Memorandum
Office of the Registrar

To: Dr. Gregson, Provost

From: Kelly Gaspar Poth, Registrar, x7139, kpoth@plu.edu

Date: October 15, 2020

Re: Creation of STEM Education Minor (Type 3)

New Minor Code: NSTE - STEM Education

NSCI 495 is not currently in the catalog, it will need to be formally added.

As a reminder, reuse limitations remove the majority of CAPP automation. The STEM Program Chair will be responsible for working with students to use the necessary online form to select courses for the minor.

PLU

Carol Bautista <bautisca@plu.edu>

EPC--NSCI STEM Education New Minor Type 3

Joanna Gregson <gregsojg@plu.edu> Fri, Oct 16, 2020 at 3:26 PM
To: Carol Bautista <bautisca@plu.edu>

Forwarded with endorsement!

Thanks,
Joanna
[Quoted text hidden]
--

Joanna Gregson, Ph.D.
Provost and Senior Vice President for Academic Affairs
Professor of Sociology
Pacific Lutheran University
Tacoma, WA 98447

EPC PROPOSAL FORM

Originating Academic Unit: Department of Education & the Division of Natural Sciences

Date Proposal Submitted: October 1, 2020

INSTRUCTIONS: Upon completing the form, submit a hard copy with all appropriate signatures to the Office of the Provost. In addition, email a copy to EPC *via* the Faculty Governance Manager (facgov@plu.edu).

DEADLINES: Type 1 proposals, being non-substantive, are generally considered on a rolling basis. Type 2 proposals - December 1. Type 3 proposals - October 1.

For specifics on the processing of each type of proposal, see '2. *Flowchart of Usual Procedure for Curriculum Revision*' and *'5. Checklist for Developing Proposals*' in the EPC Manual, found in the Faculty Handbook (Section III, Part VI).

PROPOSAL SUMMARY

Provide a summary of the proposal.

We propose the creation of a STEM (Science, Technology, Engineering, Mathematics) Education minor. The purpose of the minor is to provide focused study for students who are interested in both Education and STEM fields. The minor will be based on existing courses in both the Department of Education and the Division of Natural Sciences. This minor includes experiential learning in NSCI 350: STEM Education Partnership or an internship. The internship option will require the use of the designation NSCI 495: Internship.

TYPE OF PROPOSAL

Check all the appropriate boxes.

[ ] TYPE 1: NON-SUBSTANTIVE CHANGES ***[complete shaded sections and provide signatures]***

Check boxes in this section. Also complete Proposal Summary (above), Catalog/Curriculum Changes section (ahead), and provide chair/dean signatures on final page.

- [ ] Change course number
- [ ] Change course title
- [ ] Delete course with no GenEd element, which is not part of by any other major/minor/concentration
- [ ] Prerequisite change within the academic unit only
- [ ] Catalog correction (editorial)

[ ] TYPE 2: SUBSTANTIVE CHANGES ***[complete all sections, including signatures]***

Submit completed form, including signatures. Be sure to check all boxes that apply.

- [ ] Change catalog description++
- [ ] Add permanent GenEd course++
- [ ] Add permanent non-GenEd course++
- [ ] Change major requirement**
- [ ] Change a course's credit hours
- [ ] Add GenEd Element to existing course++
- [ ] Delete GenEd course
- [ ] Change minor requirement**

[ ] Revise curriculum**
[ ] Change grading type (e.g. P/F, letter grade)
[ ] Other: _____

[ ] Change concentration requirement**
[ ] Change prerequisite involving another unit's course

[X] TYPE 3: CHANGES REQUIRING FACULTY ASSEMBLY APPROVAL ***[complete all sections, including signatures]***

Note: These proposals require the approval of the Board of Regents in addition to the Faculty Assembly.

[ ] New Degree** [ ] New Major** [X] New Minor** [ ] New Concentration**
[ ] Eliminate Degree [ ] Eliminate Major [ ] Eliminate Minor [ ] Eliminate Concentration
[ ] Add Certificate (non-Continuing Education)** [ ] Other: _____

** These changes/proposals require completion of the EPC Curriculum Change Template. The noted Type 3 proposals also require attachment of an Institutional Impact Evaluation Form.
++ A course syllabus must be submitted with these course proposals.

STATEMENT OF RATIONALE

Provide a statement of rationale and/or other clarifications. Include information on student learning and outcomes and any General Education Program rationale.

This minor provides a course of study for students interested in exploring careers in STEM teaching and communication. It provides PLU students with the opportunity to develop a strong foundation across the STEM disciplines at PLU while also learning about culturally sustaining pedagogy through a course offered by the PLU Education Department and through service learning. The requirements include a range of STEM courses intended to reflect the broad content knowledge that K-12 teachers need to have, but typically do not possess.

We anticipate that this minor will be attractive for students majoring in the Natural Sciences who are interested in becoming teachers or who are curious about teaching. This minor may also be attractive for students earning a Bachelor of Arts in Education who are interested in developing Science & Mathematics content knowledge. The minor will provide a strong preparation for undergraduate students who are interested in pursuing a Master of Arts in Education at the elementary or secondary education as the STEM coursework for the minor aligns with the requirements needed for a middle level science endorsement.

This minor will also appeal to students who are interested in informal education. The development of STEM content knowledge and pedagogical skills and the service learning experience in this minor will prepare students to work at zoos and museums and in other careers involving science communication.

Learning Objectives

PLU students who complete the minor will:

1. develop STEM content knowledge
2. practice and develop their own teaching style and philosophy
3. engage in critical reflection by considering issues from multiple perspectives
4. cultivate respect for diverse cultures and ways of knowing, which will allow them to teach all students effectively using culturally sustaining pedagogy
5. begin to recognize how culture, tradition, and training shapes our assumptions and will begin to apply that understanding to effectively engage with students

CATALOG/CURRICULUM CHANGES

Current Catalog Language:

N/A

Proposed Catalog Language: (note changes in **Blue Bold** and ~~Blue Strikeout~~)

There is a need for excellent teachers with strong content knowledge in Science, Technology, Engineering, and Mathematics (STEM) who are able to teach using culturally sustaining pedagogy. The STEM Education minor is supportive of, and connects to PLU's focus on diversity, justice, and sustainability and provides a program for students to explore teaching as a vocation. This interdisciplinary program is designed to guide students through courses in Education and Natural Sciences and includes service learning.

The STEM Education Minor is well suited for any student interested in exploring the vocation of teaching or who enjoys science outreach and science communication. The coursework emphasizes content knowledge, culturally sustaining and relevant pedagogies, and effective communication. The STEM Education Minor will appeal to students majoring in the Natural Sciences who are interested in teaching. Students interested in pursuing a Master of Arts in Education will find the STEM Education Minor coursework aligns with the requirements for a middle level science endorsement, but that additional coursework will be needed. Students planning to pursue a Master of Arts in Education with a middle level science endorsement are encouraged to meet with an advisor in the Education Department.

Minor:
20 semester hours, including:

- **EDUC 205: Multicultural Perspectives in the Classroom (4)**
- **NSCI 350: STEM Education Partnership (4)**

In addition, STEM Education minors must complete a minimum of 12 credit hours in the following areas at PLU:

- **Biology & Chemistry (4)**
  4 semester hours, chosen from the following courses:
  - **BIOL 225: Molecules, Cells, and Organisms**
  - **BIOL 226: Genes, Evolution, Diversity, and Ecology**
  - **CHEM 104: Environmental Chemistry**
  - **CHEM 115: General Chemistry I**
  - **CHEM 116: General Chemistry II**

- **Geosciences & Physics (4)**
  4 semester hours, chosen from the following courses:
  - **GEOS 102: General Oceanography**
  - **GEOS 103: Earthquakes, Volcanoes and Geologic Hazards**
  - **GEOS 104: Conservation of Natural Resources**
  - **GEOS 105: Meteorology**
  - **GEOS 106: Geology of National Parks**
  - **GEOS 107: Global Climate Changes**
  - **PHYS 110: Astronomy**
  - **PHYS 125: College Physics I**
  - **PHYS 126: College Physics II**
  - **PHYS 153: General Physics I**
  - **PHYS 154: General Physics II**

- **Computer Science & Mathematics (4)**

4 semester hours, chosen from the following courses:

- **DATA 133: Introduction to Data Science I**
- **CSCI 144: Introduction to Computer Science**
- **MATH 123: Modern Elementary Mathematics I**
- **MATH 145: Statistics for Biologists**
- **MATH 151: Calculus I**
- **MATH 152: Calculus II**
- **MATH 242: Introduction to Mathematical Statistics**
- **MATH 321: Geometry**
- **MATH/EDUC 446: Mathematics in the Secondary School**

Students are expected to work closely with STEM Education faculty advisors to ensure their program of study meets the requirements. Students may substitute a 4-credit NSCI 495: Internship for NSCI 350 at the discretion of the program chair. The program chair is the instructor for NSCI 495.

Up to eight (8) approved credits from supporting majors and minors can be applied to the STEM Education minor. At least 12 semester hours must be earned in residence at PLU.

Additional information for courses: N/A

Is this a course that because of variable content could be repeated for credit?	[ ]	Yes,	?	Times [If yes, the parameters must be clear in course description]	[X]	No [Default is 'no.' Note that does not exclude a student's option to repeat a course for a better grade to replace the initial one.]
Grade Type:	[X]	Standard Letter			[ ]	Pass/Fail
Anticipated Enrollment:						
Course Syllabus Attached++:	[X]	Yes			[ ]	No

++Required for new courses, and other proposals as indicated above.

Does the proposal include the addition to a course of one or more General Education Program elements (GenEd)?

[ ] Yes (Check the appropriate boxes below)
If more than one course is proposed, make sure the proposal makes clear which GenEd elements, if any, are proposed for each course.

[X] No

[ ] Alternative Perspectives **A**
[ ] Art, Music, Theatre **AR**
[ ] Cross Cultural Perspective **C**
[ ] International Honors (100-level) **H1**
[ ] International Honors (200-level) **H2**
[ ] International Honors (300-level) **H3**
[ ] Literature **LT**
[ ] Inquiry Seminar (FYEP) **F**
[ ] Mathematical Reasoning **MR**
[ ] Natural Sciences, Mathematics, or Computer Science **NS**
[ ] Physical Activity **PE**
[ ] Philosophy **PH**
[ ] Religion: Christian Traditions **RC**
[ ] Religion: Global Religious Traditions **RG**
[ ] Science and Scientific Method **SM**
[ ] Investigating Human Behavior, Culture, and Institutions **SO**
[ ] Senior Seminar/Project **SR**
[ ] Writing Seminar (FYEP) **FW**

NOTE: Submissions will be forwarded to the Core Curriculum Committee for its review and recommendation.

Diversity courses have specific learning objectives that must be included in the syllabus.

STAFFING & BUDGETARY IMPLICATIONS

Has this proposal been formally approved by at least 2/3 of the full-time teaching faculty in your academic unit?

[X] Yes

[ ] No (Indicate why the proposal is being forwarded to EPC)

Does this proposal impact any other academic unit?

[X] Yes (List below and indicate if 2/3 of the full-time faculty in that area support the proposal)

Education

[ ] No

Does this proposal require the commitment of new or substantially different support services (e.g., Library acquisitions, Information and Technology Services, Wang Center)?

[ ] Yes (Explain and indicate if support services have been consulted)

No.

[ ] No

Explain how the proposed change(s) will be staffed. Revised 2-Year Course Cycle must be attached.

This minor relies on existing courses including NSCI 350. The program allows students to substitute NSCI 495: Internship for NSCI 350 on a case by case basis. The chair of the minor will determine whether NSCI 495 is required and will administered by Ksenija Simic-Muller or Andrea Munro.

We anticipate no additional staffing and are designing NSCI 495: Internship to rely on existing volunteer and student teaching programs along with an online component.

Are special budgetary arrangements and funding required? If "no", explain how the proposed changes will be integrated without added personnel or budgetary requirements.

[ ] Yes (Explain what types of support will be used to meet the budgetary requirements of the proposed change(s). Include the source(s) of funding, percentage of costs covered, and time frame covered.)

[X] No

NOTE: Budgetary considerations will be reviewed/approved by Dean and Provost.

REQUIRED SIGNATURES

_____

Department Chair/Program Chair/Associate Dean (Date)

_____

Dean (Date)

[ ] Forwarded with Endorsement
[ ] Forwarded with Reservations

_____

Provost (Date)

Institutional Impact Evaluation Form

1. **Name of Proposed Program:** STEM Education minor

2. **Executive Summary**: In 1-2 paragraphs, describe the proposed program, including a clear statement of how the program meets the mission of the university.

The STEM (Science, Technology, Engineering, Mathematics) Education minor will provide focused study for students who are interested in both Education and STEM fields. The minor will be based on existing courses in both the Department of Education and the Division of Natural Sciences. The STEM Education Minor is well suited for any student interested in exploring the vocation of teaching or who enjoys science outreach and science communication. This minor provides PLU students with the opportunity to develop a strong foundation across the STEM disciplines at PLU while also learning about culturally sustaining pedagogy through a course offered by the PLU Education Department and through service learning. The requirements include a range of STEM courses intended to reflect the broad content knowledge that K-12 teachers need to have.

There is a need for excellent teachers with strong content knowledge in STEM who are able to teach using culturally sustaining pedagogy. The STEM Education minor is supportive of, and connects to PLU's focus on diversity, justice, and sustainability and provides a program for students to explore teaching as a vocation. This interdisciplinary program is designed to guide students through courses in Education and Natural Sciences and includes service learning.

3. **Proposed Program Start Date**: Sept. 1, 2021

4. **Program Offerings:**

    a. Describe the type of program (new degree, new major, new minor, new concentration).

    b. Identify the delivery format for the program (face-to-face, online, blended, or competency-based) and rationale for this format.

    c. Describe the curriculum and program requirements by providing a clear description of the courses required to complete the program and any program-specific policies (e.g., credit hours in residency, GPA requirements). Include course offerings, number of credits, prerequisites, and any general education elements. Clearly distinguish between existing courses and any new courses that will need to be created or deleted. If you are using preexisting catalog language, please highlight changes by using **blue boldface** for changes and ~~blue strikeout~~ for deletions.

d. Provide a two-year course cycle for delivering the curriculum.

e. Provide completion pathways (including two and four-year advising plans for undergraduate programs).

f. Identify the learning outcomes for the program. For undergraduate programs, also describe the connection to the Integrative Learning Objectives.

g. Provide a plan for assessing program learning outcomes.

h. Identify program entrance requirements, including application processes, if appropriate.

This program is a new minor that will primarily utilize existing face-to-face courses. We propose the creation of a four-credit internship course (NSCI 495) that will be taught remotely as a service-learning alternative to NSCI 350. Existing courses are currently provided annually (with only one exception). NSCI 350 is taught during the spring semester. There are no program entrance requirements or application processes.

Proposed Minor Requirements:

Minor:
20 semester hours, including:

- **EDUC 205: Multicultural Perspectives in the Classroom (4)**
- **NSCI 350: STEM Education Partnership (4)**

In addition, STEM Education minors must complete a minimum of 12 credit hours in the following areas at PLU:

- **Biology & Chemistry (4)**
  4 semester hours, chosen from the following courses:
  - **BIOL 225: Molecules, Cells, and Organisms**
  - **BIOL 226: Genes, Evolution, Diversity, and Ecology**
  - **CHEM 104: Environmental Chemistry**
  - **CHEM 115: General Chemistry I**
  - **CHEM 116: General Chemistry II**

- **Geosciences & Physics (4)**
  4 semester hours, chosen from the following courses:
  - **GEOS 102: General Oceanography**
  - **GEOS 103: Earthquakes, Volcanoes and Geologic Hazards**
  - **GEOS 104: Conservation of Natural Resources**
  - **GEOS 105: Meteorology**
  - **GEOS 106: Geology of National Parks**
  - **GEOS 107: Global Climate Changes**

- **PHYS 110: Astronomy**
- **PHYS 125: College Physics I**
- **PHYS 126: College Physics II**
- **PHYS 153: General Physics I**
- **PHYS 154: General Physics II**

- **Computer Science & Mathematics (4)**
  4 semester hours, chosen from the following courses:
  - **DATA 133: Introduction to Data Science I**
  - **CSCI 144: Introduction to Computer Science**
  - **MATH 123: Modern Elementary Mathematics I**
  - **MATH 145: Statistics for Biologists**
  - **MATH 151: Calculus I**
  - **MATH 152: Calculus II**
  - **MATH/STAT 242: Introduction to Mathematical Statistics**
  - **MATH 321: Geometry**
  - **MATH/EDUC 446: Mathematics in the Secondary School**

Students are expected to work closely with STEM Education faculty advisors to ensure their program of study meets the requirements. Students may substitute a 4-credit NSCI 495: Internship for NSCI 350 at the discretion of the program chair. The program chair is the instructor for NSCI 495.

Up to eight (8) approved credits from supporting majors and minors can be applied to the STEM Education minor. At least 12 semester hours must be earned in residence at PLU.

Two-year course cycle:

Course number	F21	J22	S22	F22	J23	S23
EDUC 205	x		x	x		x
NSCI 350			x			x
NSCI 495	**x (if needed)**			**x (if needed)**		
BIOL 225	x		x	x		x
BIOL 226	x		x	x		x
CHEM 104	x			x		
CHEM 115	x	x		x	x	
CHEM 116			x			x
GEOS 102	x			x		
GEOS 103	x		x	x		x
GEOS 104	x		x	x		x

GEOS 105	x			x		
GEOS 106		x	x		x	x
GEOS 107					x	x
PHYS 110	x			x		
PHYS 125	x			x		
PHYS 126			x			x
PHYS 153	x		x	x		x
PHYS 154	x		x	x		x
DATA 133	x			x		
CSCI 144	x		x	x		x
MATH 123	x		x	x		x
MATH 145			x			x
MATH 151	x		x	x		x
MATH 152	x		x	x		x
MATH/STAT 242	x			x		
MATH 321			x			x
MATH/EDUC 446				x		

Because students have a variety of courses to choose from each semester; because the majority of the courses also have an MR, NS, or SM designation; and because students majoring in the Division of Natural Sciences or Education Department will have taken some of these courses as requirements for their majors, we do not foresee any difficulties in completing the minor in two or four years. Students who are unable to take NSCI 350 will substitute NSCI 495 for the course.

Learning Outcomes:

PLU students who complete the minor will:

1. develop STEM content knowledge
2. practice and develop their own teaching style and philosophy
3. engage in critical reflection by considering issues from multiple perspectives
4. cultivate respect for diverse cultures and ways of knowing, which will allow them to teach all students effectively using culturally sustaining pedagogy
5. begin to recognize how culture, tradition, and training shapes our assumptions and will begin to apply that understanding to effectively engage with students

Assessment of Program Learning Outcomes:

We will use student work (including their reflections about teaching) from NSCI 350 and NSCI 495 to assess whether students in the minor are meeting the program learning outcomes. This will occur at the end of the term when either course is taught and will be evaluated cumulatively after 3 years during Spring/Summer 2024.

The development of this minor is currently being funded by a 5-year, $1.2 million Robert Noyce Teacher Scholarship grant from the National Science Foundation. As part of the grant, the minor will be assessed toward the end of the grant period in Spring/Summer 2024. At that point we can assess (i) the popularity of the minor, (ii) the impact of the minor on applications to the MAE program, (iii) the cost and revenue of the minor, and (iv) whether students in the minor have met learning objectives.

5. **External Authorization**: Will the proposal require authorization from NWCCU, the state of Washington, or an external accreditation body?

   No

6. **Rationale**:

a. Provide evidence of demand for the proposed program, which may include a market analysis or review of trends at other universities. Include reference to relevant competitors' programs and characteristics of the proposed program that will make it attractive to students in light of this competition.

b. Identify the target audience for the program.

c. Explain why this is the right time for the university to add this program.

d. Explain how this program might compete with other programs currently offered at PLU.

e. Identify which academic units might be affected by this program, and how.

f. Will approval of this program mean the termination of another program? If so, what is the timeline for the proposed elimination?

The development of this minor is intended to serve as a recruiting tool to highlight the PLU Masters in Education (MAE) program to undergraduate STEM majors. The development of the STEM Education minor is part of a project funded by the National Science Foundation to recruit and train effective K-12 STEM teachers to teach using culturally sustaining pedagogy. One component of the grant project is to develop and pilot this minor to assess whether it aids in recruitment, training, and retention of K-12 STEM teachers.

This minor does not compete with any existing programs at PLU and will not mean the termination of a different program. It provides a structure for students to begin developing a broad science background while also learning about the discipline of

teaching. This program may have a positive impact on the Department of Education if students who minor in STEM Education then decide to continue on to the PLU MAE program.

This program will likely affect the Department of Education and each department within the Division of Natural Sciences (Biology, Chemistry, Computer Science, Geosciences, Mathematics, and Physics). Students can take courses offered by each of these units to satisfy the STEM Education minor. We anticipate a minimal impact on the Division of Natural Sciences as the anticipated number of students should be low (< 10) and distributed across courses. Therefore we do not anticipate this minor requiring new sections of any courses within the Division of Natural Sciences. There may be enough interest in EDUC 205 to require an additional section.

7. **Marketing strategies:**

a. Provide a marketing and advertising plan for the initial roll-out of the program, including a timeline.

b. Identify longer-term plans for marketing and advertising.

This program is meant to appeal to current PLU students. Advertising and marketing will include information sessions during the academic year, advertising within the departments and Division of Natural Sciences, and will coincide with advertising being developed for the Noyce program at PLU.

This minor will also be highlighted to faculty advisors within the Division of Natural Sciences who can point advisees who express interest in K-12 teaching to the minor.

8. **External funding sources:** Describe any plans for the development of funding sources for this program that are external to the university, including projected amounts of funding for each.

a. Fundraising: N/A

b. Grants:

c. Other:

The development of this minor is currently being funded by a Robert Noyce Teacher Scholarship grant from the National Science Foundation. The minor is one component of the 5-year, $1.2 million grant. The minor itself is designed around existing courses which keeps projected costs down.

The minor will be re-assessed after 3-4 years toward the end of the grant period. At that point we can assess (i) the popularity of the minor, (ii) the impact of the minor on applications to the MAE program, (iii) the cost and revenue of the minor, and (iv) whether students in the minor have met learning objectives.

9. **Faculty, Staff and Administration:**

a. Describe the qualifications needed by faculty who will teach in the program.

b. Identify the number and type (contingent, tenure-track) of faculty members necessary to deliver the program.

c. Will any current faculty serve in the proposed program? If so, how will this new commitment be accommodated in their teaching load?

d. Identify the number and type (contingent, tenure-track) of *new* faculty necessary to deliver the program.

e. If new faculty are required, provide a recruitment plan and timeline, including comments addressing the challenges of filling positions with small hiring pools or where market premia might be required

f. Describe plans for providing administrative support for the program. Identify any new administrative positions or organizational rearrangements in staff needed to accommodate the new program.

The proposed minor utilizes existing courses, except for an internship to allow for service learning (NSCI 495: Internship). For this reason, no new faculty are needed to deliver this program.

Dr. Andrea Munro and Dr. Ksenija Simic-Muller will serve in the program as PIs on the Robert Noyce Teacher Scholarship grant. The internship course will be taught as a remote course on an as-needed basis as an alternate to NSCI 350: STEM Education Partnership. The internship course is anticipated to have small enrollment (< 3 in a term when needed) and not requiring FTE. As this program begins, both Munro and Simic-Muller receive compensation as summer salary through the National Science Foundation grant. When the program is assessed at the end of academic year 2023-2024 it will be important to assess how often NSCI 495 is taught and whether it is in-load.

No new administrative positions or organization rearrangements are anticipated for this minor.

10. **Facility and Technology Needs** – Includes but not limited to classroom, office, studio, laboratory, storage, technology, and computer labs.

a. Describe any new construction or facility renovations necessary to launch or maintain the program and the associated expenses.

b. Describe any furniture and/or equipment necessary to launch or maintain the program.

c. Explain any special security considerations associated with the program.

d. Identify possible health and safety concerns associated with the program.

No new facility or technology needs are anticipated for this program.

11. Library Resources:

a. Describe library resources needed to support the program, including print books, electronic materials, and other library resources.

b. Does the new program require access to library resources not already available? Are these mandated by any program accreditation?

c. If program is fully online or blended, describe how library resources will be delivered to students. Include expenses for postage, photocopying, etc.

No new library resources will be needed to support the program.

12. Student Services—Are there any changes in existing student services needed to accommodate the program? Will adding the program result in changes in service provision to the rest of the student body? Where might additional resources be necessary, and what are the projected expenses for those resources?

a. Financial aid

b. Registration

c. Center for Student Success (advising, tutoring)

d. Other

No new student services are anticipated for this program.

13. Budget. Use information from the questions above to complete the table. Please see footnotes for additional information.

Year	Year Zero	Academic Year 1	Academic Year 2	Academic Year 3	Academic Year 4
# Students in Program[i]	0	2	4	6	6
# Faculty FTE to Deliver Program[ii]	0	1-2	1-2	1-2	1-2
# *New* Faculty FTE to Deliver Program[iii]	0	0	0	0	0

Average Faculty Salary in unit[iv]	-	-	-	-	-
# Administrators or Staff[v]	0	0	0	0	0
# *New* Administrators or Staff[vi]	0	0	0	0	0
Average Administrator or Staff Salary[vii]	-	-	-	-	-
Services & Purchases[viii]	0	0	0	0	0
Facility and Technology[ix]	0	0	0	0	0
Library Resources[x]	0	0	0	0	0
Student Services[xi]	0	0	0	0	0
Net	0	0	0	0	0

i. Identify the projected number of students *declared* in the new program for each of the first four years of the program.

ii. Identify projected faculty FTE for each of the first four years of the program.

iii. Identify the number of additional (new) faculty FTE (whether new of contingent) necessary to add in each of the first four years of the program.

iv. Identify average faculty salary in the proposed program in consultation with the Provost's Office.

v. Indicate the projected staff/administrator FTE for each of the first four years of the program.

vi. Identify the number of additional (new) staff/administrator FTE necessary to add in each of the first four years of the program.

vii. Indicate the average staff/administrator salary.

viii. Indicate the annual services and purchases budget required for each of the first four years of the program, including any projected expenditures required for start-up expenses. *Itemize these expenses in an attached narrative*.

ix. Estimate facilities and technology expenses for each of the first four years of the program.

x. Estimate library expenses for each of the first four years of the program.

xi. Estimate student services expenses

14. Risk management

Describe the major risk considerations of the plan and the steps that could be taken to mitigate or minimize the risk and still implement a successful plan. For example, if applicable, the plan may encounter problems associated with items such as negotiating a lease contract, obtaining city or government approvals, obtaining accreditation approval, etc.

This program has no risk. There is no approval needed or leases to sign. The minor is a component of a project funded by National Science Foundation.

15. Accountability and Exit Strategy:

a. Outline the steps that will be taken to review whether the program is meeting its enrollment and revenue targets, including the timeline for such review. For new undergraduate programs, provide a 5-year timeline; for new graduate programs, provide a 3-year timeline.

b. Provide an exit strategy, including a general timeline for deciding whether to terminate or continue the program and a plan for teaching out the program.

c. Identify who will be responsible for providing accountability and oversight for the program meeting its enrollment and revenue targets.

As part of the National Science Foundation funded project, we will examine participation and interest in the minor and will consider whether the minors opt to pursue teaching degrees through PLU's MAE program. The development of this minor is currently being funded by a 5-year, $1.2 million Robert Noyce Teacher Scholarship grant from the National Science Foundation. As part of the grant, the minor will be assessed toward the end of the grant period in Spring/Summer 2024 (and at the end of the grant period). At that point we can assess (i) the popularity of the minor, (ii) the impact of the minor on applications to the MAE program, (iii) the cost and revenue of the minor, and (iv) whether students in the minor have met learning objectives.

The minor should be assessed within 3 years to determine whether it is meeting enrollment targets of ~ 4 students per year. The program does not have revenue targets.

16. Communications Checklist. The persons/offices listed below should be consulted as the proposal is prepared.

	Signature	**Date**	**Level of Support:** • **Support** • **Undecided** • **Do not support**

Chair			
Dean			
Associate Provost for Undergraduate or Graduate Studies, as appropriate			
Provost			
Accreditation Liaison Officer			
Director of the Library			
Registrar			
Student Financial Services			
Director of Admission			
Executive Director Center for Student Success			
Vice President for Administrative Services			

May 2020

NSCI 495: Internship (4 credits)
Fall 2022

Assoc. Prof. Andrea Munro
Email: munroam@plu.edu
Office Hours: M 1-3 pm, R 10 am - noon

Course Description
This course is offered as part of the STEM Education minor as an alternative to NSCI 350 and is available for declared STEM Education minors after approval from the chair of the STEM Education minor. This course is administered as an online course that is paired with a concurrent teaching or tutoring internship that has been approved by the chair of the STEM Education minor. The internship must involve teaching, tutoring, or mentoring throughout the term and be a minimum of 40 hours. You must have a supervisor for the internship and that supervisor is expected to provide an evaluation of your work as part of this course.

Learning Objectives for the Course
In this course you will:

1. routinely engage in teaching or tutoring for a minimum of 40 hours during the term
2. reflect on your teaching or tutoring experiences as a way to improve your own teaching and to develop your own teaching style and philosophy
3. reflect on the complexity of teaching and teaching structures
4. Understand, implement, and analyze principles and practices for enacting culturally sustaining teaching

Learning Outcomes for the Minor:

PLU students who complete the minor will:

1. develop STEM content knowledge
2. practice and develop their own teaching style and philosophy
3. engage in critical reflection by considering issues from multiple perspectives
4. cultivate respect for diverse cultures and ways of knowing, which will allow them to teach all students effectively using culturally sustaining pedagogy
5. begin to recognize how culture, tradition, and training shapes our assumptions and will begin to apply that understanding to effectively engage with students

Course Assignments

- **Internship work:** Throughout the term you are expected to keep a journal and activity log. In the log, you should record the dates and times you engaged in teaching or tutoring and write a paragraph about what you experienced that day. You can use the journal and activity log when writing Reflection 2 and the Final Reflection.

The journal and activity log must be submitted at the end of the term either as a hard copy to the instructor or as a pdf to the Sakai website. Consult with the instructor about these options before starting the journal and activity log.

- **Initial Reflection:** You will write an initial reflection in the style of an essay before beginning your internship. Within the reflection, you should:
    - Describe two impactful experiences you had while teaching or tutoring. If you do not have previous experience as a teacher or tutor, consider your own experiences when working with a teacher or tutor. What made them impactful? How do those experiences inform how you think about teaching?
    - Describe how will you develop relationships with students that capitalize upon their knowledge and interests and help cultivate their active engagement with learning?
    - Describe what you hope to learn and what skills you hope to improve during this internship?

  Your reflection should be uploaded to the Sakai course site within the first two weeks of the term.

- **Meeting with NSCI 495 Instructor:** You are required to meet with the instructor to discuss your initial reflection and your internship experiences. At this meeting, you and the instructor will also review your journal and activity log. The instructor will also assign a set of readings about teaching pedagogy. This meeting should occur sometime during Weeks 3-6 of the term.

- **Reflection 2:** You will write a reflection in the style of an essay after having begun your internship. It is best if this occurs in the middle of the term after you have completed the assigned readings so that you can draw on the readings when you write your reflection. Within the reflection, you should:
    - Describe your experience with the internship so far. What have you enjoyed and what has been difficult?
    - Describe what has surprised you during your internship. Why was it surprising? What insights/questions does this bring about?
    - Describe what you have done to get to know your students strengths and interests and to cultivate their active engagement in learning.
    - Describe some ways you assess whether the students you are teaching or tutoring are learning the material.
    - Describe which teaching approaches or techniques have been effective and which have been ineffective.
    - Describe how your teaching style and philosophy has developed so far in the internship.
    - Connect what you have observed in your internship with the readings you were assigned. Do your observations match what was in the readings?

Your reflection should be uploaded to the Sakai course site within Week 7-9 of the term.

- **Final Reflection:**You will write a final reflection in the style of an essay at the end of the term. Within the reflection, you should:
    - Describe your experience this term, focus on any situations that were particularly important or transformative for you.
    - Describe what you have learned through your internship experience.
    - Describe how your understanding of what makes someone an effective teacher has developed.
    - Describe ways you have included culturally-responsive pedagogy in your approach.

  Your reflection should be uploaded to the Sakai course site during finals week.

- **Evaluation from Internship Supervisor:** The instructor will request an evaluation from your internship supervisor. At the start of the term, you are expected to provide the instructor with contact information for your internship supervisor. This evaluation will serve as 7% of your grade.

Grading

	Total points
Initial Reflection	50
Meeting with NSCI 495 Instructor	25
Reflection 2	100
Final Reflection	100
Journal & Activity Log	50
Evaluation from Internship Supervisor	25
Course Total	350

Final Grading Scale

Point Total	Percentage	Letter Grade

360-400	90-100	A- to A
320-356	80-89	B- to B+
280-316	70-79	C- to C+
240-276	60-69	D- to D+
0-236	0-59	E

Expectations
As ambassadors of PLU working on or off campus, students enrolled in this course are expected to conduct themselves professionally at all times.

Professional behavior includes:

- Attentiveness to on-time arrival for internship experiences.
- Clear and frequent communication in-person, by phone, or by email with the course instructor and your internship supervisor.
- Professional and respectful behavior, language, and dress, especially when visiting off-campus locations to teach or tutor.