



The Maine Center for Research in STEM Education

Faculty Course Modification Incentive Grants and Maine Learning Assistant (FIG-MLA) Program

Letters of Intent Due by Email: February 6, 2019. See page 4. Send letters to erin.vinson@maine.edu.

Full Proposals Due Online: February 28, 2019. See page 5.

One-on-one Information/Q&A Meetings: As requested – please email Erin.

The Maine Center for Research in STEM Education ([RiSE Center](#)) is pleased to invite science, technology, engineering, and mathematics (STEM) instructors at the University of Maine to apply to the [Faculty Course Modification Incentive Grants and Maine Learning Assistant \(FIG-MLA\) Program](#) for the **2019-2020 academic year**. The FIG-MLA Program is an innovative, growing, and successful program that improves undergraduates' STEM course experiences and learning outcomes while providing a rewarding professional development opportunity for exemplary STEM majors and STEM faculty.

The goals of the FIG-MLA program are to:

- improve the quality of undergraduate STEM education,
- promote research-based teaching,
- prepare talented STEM majors for careers in teaching, and
- encourage institutional change in the way STEM courses are taught.

Through the FIG-MLA program, STEM instructors receive assistance in planning and implementing course modifications that incorporate research-based techniques for STEM instruction, including those that promote active learning and peer learning. MLAs serve as peer instructors, facilitating group work and assisting faculty as they transform their courses to incorporate more interactive-engagement and student-centered instruction. MLAs learn to use innovative, research-based instructional strategies, develop relevant pedagogical skills, deepen their content understanding, and have the opportunity to explore their interest in STEM teaching, while participating in a vibrant community of peers and faculty. RiSE Center graduate students and staff assist STEM instructors in gathering and analyzing data to support course improvements. These supports and the professional community fostered by the RiSE Center have profound, positive impacts on the STEM course experience offered to University of Maine undergraduates.

Enrollment in multiple FIG-MLA courses is a factor in stronger institutional retention for first year students, with 79% of FIG-MLA students (those who have taken two or more FIG-MLA courses) retained compared to 69% of Non-FIG-MLA students within highly impacted majors. In addition, FIG-MLA courses and course sections have significantly lower course fail rates (also known as DFW rates) than Non-FIG-MLA courses and sections within a comparable pool of STEM courses. In other words, students in FIG-MLA courses experience higher rates of course success than students in comparable courses that are not involved in the FIG-MLA program. Course success is a strong predictor of institutional retention.

Across two recent academic years (2014-15 and 2015-16), 77% of incoming STEM majors took at least one FIG-MLA course. All parties to the FIG-MLA program including students, faculty, and Maine Learning Assistants, self-report important academic and professional benefits as a result of the program. As of the 2018-2019 academic year, 42 instructors with 43 courses in 15 departments have received awards. To date, 376 undergraduate students have been hired as MLAs. The program is funded by the University of Maine.

I. As a FIG-MLA awardee, STEM instructors will receive:

Summer salary

Selected instructors will receive \$2500 summer stipend for two summers. During the first summer, prior to the first offering of the modified course in the 2019-2020 academic year, instructors will plan instructional changes or enhancements and further develop plans for gathering data to assess student learning in their course. Instructors will receive \$2500 summer stipend for the second summer, following the first offering of the modified course and will analyze the impact of the instructional changes on student learning in their course and revise instructional plans. Instructors are encouraged to collaborate with colleagues; however, a total \$5000 of summer stipend may be requested per proposal. If you have a colleague (or colleagues) who are also interested in reforming the same course, please contact us to discuss multi-faculty course proposals.

Undergraduate Maine Learning Assistants

Incorporating undergraduate students as Maine Learning Assistants (MLAs) as part of the method for implementing the proposed instructional modifications must be a component of the proposed project. These undergraduate students will assist with instruction. MLAs are currently paid \$11/hour (this will increase to \$12/hour in January 2020). Students new to the MLA program are required to enroll in INT 492 Maine Learning Assistant Pedagogy Seminar, a 1-credit course about teaching and learning. Tuition for INT 492 is paid by the program.

MLAs will **not** be expected to do grading of any kind or hold private one-on-one office hours. MLAs will be selected from among students who were successful in your course during a previous semester or who have shown previous knowledge for the course content. A formal application and interview process is required for the selection of MLAs. You will need to communicate with the program in this process and RiSE Center staff will provide assistance in identifying and selecting MLAs for your course.

Assistance with instructional design and evaluation

Instructors will also have the assistance (up to 20 hours for year 1 and for year 2) of a graduate student in STEM education research to collaborate in course development, data collection, and/or data analysis to evaluate the course modification. RiSE Center staff (Program Coordinator Erin Vinson and Research & Evaluation Coordinator Laura Millay) and FIG-MLA Faculty Consultants (Natasha Speer and MacKenzie Stetzer) will also assist as needed and as time permits. We encourage faculty to speak with UMaine's [Center for Innovation in Teaching and Learning](#) staff for feedback and assistance with course design.

II. Expectations of FIG-MLA Program Instructors:

- upon award recommendation, meet with program staff and instructor's department chair to discuss the program, award, and commitment.
- hold weekly content preparation meetings with MLAs (this may be combined with regular weekly meetings with graduate student teaching assistants (TAs), if applicable).
- develop and implement proposed assessment plan for measuring impacts of instructional changes on student learning. We can work with you to develop an assessment plan prior to proposal submission.
- administer pre- and post-semester surveys for program evaluation. (We gather these data for program evaluation purposes and not as an evaluation of individual faculty or individual projects.)
- attend meetings with other faculty in the program to discuss project plans, assessment design, data analysis, challenges, successes, etc.
- write a brief report of the project for each semester the modified course is offered.

III. Proposal Evaluation Procedure and Anticipated Funding Schedule:

Timeline

Letters of intent are due on **February 6, 2019**. Letters will be reviewed and members of the FIG Review Committee will work with instructors to fine-tune their proposal. Full proposals are due by **February 28, 2019**. Final funding decisions will be made by **March 11, 2018**. Maine Learning Assistant recruitment will begin mid-March for all Fall 2019 FIG-MLA courses, and mid-October for Spring 2020 FIG-MLA courses.

Funding Schedule

Note that we are in the process of trying to minimize the burden on individual departments for large introductory courses, so this schedule may be subject to change for such courses.

The estimated cost of MLAs includes the stipend and tuition (for new MLAs).

- **Year 1 and Year 2:** The RiSE Center covers 100% of the cost of MLAs in the selected course at 100% (roughly \$1500/MLA) as well as two instructor summer stipends of \$2500 each.
- **Year 3 and Year 4:** Departments are expected to cover 50% of the cost of MLAs (roughly \$750/MLA). RiSE staff can help instructors work with department chairs to secure funding from departments.
- **Year 5+:** Departments are expected to cover 75% of the cost of MLAs (roughly \$1125/MLA). RiSE staff can help instructors work with department chairs to secure funding from departments.

FIG-MLA Program Contacts

- Erin Vinson – RiSE Center Campus Programs Coordinator
 - erin.vinson@maine.edu / 581-4666
- MacKenzie Stetzer – Assoc. Professor, Dept of Physics & Astronomy and FIG-MLA Faculty Consultant
 - mackenzie.stetzer@maine.edu / 581-1033
- Natasha Speer – Assoc. Professor, Dept of Mathematics & Statistics and FIG-MLA Faculty Consultant
 - natasha.speer@maine.edu / 581-3937

IV. Letter of Intent Instructions

Email a 1-2 page letter of intent to Erin Vinson (erin.vinson@maine.edu) by **February 6, 2019**. The letter of intent should include the following:

1. Instructor Information:

Name of primary instructor:

Name of additional instructor, if applicable:

Department:

Email address:

2. Course Information:

Course to be modified (number and title):

Semester(s) taught:

Expected course enrollment:

Approximate number of times you have taught this course:

Describe the course in its current form. Include information about how time in class is typically spent (e.g., use of lecture, lab activities, group work, etc.).

3. Course Modification:

Number of Maine Learning Assistants requested:

What motivates you to want to introduce or enhance the student-centered, active learning instructional practices used in the course?

What are the student-centered, active learning instructional practices you would like to introduce or enhance in your course? Why do you believe these changes are likely to improve student learning in your course?

Describe in detail how you plan to incorporate the use of MLAs into your course.

4. Department Support

We encourage you to share information about this program and your ideas for course modifications with your department chair and colleagues. As a part of the **full proposal**, we now require a letter of support from your department chair regarding ongoing support of funding MLAs beyond the first two years of RiSE Center support. Upon award recommendation, program staff will meet with you and your department chair to discuss the program, award, and commitment.

V. Requirements of Full Proposals

Instructors who submit a letter of intent will be invited to submit a **full proposal online**. Full proposals are due by **February 28, 2019**. Below are the requirements to be included in the full proposal.

A. Course Details

- i. Department
- ii. Course number and title
- iii. Expected course enrollment
- iv. Number of MLAs requested
- v. Semester(s) you teach the course
- vi. Approximate number of times you have taught this course (or one similar)

B. Course Modification: The proposed additions or enhancements to the course must involve active learning, research-supported instructional practices. These can include (but are not limited to) integrating clickers (student response systems) into a large lecture, incorporating collaborative group work into recitations, or integrating small group discussion into a large lecture.

- 1) Describe in detail how you are proposing to modify this course. Be sure to address:
 - a) what your students will be doing differently in your modified course,
 - b) what will you be doing differently, and
 - c) any instructional practices that you will introduce or enhance.
- 2) Why do you believe these changes are likely to improve student learning in your course?
- 3) Discuss any challenges you anticipate in modifying your course and meeting the guidelines of the FIG-MLA program. Are there any areas in which you would particularly like to be supported?

C. Required Elements of Modification: The changes or enhancements to the course must make use of MLAs in either lecture or recitation/lab, or both. The MLAs are undergraduates who have done well in the course previously or are otherwise knowledgeable about the course content and are hired to facilitate small group interactions. The way in which MLAs are used may take many different forms including (but not limited to) having MLAs assist during recitations/labs or having MLAs in lectures to help facilitate small group discussions or Peer Instruction.

- 4) Describe how you plan to incorporate MLAs into your course.
- 5) Please list below how your MLAs will spend the 7 hours of work per week. Remember, MLAs are not allowed to grade or to schedule one-on-one meetings with students.
Example: 3 hours in lecture facilitating student discussion, 1 hours for content prep meetings, 2 hours in recitation, and 1 hour for preparation.
- 6) Please explain what having the MLAs in your course will enable you to do that you couldn't do without them.

D. Description of Rationale and Assessment. Proposals should include a rationale for the proposed changes and their potential to improve student learning. Proposals should also include plans for assessing the impact of the changes on students' learning, attitudes, and experience in the course.

7) What improvements in student outcomes do you want to accomplish through the changes you have proposed. How do you plan to assess the success of your course modifications?

8) Faculty in this program use data to inform instruction. What data will you gather and what instruments will you use? Note: if you need help or would like some suggestions, please contact Erin Vinson (erin.vinson@maine.edu).

E. Department Support and Supporting Documents

Funding Schedule

- **Year 1 and Year 2:** The RiSE Center covers 100% of the cost of MLAs in the selected course at 100% (roughly \$1434/MLA) as well as two instructor summer stipends of \$2500 each.
- **Year 3 and Year 4:** Departments are expected to cover 50% of the cost of MLAs (roughly \$717/MLA). RiSE staff can help instructors work with department chairs to secure funding from departments.
- **Year 5+:** Departments are expected to cover 75% of the cost of MLAs (roughly \$1075.50/MLA). RiSE staff can help instructors work with department chairs to secure funding from departments.

9) We encourage you to share information about this program and about your proposal with your department chair and colleagues. If your department is interested in helping fund your project (e.g., by providing financial support for some MLAs, your summer salary, etc.), please describe their planned contributions.

10) Supporting documents. Please email the following to Erin Vinson at erin.vinson@maine.edu

- a) a copy of your resume/curriculum vitae
- b) a letter of support from department chair/director

11) Any additional comments you would like to include for consideration of your FIG-MLA program proposal?