emerging global health challenges of the 21st Century. This course integrates an evolutionary biology lens with current medical knowledge enhancing our understanding of health. This class uses topics such as human-pathogen coevolution, development and aging, human migration, diseases (infectious, metabolic, and autoimmune), and physiological and behavioral mechanisms of immunity to explore the broad arena of human health within a deep time and global context.

BIO 507/ASB 507 Advanced Evolutionary Medicine: 3 credit hours

Evolutionary medicine explores the application of the principles of evolution to the fields of medicine and public health and places disease in the context of changing environments, both exposures and the encompassing ecology of life in which an individual is imbedded. Advanced evolutionary medicine, focuses on the biological aspects of evolutionary theory through the use of molecular genetics, population genetics, and the use of evolutionary thinking and analysis with translational, clinical, and public health intersections. A foundation in evolutionary medicine is useful for students with interests including but not limited to: premed, population genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

BIO 571 Evolutionary Medicine Capstone: 3 credit hours

The purpose of this course is to provide Evolutionary Medicine Certificate students with a culminating experience in which they bring together the knowledge learned in prior courses in the program in a way that is meaningful and relevant to their professional goals. The focus of the course will be projects that the students carry out to demonstrate their ability to integrate the core concepts of evolutionary thinking and analysis, and place disease in the context of changing environments, exposures, and the encompassing ecology of life in which an individual is embedded. This demonstration will weave perspectives from biology, anthropology, public health, and medicine. The course also provides opportunities to engage in some professional activities.

6. REQUIRED SUPPORTING DOCUMENTS

(Please label accordingly, i.e., Appendix or Attachment A, B, etc.)

Please include the following with your proposal:

- A.** Statements of support from all deans
- B.** Impact statements of heads of impacted academic units (programs with similar names/content, utilizing courses, faculty, etc.)

See Appendix III for all letters of support.



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APPENDIX I

OPERATIONAL INFORMATION FOR GRADUATE CERTIFICATES

(This information is used to populate the [Graduate Programs Search](#) website.)

1. Proposed name of certificate: Evolutionary Medicine

2. Marketing description *(Optional - 50 words maximum. The marketing description should not repeat content found in the program description.)*

Transforming our understanding of disease to improve human health requires framing questions about health and illness in new and innovative ways. Through the connection of evolutionary biology, medicine, global health, and public health, learn how to holistically approach ideas about evolution, human vulnerability, and the future of medicine.

3. Provide a brief program description *(Catalog type (i.e. will appear in Degree Search) – no more than 150 words. Do not include any admission or curriculum information)*

With rising need for health science-related skills and an aging population in the United States, innovations in health and medicine are in demand. Evolutionary medicine is a new and burgeoning field situated between the life and social sciences that seeks to integrate the fields of evolutionary biology, genetics, medicine, global health and public health to transform our understanding of disease and improve human health. Students that complete this certificate will learn how to integrate perspectives from across fields to answer questions about health and disease in the context of human life history.

Students will be introduced to integrated approaches within the biological and social sciences that are capable of addressing an emerging, anticipated public need such as reemerging infectious disease, challenges with vaccines, the expansion of chronic disease and other growing public health crises.

4. Delivery/Campus Information Options: On-campus only (ground courses and iCourses)

5. Campus(es) where program will be offered:

ASU Online curriculum consists of courses that have no face-to-face content. iCourses are online courses for students in on-campus programs. iCourses may be included in a program, but may not comprise the entirety of a program. On-campus programs must have some face-to-face content

Note: Office of the Provost approval is needed for ASU Online campus options.

ASU Online only (all courses online and managed by ASU Online)

All other campus or location options (please select all that apply):

Downtown Phoenix Polytechnic Tempe West Other: _____

Both on-campus and ASU Online* - (check applicable campus(es) from options listed above)

**Note: Once students elect a campus or Online option, students will not be able to move between the on-campus and the ASU Online options. Approval from the Office of the University Provost and [Philip Regier](#) (Executive Vice Provost and Dean) is required to offer programs through ASU Online. Please complete the ASU Online Offering form in [Curriculum ChangeMaker](#) to begin this request. Prior to completing the online Curriculum ChangeMaker form, please contact EdPlus at asuonline@asu.edu who can provide you with additional information regarding the online request process*

If the certificate program is ground only, it will only be open to international students who are already enrolled in a degree program at ASU and they must complete the certificate before the degree is awarded. If this certificate is ground only, please indicate this in the additional application information below.



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6. Admission Requirements

An applicant must fulfill the requirements of both the Graduate College and The College of Liberal Arts and Sciences.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in the life or social sciences or related field, from a regionally accredited institution.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

Applicants are required to submit:

1. graduate admission application and application fee
2. official transcripts
3. professional resume
4. written statement
5. proof of English proficiency

Additional Application Information

Applicants whose native language is not English (regardless of current residency) must provide proof of English proficiency. The professional resume should demonstrate the applicant's skills and previous training.

The written statement will ask about future career goals to better assist the student with selection of the most applicable set of courses in evolutionary medicine.

International students who need an F1 or J1 visa will first need to apply to and be accepted into a graduate degree program prior to being considered for the certificate program. International students residing in the U.S. on other types of visas must adhere to all Graduate College policies and procedures regarding admission be considered for admission to this certificate program.

7. Application Review Terms (if applicable session):

Indicate the first term and year in which applications will be opened for admission. Applications will be accepted on a rolling basis after that time.

Note: It is the academic unit's responsibility to display program deadline dates on their website.



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Terms	Years	University Late Fee Deadline
<input checked="" type="checkbox"/> Fall (regular) <input type="checkbox"/> Session B	(year): 2020 (year):	July 1st October 1st
<input checked="" type="checkbox"/> Spring (regular) <input type="checkbox"/> Session B	(year): 2021 (year):	December 1st February 8th
<input checked="" type="checkbox"/> Summer (regular) <input type="checkbox"/> Summer B	(year): 2021 (year):	May 14th May 14th
<p><i>Note: Session B is only available for approved online programs.</i></p>		

Program admission deadlines website address: <https://sols.asu.edu/degree-programs/graduate>

8. Curricular Requirements:

Curricular Structure Breakdown for the Academic Catalog:

(To be completed by the Graduate College)

Required Core (3 credit hours)

ASB 507/BIO 507 Advanced Evolutionary Medicine (3) or ASM 503/BIO 510 Evolutionary Medicine and Global Health (3)

Restricted Electives in Anthropology (3 credit hours)

ASB 503 Medical Anthropology (3)
 ASB 510 Health: Social and Biocultural Theories (3)

Restricted Electives in Biology (3 credit hours)

ASM 546/BIO 546 Principles of Human Genetics (3)
 BIO 545 Populations: Evolutionary Genetics (3)
 EVO 601 Principles of Evolution (3)

Electives or Research (3 credit hours)

Culminating Experience (3 credit hours)

BIO 571 Evolutionary Medicine Capstone (3)

Additional Curriculum Information

Students choose one course from an approved list of electives or research courses, and cannot choose courses already taken for required core or restricted electives in anthropology and biology.

For restricted electives in anthropology and biology, students must choose one course from the list indicated for each subject.

9. Keywords: List all keywords that could be used to search for this certificate. Keywords should be specific to the proposed certificate – limit 10 keywords.



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genetics, genomics, darwinian medicine, biology, public health, global health, evolutionary biology, evolution, medicine

10. Area(s) of Interest

A. Select one (1) primary area of interest from the list below that applies to this program.

- | | |
|--|---|
| <input type="checkbox"/> Architecture & Construction | <input type="checkbox"/> Interdisciplinary Studies |
| <input type="checkbox"/> Arts | <input type="checkbox"/> Law & Justice |
| <input type="checkbox"/> Business | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Communication & Media | <input type="checkbox"/> Psychology |
| <input type="checkbox"/> Education & Teaching | <input type="checkbox"/> STEM |
| <input type="checkbox"/> Engineering & Technology | <input checked="" type="checkbox"/> Science |
| <input type="checkbox"/> Entrepreneurship | <input type="checkbox"/> Social and Behavioral Sciences |
| <input type="checkbox"/> Health & Wellness | <input type="checkbox"/> Sustainability |
| <input type="checkbox"/> Humanities | |

B. Select one (1) secondary area of interest from the list below that applies to this program.

- | | |
|---|---|
| <input type="checkbox"/> Architecture & Construction | <input type="checkbox"/> Interdisciplinary Studies |
| <input type="checkbox"/> Arts | <input type="checkbox"/> Law & Justice |
| <input type="checkbox"/> Business | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Communications & Media | <input type="checkbox"/> Psychology |
| <input type="checkbox"/> Education & Teaching | <input type="checkbox"/> STEM |
| <input type="checkbox"/> Engineering & Technology | <input type="checkbox"/> Science |
| <input type="checkbox"/> Entrepreneurship | <input type="checkbox"/> Social and Behavioral Sciences |
| <input checked="" type="checkbox"/> Health & Wellness | <input type="checkbox"/> Sustainability |
| <input type="checkbox"/> Humanities | |

11. Contact and Support Information:

Office Location - Building Code & Room: <i>(Search ASU map)</i>	LSC 210
Campus Telephone Number: (may not be an individual's number)	480-965-9944
Program Email Address: (may not be an individual's email)	evmed@asu.edu
Program Website Address: (if one is not yet created, use unit website until one can be established)	evmed.asu.edu
Program Director (Name):	Kenneth Buetow
Program Director (ASURITE):	kbueto
Program Support Staff (Name):	Lenora Ott
Program Support Staff (ASURITE):	llott1
Admissions Contact (Name):	Lenora Ott



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Admissions Contact (ASURITE):	llott1
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12. Application and iPOS Recommendations: List the Faculty and Staff that will input admission/POS recommendations to Gportal **and** indicate their approval for Admissions and/or POS:

NAME	ASURITE	ADMSN	POS
Emilia Martins	emart120	yes	yes
Kevin Martin	Kmart105	yes	yes
Kylie Burkholder	kburkho3	yes	yes
Christopher Ferneding	cfernedi	yes	yes

(NEW GRADUATE INITIATIVES)

PROPOSAL PROCEDURES CHECKLIST

Academic units should adhere to the following procedures when requesting new curricular initiatives (degrees, concentrations or certificates).

Obtain the required approval from the Office of the Provost to move the initiative forward for internal ASU governance reviews/approvals. Please see the academic strategic plan website at: <https://provost.asu.edu/curriculum-development>.

Submit any new courses that will be required for the new curricular program to the Curriculum ChangeMaker online course approval system for review and approval.

- Additional information can be found at the Provost's Office Curriculum Development website: [Courses link](#)
- For questions regarding proposing new courses, send an email to: courses@asu.edu

Prepare the applicable proposal template and operational appendix for the proposed initiative.

Obtain letters or memos of support or collaboration (if applicable).

- When resources (faculty or courses) from another academic unit will be utilized
- When other academic units may be impacted by the proposed program request
- if the program will have an online delivery option support will be required from the Provost's office and ASU Online. *(Please complete the ASU Online Offering form in [Curriculum ChangeMaker](#) to begin this request.)*

Obtain the internal reviews/approvals of the academic unit.

- Internal faculty governance review committee(s)
- Academic unit head (e.g. Department Chair or School Director)
- Academic unit Dean (will submit approved proposal to the curriculumplanning@asu.edu email account for further ASU internal governance reviews (as applicable, University Graduate Council, CAPC and Senate)

Additional Recommendations

All new graduate programs require specific processes and procedures to maintain a successful program. Below are items that Graduate College strongly recommends that academic units establish after the program is approved for implementation.

Establish satisfactory academic progress policies, processes and guidelines – Check within the proposing academic unit and/or college to see if there are existing academic progress policies and processes in place. If none have been established, please go to http://graduate.asu.edu/faculty_staff/policies and scroll down to the **academic progress review and remediation processes** (for faculty and staff) section to locate the reference tool and samples for establishing these procedures.

Establish a Graduate Student Handbook for the new degree program – Students need to know the specific requirements and milestones they must meet throughout their degree program. A Graduate Student Handbook provided to students when they are admitted to the degree program and published on the website for the new degree gives students this information. Include in the handbook the unit/college satisfactory academic progress policies, current degree program requirements (outlined in the approved proposal) and provide a link to the Graduate Policies and Procedures website. Please go to http://graduate.asu.edu/faculty_staff/policies to access Graduate Policies and Procedures.

APPENDIX II

Assessment Plan

Academic Program Assessment Plan

Graduate Certificate in Evolutionary Medicine

Status: UOEEE Provisional Approval

Comments: Approved. Thank you for clarifying that means will be used when multiple artifacts are assessed in a measure.

Element Outcome Measure Description

AP_2Goal 0

Element	Outcome	Measure	Description
Outcome	1		Graduates of the Evolutionary Medicine Certificate will demonstrate an understanding of evolutionary principles with no misconceptions.
Plan_2Concepts	1		Students will utilize the evolutionary principles of molecular genetics, natural selection in relation to disease vulnerability, drift and neutral processes, mechanisms of evolution, and genotype versus phenotype.
Plan_3Competencies	1		Ability to map the mechanisms of evolution using concept maps and verbally explain the impact of genetics concepts impact on evolution and medicine. Ability to deduce impact of evolution on human health and make predictions.
AP_1Process	1	1	
Measure	1	1	Homework assignments in ASB/BIO 507 will assess student capacity to identify evolutionary principles applied to human health and disease, using a rubric that measures how many concepts they can identify and in what detail they can describe their relationship to human health.
PC	1	1	80% of students will score 3.8 or above on a faculty-developed rubric of a 1-5 scale of this measure.
Measure	1	2	Homework assignments in ASM 503/BIO 510 will assess student ability to make predictions about evolutionary impact on human health through research and hypothesis.
PC	1	2	80% of students will score 3.8 or above on a faculty-developed rubric of a 1-5 scale of this measure.

Element Outcome Measure Description

Element	Outcome	Measure	Description
Outcome	2		Graduates of the Evolutionary Medicine Certificate will be able to distinguish between different types of analyses and interpret data relevant to evolutionary medicine.
Plan_2Concepts	2		Students utilize proximate and ultimate analyses, phylogenies and knowledge of public health data while being ethically and culturally considerate regarding best practices of research and community partnerships.
Plan_3Competencies	2		Navigation of public health organizations like the Centers for Disease Control (CDC) and World Health Organization (WHO) to find population data. Ability to read models built on data sets in order to answer research questions. Ability to evaluate the impact of culture and ethical research on human health disparities and market to stakeholders.
AP_1Process	2	1	
Measure	2	1	Homework assignments in ASB/BIO 507 will be used to assess the degree to which students can analyze and interpret public data sets through the application of evolutionary theory. This shall be addressed in the core courses with a rubric that assesses student ability to fully describe the ethical issues associated with the use of population health data.
PC	2	1	80% of students will score a 3.8 or above on a faculty-developed rubric of this metric.
Measure	2	2	Student capacity for the presentation of data will be assessed through group projects and individualized projects that allow students to explore concepts of evolutionary medicine in conjunction with public data sets and compose written works including white papers, research papers, and policy statements in ASB/BIO 507 and ASM 503/BIO 510.
PC	2	2	80% of students will have a mean score of 3.8 or above on a faculty-developed rubric of this metric.

Outcome	3		Graduates of the evolutionary medicine certificate will demonstrate how the vast biological and cultural variation across and within human populations informs health differentials and disparities
Plan_2Concepts	3		Student will utilize the principles Life History Theory, environmental mismatch, pathogen coevolution, trade-offs, and morbidity and mortality and their variation among high, middle and low-income regions.
Plan_3Competencies	3		Ability to describe the impact of life-history theory as an explanation for human health disparities. Analysis of trade-offs and pathogen coevolution on historical information about disease and human health as a function of critical thinking.
AP_1Process	3	1	
Measure	3	1	Student capacity to describe the application of life-history theory, environmental mismatch, and biological and cultural variation to human health and disease will be assessed using homework assignments using a rubric that measures the detail in which students can describe the way in which these factors are applied and how they are viewed in population data, as offered in the foundational courses ASB/BIO 507 and ASM 503/BIO 510.
PC	3	1	80% of students will have a mean score of 3.8 or above on a faculty-developed rubric for this metric.
Measure	3	2	Student ability to analyze the impact of pathogen coevolution, trade-offs and historical and cultural impact of high, middle, and low-income regions on morbidity and mortality will be assessed through problems sets, discussions, and writing in ASB/BIO 507 and ASM 503/BIO 510.
PC	3	2	80% of students will have a mean score of 3.8 or above on a faculty-developed rubric for this metric.

Element Outcome Measure Description

Outcome	4		Graduates of the evolutionary medicine certificate will be able to formulate relevant questions, hypotheses and predictions about human evolution and health within the context of the current state of knowledge.
Plan_2Concepts	4		Students will utilize the foundational principles of genetics and evolutionary theory within the social context of human populations and public health with an integration of evolutionary medicine.
Plan_3Competencies	4		Evaluation and selection relevant primary scientific research literature, identify gaps in the literature, develop and use conceptual models in thinking about evolutionary reasons for disease vulnerability, compose and write scientifically.
AP_1Process	4	1	
Measure	4	1	Students will be assessed through a capstone course on the ability to apply an evolutionary framework to a research question or hypothesis of their choice resulting in a culminating experience conducted through a paper, presentation or creative project, an internship or extended research project with a faculty member.
PC	4	1	80% of students will score 3.8 or above on a faculty-developed rubric of a 1-5 scale of this measure for individual projects.
Measure	4	2	Students will be assessed on their ability to apply an evolutionary framework to research questions about emerging health epidemics and disease as demonstrated through independent research and analysis of supporting scientific literature during an independent research paper ASM 503/BIO 510 and a group-role playing project in ASB/BIO 507.
PC	4	2	80% of students will have a mean score of 3.8 or above on a faculty-developed rubric of a 1-5 scale of this metric.

If you have questions, please e-mail assessment@asu.edu or call UOEEE at (480) 727-1731.

APPENDIX III

Statements of Collaboration and Impact

The College of Liberal Arts and Sciences – Official Submission

From: [Kimberly Castillo](#)
To: [Curriculum Planning](#)
Cc: [Jenny Smith](#); [Kyle Rader](#)
Subject: New Program- Evolutionary Medicine cert
Date: Friday, September 20, 2019 12:48:39 PM
Attachments: [SoLS-EvMed Cert-FM signed.pdf](#)
[SoLS-EvMed Cert-FINAL.docx](#)
[image003.png](#)

Hello,

Please see the attached forms to establish an Evolutionary Medicine certificate. Let me know if anything else is needed, thanks!

Best,

Kim Castillo

Academic Success Analyst, Graduate Initiatives

Office of the Dean

The College of Liberal Arts & Sciences

P: 480-965-0044 | **E:** Kimberly.E.Castillo@asu.edu





March 25, 2019

Office of the Executive Vice President
and Provost of the University
Arizona State University
P.O. Box 877805
Tempe, AZ 85287-7805

To Whom it May Concern,

As Interim Director of the School of Life Sciences, I am writing in support of the proposals to establish undergraduate and graduate certificates in Evolutionary Medicine.

The field of Evolutionary Medicine applies the principles of evolution to medicine and public health, placing disease in the context of changing environments. Evolutionary medicine is inherently interdisciplinary and integrates basic and applied science, providing a foundation for core concepts of evolutionary thinking and analysis in translational, clinical, and public health training. The proposed certificates will give students foundational training in evolutionary medicine and how it is applied to the health of human populations. The certificates permit students to specialize further through their electives including: population genomics, maternal and child health, mental health, cancer, microbiomics, aging, anthropology, biology, public health, global health, and medicine.

The undergraduate and graduate programs offices of the School of Life Sciences have obtained the necessary faculty approvals through governance procedures in the unit. In addition, the School has the resources to support the certificates as presented in the proposal, without impacting core program resources. The courses in the attached list are approved for use within the two programs.

This certificate will provide training and recognition of skills in Evolutionary Medicine that will enhance the future success of our students.

Sincerely,

A handwritten signature in blue ink that reads "Kenro Kusumi". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Kenro Kusumi
Interim Director and Professor,
School of Life Sciences

Undergraduate courses with support from SoLS

BIO 498 Evolution and Mental Disorders (Pending Permanent Number)

BIO 498 Maternal and Child Health (Omnibus)

BIO 395 Introduction to Evolutionary Psychology (Omnibus)

BIO/ASB 250 Introduction to Evolutionary Medicine

BIO 446 Principles of Human Genetics

BIO 301 Cancer: Mother of All Diseases

BIO 318 History of Medicine

BIO 327 Evolution and Human Behavior

BIO 345 Evolution

BIO 425 Advanced Immunology

BIO 440 Functional Genomics

BIO 462 Endocrine Physiology

HPS 331 History of Medicine

MBB 445 Molecular Biology/ Genetics

MIC 205 Microbiology

MIC 314 HIV/AIDS: Sci/Behavior/Society

ASM/BIO 394 Ecology and Evolution of Infectious Diseases (Omnibus)

Graduate courses with support from SoLS

BIO 598 Evolution and mental Disorders (pending permanent number)

BIO 545 Populations Evolution Genetics

BIO 546 Principles of Human Genetics

EVO 601 Principles of Evolution

BIO 522 Populations: Evolutionary Ecology

BIO 598 Maternal and Child Health (omnibus)

BIO 425 Advanced Immunology

BIO 540 Functional Genomics

BIO 462 Endocrine Physiology

MBB 445 Molecular Biology/ Genetics



Dear Colleagues,

I enthusiastically support the proposed undergraduate and graduate certificates in Evolutionary Medicine.

As you are aware, Evolutionary Medicine is the application of the principles of evolution to the fields of medicine and public health and places disease in the context of changing environments, both exposures and the encompassing ecology of life in which an individual is imbedded. It is also inherently interdisciplinary in nature, as Evolutionary Medicine integrates basic and applied science – providing a firm understanding of the core concepts of evolutionary thinking and analysis, with translational, clinical, and public health training. The certificate will give students foundational training in evolutionary medicine and how it is applied to the health of human populations, and then will allow students to specialize further through their electives in the direction of their academic interests including, but not limited to: population genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

As there are faculty from SHESC that are involved with the certificates, I see no conflict of interest with our school and there will be no impact on our current degree programs except to enhance them with the certificate. The courses in the attached list are approved for use within the two programs.

This certificate will provide training and recognition of skills in Evolutionary Medicine that are critical for the future success of a variety of students.

Sincerely,

A handwritten signature in blue ink that reads "Kaye E. Reed".

Kaye E. Reed, President's Professor
Director, School of Human Evolution and Social Change
Research Associate, Institute of Human Origins
Arizona State University
Tempe, AZ 85287
(480) 965-9813

Undergraduate courses with support from SHESC

ASM 345 Disease and Human Evolution
ASM 246 Human Origins
ASM 401 Health and Human Biology
BIO/ASB 250 Introduction to Evolutionary Medicine (Pending Permanent Number)
ASM 456 Infectious Disease and Human Evolution
BIO/ASM 498 Evolution and Mental Disorders (Pending Permanent Number)
BIO/ASB 498 Maternal and Child Health (Omnibus)
ASM/BIO 394 Ecology and Evolution of Infectious Diseases (Omnibus)
BIO/ASM 446 Principles of Human Genetics

Graduate courses with support from SHESC

ASM 560 Human growth and development: an evolutionary perspective
BIO/ASM 598 Evolution and mental Disorders (pending permanent number)
ASB 510 Health: Social and Biocultural Theories
ASB 503 Medical Anthropology
BIO/ASM 546 Principles of Human Genetics
ASM 456 Infectious Disease and Human Evolution
ASM 401 Health and Human Biology

School of Mathematical and Statistical Sciences, The College of Liberal Arts and Sciences

From: [Albert Boggess](#)
To: [Kenneth Buetow](#)
Cc: ambruster@asu.edu
Subject: Re: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Wednesday, April 10, 2019 4:53:50 PM

Kenneth - This certificate proposal is fine with SoMSS.
Al Boggess

On Wed, Apr 10, 2019 at 3:56 PM Kenneth Buetow <KennethBuetow@exchange.asu.edu> wrote:

Dr. Boggess –

I am following up on this request to the School of Mathematical Sciences and if you had any questions or concerns regarding the **graduate** certificate in Evolutionary Medicine.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Thank you,

Ken

From: Kenneth Buetow
Sent: Thursday, March 28, 2019 1:15 PM
To: 'boggess@asu.edu' <boggess@asu.edu>
Subject: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Dr. Boggess,

The Center for Evolution and Medicine is developing a transdisciplinary **graduate certificate** in Evolutionary Medicine. The certificate program will be administered through the School of Life Sciences and the School of Human Evolution and Social Change. On behalf of the faculty of the Center, I am writing to request a very brief statement from you about the potential impact of our proposed certificate on your program.

Evolutionary Medicine is the application of the principles of evolution to the fields of medicine and public health. While, evolution is the foundational basic science of the life sciences, evolutionary medicine is a new way of thinking that integrates perspectives across the traditionally siloed disciplines of public health and medicine. Inherently interdisciplinary in nature, Evolutionary Medicine provides foundational basic science – providing a firm understanding of the core concepts of evolutionary thinking and analysis, with translational, clinical, and public health training.

The certificate will give students core training in evolutionary medicine and how it is applied to the health of human populations. Through selection of electives students will have the opportunity to further specialize training pursuant to academic degree programs including, but not limited to: populational genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

Our aim with the Evolutionary Medicine Certificate is to provide a core set of courses in evolutionary biology, genetics, global health and public health, and to include elective courses, as appropriate from other units. If you would like a course offered in your department to be included as an elective in the certificate, we welcome your suggestions.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Unfortunately, to fit within the recently revised ASU timelines for certificate applications, we will need to submit our application by April 1st. Your support letter is a necessary part of our application package that will need to follow shortly thereafter. We would ideally have your letter for forwarding by **April 5th**.

Thank you in advance for your time and support as we work to provide the best possible training for all of our students.

Department of Physics, The College of Liberal Arts and Sciences

From: [Peter Bennett](#)
To: [Kenneth Buetow](#)
Cc: [Michael Treacy](#); [Peter Rez](#)
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Thursday, March 28, 2019 3:30:59 PM

Ken,

I do not see any conflict with the physics department and do not anticipate any course we would offer as an elective.

-Peter Bennett

From: Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Sent: Thursday, March 28, 2019 1:16 PM
To: Peter Bennett <peter.bennett@asu.edu>
Subject: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Dr. Bennett,

The Center for Evolution and Medicine is developing a transdisciplinary **graduate certificate** in Evolutionary Medicine. The certificate program will be administered through the School of Life Sciences and the School of Human Evolution and Social Change. On behalf of the faculty of the Center, I am writing to request a very brief statement from you about the potential impact of our proposed certificate on your program.

Evolutionary Medicine is the application of the principles of evolution to the fields of medicine and public health. While, evolution is the foundational basic science of the life sciences, evolutionary medicine is a new way of thinking that integrates perspectives across the traditionally siloed disciplines of public health and medicine. Inherently interdisciplinary in nature, Evolutionary Medicine provides foundational basic science – providing a firm understanding of the core concepts of evolutionary thinking and analysis, with translational, clinical, and public health training.

The certificate will give students core training in evolutionary medicine and how it is applied to the health of human populations. Through selection of electives students will have the opportunity to further specialize training pursuant to academic degree programs including, but not limited to: populational genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

Our aim with the Evolutionary Medicine Certificate is to provide a core set of courses in evolutionary biology, genetics, global health and public health, and to include elective courses, as appropriate from other units. If you would like a course offered in your department to be included as an elective in the certificate, we welcome your suggestions.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Unfortunately, to fit within the recently revised ASU timelines for certificate applications, we will need to submit our application by April 1st. Your support letter is a necessary part of our

application package that will need to follow shortly thereafter. We would ideally have your letter for forwarding by **April 5th**.

Thank you in advance for your time and support as we work to provide the best possible training for all of our students.

Sincerely,

Ken Buetow
Associate Director,
Center for Evolution & Medicine
Arizona State University
Mail Code: 1701
Tempe, AZ 85287-1701
p: 480-727-9413 f: 480-727-4457

College of Health Solutions

From: [Julie Liss](#)
To: [Kenneth Buetow](#)
Cc: [Kate Lehman](#); [Deborah Helitzer](#)
Subject: Re: Undergraduate certificate in Evolutionary Medicine
Date: Thursday, April 11, 2019 9:27:44 AM

Ken:

Yes, the College of Health Solutions is happy to give its approval for the establishment of your graduate certificate in Evolutionary Medicine.

Sincerely,

Julie

From: Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Date: Wednesday, April 10, 2019 at 3:27 PM
To: Julie Liss <JULIE.LISS@asu.edu>
Cc: Kate Lehman <KATE.LEHMAN@asu.edu>, Deborah Helitzer <Deborah.Helitzer@asu.edu>
Subject: RE: Undergraduate certificate in Evolutionary Medicine

Julie –

Do you also grant approval for the graduate certificate in Evolutionary Medicine? We are required to document the approvals separately.

Best,
Ken

From: Kenneth Buetow
Sent: Friday, April 5, 2019 4:29 PM
To: Julie Liss <JULIE.LISS@asu.edu>; Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Cc: Kate Lehman <KATE.LEHMAN@asu.edu>; Deborah Helitzer <Deborah.Helitzer@asu.edu>
Subject: RE: Undergraduate certificate in Evolutionary Medicine

Julie –

Thank you for your response.

Best,
Ken

From: Julie Liss
Sent: Friday, April 5, 2019 4:14 PM
To: Kenneth Buetow <KennethBuetow@exchange.asu.edu>

Cc: Kate Lehman <KATE.LEHMAN@asu.edu>; Deborah Helitzer <Deborah.Helitzer@asu.edu>

Subject: Undergraduate certificate in Evolutionary Medicine

(forgive me if you already received this)

Ken:

The College of Health Solutions is pleased to support your undergraduate certificate in Evolutionary Medicine. It may be of interest to some of our students.

Sincerely,

Julie Liss,
Associate Dean, Academic Success

Julie Liss, Ph.D.
Associate Dean of Academic Success, College of Health Solutions
Professor, Speech and Hearing Science
Faculty, Barrett, The Honors College
Outgoing Editor-in-Chief, Journal of Speech, Language and Hearing Research (Speech)
Fellow, American Speech Language Hearing Association
Arizona State University
julie.liss@asu.edu

College of Integrative Sciences and Arts

From: [Duane Roen](#)
To: [Kenneth Buetow](#)
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Thursday, March 28, 2019 8:32:11 PM

Ken,

CISA is pleased to support your graduate certificate in Evolutionary Medicine.

Best,
Duane

Duane Roen
Vice Provost, Polytechnic campus
Dean, College of Integrative Sciences and Arts
Dean, University College
Arizona State University
Mail Code: 2780
7271 E Sonoran Arroyo Mall
Mesa, AZ 85212-6415
P: 480-727-6513

From: Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Sent: Thursday, March 28, 2019 1:11 PM
To: Duane Roen <Duane.Roen@asu.edu>
Subject: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Dean Roen,

The Center for Evolution and Medicine is developing a transdisciplinary **graduate certificate** in Evolutionary Medicine. The certificate program will be administered through the School of Life Sciences and the School of Human Evolution and Social Change. On behalf of the faculty of the Center, I am writing to request a very brief statement from you about the potential impact of our proposed certificate on your program.

Evolutionary Medicine is the application of the principles of evolution to the fields of medicine and public health. While, evolution is the foundational basic science of the life sciences, evolutionary medicine is a new way of thinking that integrates perspectives across the traditionally siloed disciplines of public health and medicine. Inherently interdisciplinary in nature, Evolutionary Medicine provides foundational basic science – providing a firm understanding of the core concepts of evolutionary thinking and analysis, with translational, clinical, and public health training.

The certificate will give students core training in evolutionary medicine and how it is applied to the health of human populations. Through selection of electives students will have the opportunity to further specialize training pursuant to academic degree programs including, but not limited to: populational genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

Our aim with the Evolutionary Medicine Certificate is to provide a core set of courses in evolutionary biology, genetics, global health and public health, and to include elective courses, as appropriate from other units. If you would like a course offered in your department to be included as an elective in the certificate, we welcome your suggestions.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Unfortunately, to fit within the recently revised ASU timelines for certificate applications, we will need to submit our application by April 1st. Your support letter is a necessary part of our application package that will need to follow shortly thereafter. We would ideally have your letter for forwarding by **April 5th**.

Thank you in advance for your time and support as we work to provide the best possible training for all of our students.

Sincerely,

Ken Buetow
Associate Director,
Center for Evolution & Medicine
Arizona State University
Mail Code: 1701
Tempe, AZ 85287-1701
p: 480-727-9413 f: 480-727-4457

Edson College of Nursing and Health Innovation

From: [Kenneth Buetow](#)
To: [Kenneth Buetow](#)
Subject: FW: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Thursday, April 11, 2019 7:51:22 AM
Attachments: [Grad Certificate 1 Page.pdf](#)
[image001.png](#)

From: Katherine Kenny <Katherine.Kenny@asu.edu>
Sent: Wednesday, April 10, 2019 6:37 PM
To: Kenneth Buetow <Kenneth.Buetow@asu.edu>
Subject: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Kenneth - Thank you for asking the Edson College of Nursing and Health Innovation to review the attached proposal for the Evolutionary Medicine Graduate Certificate Program. We have reviewed and see no conflict with current courses or degree programs that Edson CONHI currently offers. On behalf of the Edson College of Nursing and Health Innovation we support this graduate certificate and wish you the best as you move through the University approval processes. Thank you.

Best,
Kathy

Katherine (Kathy) Kenny, DNP, RN, ANP-BC, FAANP, FAAN
Associate Dean of Academic Affairs
Clinical Professor



550 N. 3rd Street | Phoenix, AZ 85004
(P) 602-496-1719
(F) 602-496-0545
Katherine.kenny@asu.edu
<https://nursingandhealth.asu.edu/>

From: Kenneth Buetow
Sent: Thursday, March 28, 2019 13:15
To: Katherine Kenny <Katherine.Kenny@asu.edu>
Subject: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Dean Kenny,

The Center for Evolution and Medicine is developing a transdisciplinary **graduate certificate** in Evolutionary Medicine. The certificate program will be administered through the School of Life Sciences and the School of Human Evolution and Social Change. On behalf of the faculty of the Center, I am writing to request a very brief statement from you about the potential impact of our proposed certificate on your program.

Evolutionary Medicine is the application of the principles of evolution to the fields of medicine and public health. While, evolution is the foundational basic science of the life sciences, evolutionary medicine is a new way of thinking that integrates perspectives across the traditionally siloed disciplines of public health and medicine. Inherently interdisciplinary in nature, Evolutionary Medicine provides foundational basic science – providing a firm understanding of the core concepts of evolutionary thinking and analysis, with translational, clinical, and public health training.

The certificate will give students core training in evolutionary medicine and how it is applied to the health of human populations. Through selection of electives students will have the opportunity to further specialize training pursuant to academic degree programs including, but not limited to: populational genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

Our aim with the Evolutionary Medicine Certificate is to provide a core set of courses in evolutionary biology, genetics, global health and public health, and to include elective courses, as appropriate from other units. If you would like a course offered in your department to be included as an elective in the certificate, we welcome your suggestions.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Unfortunately, to fit within the recently revised ASU timelines for certificate applications, we will need to submit our application by April 1st. Your support letter is a necessary part of our application package that will need to follow shortly thereafter. We would ideally have your letter for forwarding by **April 5th**.

Thank you in advance for your time and support as we work to provide the best possible training for all of our students.

Sincerely,

Ken Buetow
Associate Director,
Center for Evolution & Medicine
Arizona State University
Mail Code: 1701
Tempe, AZ 85287-1701
p: 480-727-9413 f: 480-727-4457

Ira A. Fulton Schools of Engineering

From: [James Collofello](#)
To: [Fabio Milner](#)
Cc: [Jeremy Helm](#); [Sergio Quiros](#); [Kyle Rader](#)
Subject: Re: letter of support
Date: Thursday, October 10, 2019 4:48:06 AM
Attachments: [image001.png](#)

Fabio,

Hope your semester is going well. The Fulton Schools of Engineering does not foresee any adverse impacts owing to this proposed certificate and is willing to work with you to advance the certificate as appropriate in the future.

jim

James S. Collofello
Vice Dean for Academic and Student Affairs
Professor of Computer Science and Engineering
School of Computing, Informatics and Decision Systems Engineering
Ira A. Fulton Schools of Engineering

From: Fabio Milner <milner@asu.edu>
Sent: Wednesday, October 9, 2019 3:50 PM
To: James Collofello <JAMES.COLLOFELLO@asu.edu>
Cc: Jeremy Helm <JEREMY.HELM@asu.edu>; Sergio Quiros <Sergio.Quiros@asu.edu>; Fabio Milner <milner@asu.edu>; Kyle Rader <kwrader@asu.edu>
Subject: letter of support

Dear Jim,

Hope you are doing well.

I would like to ask you for a letter of support from the Fulton School for the SoLS-proposed Certificate in Evolutionary Medicine.

Per Provost directive in August, we now need such letters to come from Deans.

Thanks, and best wishes,
Fabio

Fabio Augusto Milner, PhD

Associate Dean of Graduate Initiatives

[The College of Liberal Arts and Sciences](#)

Director of Mathematics for STEM Education

[School of Mathematical and Statistical Sciences](#)

[Arizona State University](#)



The Polytechnic School, Ira A. Fulton Schools of Engineering

From: [Ann McKenna](#)
To: [Sergio Quiros](#); [Marco Santello](#); [Kenneth Buetow](#)
Cc: [Cindy Boglin](#); [Jessica Meeker](#); [Jeremy Helm](#)
Subject: Re: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Friday, March 29, 2019 3:32:10 PM

Hi Ken,
The Polytechnic School supports your proposal for a graduate certificate in evolutionary medicine, and we do not see any conflicts.
Best,
Ann

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Thursday, March 28, 2019 at 2:24 PM
To: Ann McKenna <Ann.McKenna@asu.edu>, Marco Santello <Marco.Santello@asu.edu>, Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Cc: Cindy Boglin <Cindy.Boglin@asu.edu>, Jessica Meeker <Jessica.Meeker@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: Center for Evolution and Medicine - Proposed Graduate Certificate

Hello Ken,

I am copying [Dr. Ann McKenna](#) in this [Dr. Marco Santello](#) in this email for their input.

Please note the highlighted university deadline.

Thank you,

Sergio Q. Quiros

Specialist-Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Sent: Thursday, March 28, 2019 1:11 PM
To: Sergio Quiros <Sergio.Quiros@asu.edu>
Subject: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Mr. Quiros,

The Center for Evolution and Medicine is developing a transdisciplinary **graduate certificate** in Evolutionary Medicine. The certificate program will be administered through the School of Life Sciences and the School of Human Evolution and Social Change. On behalf of the faculty of the Center, I am writing to request a very brief statement from you

about the potential impact of our proposed certificate on your program.

Evolutionary Medicine is the application of the principles of evolution to the fields of medicine and public health. While, evolution is the foundational basic science of the life sciences, evolutionary medicine is a new way of thinking that integrates perspectives across the traditionally siloed disciplines of public health and medicine. Inherently interdisciplinary in nature, Evolutionary Medicine provides foundational basic science – providing a firm understanding of the core concepts of evolutionary thinking and analysis, with translational, clinical, and public health training.

The certificate will give students core training in evolutionary medicine and how it is applied to the health of human populations. Through selection of electives students will have the opportunity to further specialize training pursuant to academic degree programs including, but not limited to: populational genomics, maternal and child health, mental health, cancer, microbiome, aging, anthropology, biology, public health, global health, and medicine.

Our aim with the Evolutionary Medicine Certificate is to provide a core set of courses in evolutionary biology, genetics, global health and public health, and to include elective courses, as appropriate from other units. If you would like a course offered in your department to be included as an elective in the certificate, we welcome your suggestions.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Unfortunately, to fit within the recently revised ASU timelines for certificate applications, we will need to submit our application by April 1st. Your support letter is a necessary part of our application package that will need to follow shortly thereafter. We would ideally have your letter for forwarding by April 5th.

Thank you in advance for your time and support as we work to provide the best possible training for all of our students.

Sincerely,

Ken Buetow
Associate Director,
Center for Evolution & Medicine
Arizona State University
Mail Code: 1701
Tempe, AZ 85287-1701
p: 480-727-9413 f: 480-727-4457

Sandra Day O'Connor College of Law

From: Adam Chodorow
To: Kenneth Buetow
Subject: Re: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Thursday, March 28, 2019 3:02:23 PM

The college of law supports this proposal. We anticipate no conflicts with our programs.

Sent from mobile device.

On Mar 28, 2019, at 3:13 PM, Kenneth Buetow <KennethBuetow@exchange.asu.edu> wrote:

Dear Dean Chodorow,

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Sincerely,

Ken Buetow
Associate Director,
Center for Evolution & Medicine
Arizona State University
Mail Code: 1701
Tempe, AZ 85287-1701
p: 480-727-9413 f: 480-727-4457

<Grad Certificate 1 Page.pdf>

New College of Interdisciplinary Arts and Sciences

From: [Patricia Friedrich](#)
To: [Kenneth Buetow](#)
Subject: Re: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Wednesday, April 17, 2019 5:16:33 PM

Yes, New College is in support of the new **graduate certificate** in Evolutionary Medicine.

Thank you so much,

Patricia Friedrich, PhD
Associate Dean of Academic Programs and Faculty Affairs,
New College of Interdisciplinary Arts and Sciences
Professor of Linguistics/Rhetoric and Composition,
School of Humanities, Arts, and Cultural Studies
Arizona State University P. O. Box 37100
4701 W. Thunderbird Rd. Mail Code 3051
Phoenix, AZ, USA 85069-7100
voice 602 543-6046

From: Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Date: Wednesday, April 17, 2019 at 5:10 PM
To: Patricia Friedrich <Patricia.Friedrich@asu.edu>
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate

Dear Patty –

Thank you for your response to the undergraduate certificate proposal. Can you please respond to this one as well? We have to document support for the graduate and the undergraduate certificate proposals separately.

Best,
Ken

From: Kenneth Buetow
Sent: Wednesday, April 10, 2019 3:33 PM
To: Patricia Friedrich <Patricia.Friedrich@asu.edu>
Cc: Tosha Ruggles <tosha.ruggles@asu.edu>
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate

Dr. Friedrich –

I am following up on this request to the New College of Interdisciplinary Arts and Science and if you had any questions or concerns regarding the **graduate** certificate in Evolutionary Medicine.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Thank you,
Ken

School of Sustainability

From: [Christopher Boone](#)
To: [Fabio Milner](#)
Cc: [Caroline Harrison](#); [Kyle Rader](#); [Nicole Darnall](#)
Subject: RE: letter of support
Date: Wednesday, October 9, 2019 4:33:35 PM
Attachments: [image001.png](#)

Dear Fabio,

The School of Sustainability is happy to support the SOLS proposal for a Certificate in Evolutionary Medicine.

Christopher Boone

Dean and Professor



P.O. Box 875502 | Tempe, Arizona | 85287-5502

PH: 480-965-2236 | Main: 480-965-2975

SchoolOfSustainability.asu.edu

Executive Assistant: Lorraine.Protocollo@asu.edu

The School of Sustainability embraces ASU's mission as being a comprehensive public research university, measured not by whom it excludes, but rather by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves. We support and foster a culture of inclusiveness, tolerance, and respect that promotes equal opportunity and diversity among SOS faculty, staff, and students and through our engagement with diverse communities within and beyond the University.

From: Fabio Milner <milner@asu.edu>
Sent: Wednesday, October 9, 2019 4:06 PM
To: Christopher Boone <Christopher.G.Boone@asu.edu>
Cc: Caroline Harrison <Caroline.Harrison@asu.edu>; Fabio Milner <milner@asu.edu>; Kyle Rader <kwrader@asu.edu>
Subject: letter of support

Dear Chris,

Hope you are doing well.

I would like to ask you for a letter of support from the School of Sustainability for the SoLS-proposed Certificate in Evolutionary Medicine.

Per Provost directive in August, we now need such letters to come from Deans.

Thanks, and best wishes,

Fabio

Fabio Augusto Milner, PhD

Associate Dean of Graduate Initiatives

[The College of Liberal Arts and Sciences](#)
[Director of Mathematics for STEM Education](#)
[School of Mathematical and Statistical Sciences](#)

[Arizona State University](#)



Armstrong Hall, Office 214
P: 480/965-5877 | F: 480/965-2110
milner@asu.edu
URL: <https://clas.asu.edu/content/fabio-milner>

From: [Caroline Harrison](#)
To: [Kenneth Buetow](#)
Cc: [Ivy Gerbis](#)
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Wednesday, April 10, 2019 4:00:26 PM

My apologies for not getting back to you.

The School of Sustainability sees no conflicts with this program and fully supports moving it forward.

Caroline J. Harrison, PhD
Curricular and Academic Programs
Senior Sustainability Scholar



P.O. Box 875502 | Tempe, Arizona | 85287-5502
PH: 480-965-8645 | Main: 480-965-2975
SchoolOfSustainability.asu.edu

From: Kenneth Buetow <KennethBuetow@exchange.asu.edu>
Sent: Wednesday, April 10, 2019 3:38 PM
To: Caroline Harrison <Caroline.Harrison@asu.edu>
Cc: Ivy Gerbis <Ivy.Gerbis@asu.edu>
Subject: FW: Center for Evolution and Medicine - Proposed Graduate Certificate

Dr. Harrison –

I am following up on this request to School of Sustainability and if you had any questions or concerns regarding the **graduate** certificate in Evolutionary Medicine.

I am writing to ask you to respond to this email with:

1. Your support for us moving forward with this certificate;
2. Any perceived conflicts within your unit with this certificate.

Thank you,
Ken

W. P. Carey School of Business

From: [Kay Faris](#)
To: [Kenneth Buetow](#)
Cc: [Kay Faris](#)
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate
Date: Wednesday, April 10, 2019 5:39:58 PM
Attachments: [image001.png](#)

Hi Ken,

The W. P. Carey School of Business supports moving forward the graduate certificate in Evolutionary Medicine. We see no negative impact from this certificate.

I wish you success with this new program!

Please let me know if you have any questions.

Thanks,

Kay

Kay A. Faris
Senior Associate Dean, Academic Programs
W. P. Carey School of Business
Arizona State University
Tempe, AZ 85287-3406
Phone: 480-965-7587
Fax: 480-965-3846
Kay.Faris@asu.edu



Arizona State University

Where Business Is Personal®

From: Kenneth Buetow
Sent: Wednesday, April 10, 2019 3:44 PM
To: Kay Faris <KAY.FARIS@asu.edu>
Subject: RE: Center for Evolution and Medicine - Proposed Graduate Certificate

Dean Faris –

Do you also grant approval for the **graduate** certificate in Evolutionary Medicine? We are required to document the approvals separately.

Best,

Ken