

The UAF Faculty Senate passed the following at Meeting #191, May 6, 2013:

**MOTION**

The UAF Faculty Senate moves to approve a new Graduate Certificate in Science Teaching and Outreach (housed in the College of Natural Sciences and Mathematics).

EFFECTIVE: Fall 2014, with Board of Regents approval.

RATIONALE: The UAF 2010 Vision statement includes an emphasis on “linking research discoveries with teaching, service, and community engagement.” UAF science graduate students are actively engaged in research, but have few opportunities to explore, understand, and engage in the teaching and service components of faculty workloads. When they do engage in teaching, they are sometimes under-prepared to do so. This program will enhance graduate student ability to teach laboratory sections of science courses, thus improving learning opportunities for undergraduates. The internship component of the proposed certificate will allow graduate students to link their research to university-level teaching and/or community engagement, including productive partnerships with Alaskan schools (SDI theme 2). In addition, the Vision 2017 Task Force recommends, among other things, that UAF “significantly expand internships, externships, and practicum opportunities for all students,” and that UAF “emphasize development of career and employability skills throughout the UAF curriculum...” This certificate will allow graduate students to explore and gain hands-on experience with teaching. Earning such a certificate will make graduate students more marketable in the highly competitive job markets they will enter upon completion of their degrees.

The costs of this program are essentially administrative. The majority of the courses required for the certificate are already either permanent, taught as trial courses, or taught as special topics courses. No new resources are required. One of the goals of this certificate offering is to give students who are already enrolled in graduate degree programs in the natural sciences a tangible credential associated with completing several of these classes.

The full proposal, 35-GNP, is on file at the Faculty Senate Office, 312B Signers’ Hall. It is also posted online at:  
<http://www.uaf.edu/uafgov/faculty-senate/meetings/2012-13-fs-meetings/#191>

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President, UAF Faculty Senate

APPROVAL:   
\_\_\_\_\_  
Chancellor's Office

DATE: 5/7/13

DISAPPROVED: \_\_\_\_\_  
Chancellor's Office

DATE: \_\_\_\_\_

## **STATEMENT OF THE PROPOSED PROGRAM, ITS OBJECTIVES AND CAREER OPPORTUNITIES**

We hereby propose a new graduate certificate in Science Teaching and Outreach, to be offered at the University of Alaska Fairbanks. Many science graduate students have demonstrated an interest in enhancing their teaching and outreach skills. In response, two courses and a seminar that meet this need have been developed and are currently offered. An additional course on mentoring has previously been offered, but not in the past year. The graduate certificate would package these courses, with the addition of an internship and two 1-credit seminars, to offer a formal credential to science students that are interested in enhancing their teaching skills. The certificate is expected to increase competitive ability in the higher education job market, as well as prepare students to be better communicators of their science.

### **Program Goals:**

- 1) To provide students with a formal credential that documents their efforts towards enhancing their teaching, mentoring, and/or outreach skills
- 2) To better prepare future professionals for careers in science and engineering by increasing skill in teaching, mentoring, and/or community engagement
- 3) To increase student familiarity with pedagogical theory and best practices in teaching

### **NEED FOR PROGRAM**

The need for improvements in how science and engineering graduate students are trained with respect to teaching and mentoring is well-documented (e.g. Committee on Graduate Education, 1998). Despite the multifaceted nature of responsibilities graduate students will have in their careers, most graduate programs in the sciences have not traditionally offered explicit training in teaching and mentoring (Pruitt-Logan et al. 2002). However, this trend is changing—as of 2009, about 45 institutions offered the option of earning a certificate in college teaching to their graduate students (Border and vonHoene, 2010). Some programs focus explicitly on preparing STEM faculty, while other programs are offered across disciplines. Science graduate students at other institutions who have participated in professional development programs related to teaching and learning have reported that their participation resulted in greater knowledge about teaching and learning, and a better understanding of faculty roles, compared to peers who have not had such training (Pruitt-Logan et al. 2002). Such training may enhance a candidate's marketability in higher education and in other science and engineering careers— in a national survey, hiring departments in a broad range of institutions placed high value on teaching readiness, as indicated by college-level teaching credentials (Benassi et al. 2001).

In addition, the certificate will prepare participants (in part) for the service component of faculty and other professional positions by requiring students to work with K-12 and public audiences. This experience should also increase student's ability to create meaningful broader impacts projects for federally funded grant proposals. Finally, participation in the coursework leading to the certificate is expected to have a direct impact on teaching skills in the short term. Because many science graduate students serve

as teaching assistants, this is expected to have positive outcomes for undergraduates taking science courses at UAF.

### Proposed General Catalog Layout Copy of Program

#### Graduate Certificate in Science Teaching and Outreach

The certificate in science teaching and outreach is a voluntary program that prepares science graduate students for science careers that include teaching and/or communicating science to the public. It does NOT meet the requirements for earning a state teaching certificate and will not allow graduates to apply for certified positions in the K-12 school system. Such training will enhance readiness for college-level teaching by providing hands-on training and familiarity with pedagogical theory. The certificate is expected to increase competitive ability in the higher education job market.

#### Requirements for the Certificate:

1. Complete the general university requirements
2. Have a Bachelor's Degree from an accredited institution
3. Admission to a graduate science or engineering degree program at UAF (CNSM, SFOS, SNRAS, CEM), or prior completion of a graduate degree in the sciences or engineering.
4. Complete the following:

STO 666- Scientific Teaching .....	2
STO 601- Communicating Science .....	2
STO 602- Mentoring in the Sciences .....	2
STO 603- Instructional Design .....	1
STO 604- Internship .....	4

11 credits

5. Complete 1 of the following:

STO 692 – Current Topics in Scientific Teaching .....	1
MATH 600 – Mathematics Teaching Seminar .....	1
PHYS 605 – Physics Teaching Seminar .....	1

1 credit

PROGRAM TOTAL: 12 credits

**RESOURCE COMMITMENT TO THE  
PROPOSED DEGREE PROGRAM**

<b>Resources</b>	<b>Existing</b>	<b>New</b>		<b>Total</b>
	College/School	College/School	Others (Specify)	
Regular Faculty (FTE's & dollars)	\$60,800 (loaded salaries) 0.43 FTE			\$60,800 (loaded salaries) 0.43 FTE
Adjunct Faculty (FTE's & dollars)	\$0	\$0		\$0
Teaching Assistants (Headcount)	\$0	\$0		\$0
Instructional Facilities (in dollars and/or sq. footage)	The program will require 3-4 small classrooms per semester.	\$0		The program will require 3-4 small classrooms per semester.
Office Space (Sq. footage)	All faculty and support personnel have existing office space	\$0		All faculty and support personnel have existing office space
Lab Space (Sq. Footage)	\$0	\$0		\$0
Computer & Networking (in dollars)	\$0	\$0		\$0
Research/ Instructional/ office Equipment (in dollars)	\$0	\$0		\$0
Support Staff (FTE's & dollars)	The B&W office manager will schedule courses (<0.05 FTE)	\$0		The B&W office manager will schedule courses (<0.05 FTE)
Supplies (in dollars)	\$0	\$0		\$0
Travel (in dollars)	\$0	\$0		\$0



**Board of Regents Program Action Request**  
**University of Alaska**  
 Proposal to Add, Change, or Delete a Program of Study

1a. Major Academic Unit (choose one) UAF	1b. School or College CNSM	1c. Department BIOL
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2. Complete Program Title: Graduate Certificate in Science Teaching and Outreach

3. Type of Program

<input type="checkbox"/> Undergraduate Certificate	<input type="checkbox"/> AA/AAS	<input type="checkbox"/> Baccalaureate	<input type="checkbox"/> Post-Baccalaureate Certificate
<input type="checkbox"/> Master's	<input checked="" type="checkbox"/> Graduate Certificate	<input type="checkbox"/> Doctorate	

4. Type of Action <input checked="" type="checkbox"/> Add <input type="checkbox"/> Change <input type="checkbox"/> Delete	5. Implementation date (semester, year) Spring, 2014
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6. Projected Revenue and Expenditure Summary. Not Required if the requested action is deletion.  
 (Provide information for the 5<sup>th</sup> year after program or program change approval if a baccalaureate or doctoral degree program; for the 3<sup>rd</sup> year after program approval if a master's or associate degree program; and for the 2<sup>nd</sup> year after program approval if a graduate or undergraduate certificate. If information is provided for another year, specify (1st) and explain in the program summary attached). Note that Revenues and Expenditures are not always entirely new; some may be current (see 7d.)

Projected Annual Revenues in FY 15		Projected Annual Expenditures in FY 15	
Unrestricted		Salaries & benefits (faculty and staff)	\$60,800
General Fund	\$5,648	Other (commodities, services, etc.)	\$
Student Tuition & Fees	\$55,152	<b>TOTAL EXPENDITURES</b>	\$60,800
Indirect Cost Recovery	\$	One-time Expenditures to Initiate Program (if >\$250,000)	
TVEP or Other (specify):	\$	(These are costs in addition to the annual costs, above.)	
Restricted		Year 1	\$
Federal Receipts	\$	Year 2	\$
TVEP or Other (specify):	\$	Year 3	\$
<b>TOTAL REVENUES</b>	<b>\$60,800</b>	Year 4	\$

Page # of attached summary where the budget is discussed, including initial phase-in: 16

7. Budget Status. Items a., b., and c. indicate the source(s) of the General Fund revenue specified in item 6. If any grants or contracts will supply revenue needed by the program, indicate amount anticipated and expiration date, if applicable.

Revenue source	Continuing	One-time
a. In current legislative budget request	\$	\$
b. Additional appropriation required	\$	\$
c. Funded through new internal MAU redistribution	\$	\$
d. Funds already committed to the program by the MAU <sup>1</sup>	\$5,648	\$
e. Funded all or in part by external funds, expiration date	\$	\$
f. Other funding source Specify Type:	\$	\$

8. Facilities: New or substantially (>\$25,000 cost) renovated facilities will be required.     Yes     No

If yes, discuss the extent, probable cost, and anticipated funding source(s), in addition to those listed in sections 6 and 7 above.

<sup>1</sup>Sometimes the courses required by a new degree or certificate program are already being taught by an MAU, e.g., as a minor requirement. Similarly, other program needs like equipment may already be owned. 100% of the value is indicated even though the course or other resource may be shared.

9. Projected enrollments (headcount of majors). If this is a program deletion request, project the teach out enrollments.

Year 1: 6	Year 2: 12	Year 3: 12	Year 4: 12
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Page number of attached summary where demand for this program is discussed: 12

10. Number\* of new TA or faculty hires anticipated (or number of positions eliminated if a program deletion):

Graduate TA	
Adjunct	
Term	
Tenure track	

11. Number\* of TAs or faculty to be reassigned:

Graduate TA	
Adjunct	
Term	
Tenure track	

Former assignment of any reassigned faculty:  
For more information see page \_\_\_\_\_ of the attached summary.

12. Other programs affected by the proposed action, including those at other MAUs (please list):

Program Affected	Anticipated Effect	Program Affected	Anticipated Effect

Page number of attached summary where effects on other programs are discussed:

13. Specialized accreditation or other external program certification needed or anticipated. List all that apply or 'none': None

14. Aligns with University or campus mission, goals, core themes, and objectives (list): Linking research with teaching, expanding internship opportunities, development of career skills

Page in attached summary where alignment is discussed: 8

15. State needs met by this program (list):

Page in the attached summary where the state needs to be met are discussed:

16. Program is initially planned to be: (check all that apply)

- Available to students attending classes at UAF campus(es).
- Available to students via e-learning.
- Partially available students via e-learning.

Page # in attached summary where e-learning is discussed:

Submitted by the University of Alaska Fairbanks with the concurrence of its Faculty Senate.

\_\_\_\_\_/\_\_\_\_\_  
Provost Date

\_\_\_\_\_/\_\_\_\_\_  
Chancellor Date

- Recommend Approval
- Recommend Disapproval

\_\_\_\_\_/\_\_\_\_\_  
UA Vice President for Academic Affairs on behalf of Date  
the Statewide Academic Council

- Recommend Approval
- Recommend Disapproval

\_\_\_\_\_/\_\_\_\_\_  
Chair, Academic and Student Affairs Committee Date

<input type="checkbox"/> Recommend Approval <input type="checkbox"/> Recommend Disapproval	_____ / _____ UA President	_____ Date
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved	_____ / _____ Chair, Board of Regents	_____ Date

\*Net FTE (full-time equivalents). For example, if a faculty member will be reassigned from another program, but his/her original program will hire a replacement, there is one net new faculty member. Use fractions if appropriate. Graduate TAs are normally 0.5 FTE. The numbers should be consistent with the revenue/expenditure information provided.

Attachments:       Summary of Degree or Certificate Program Proposal                       Other (optional)