**2017 Smathers Libraries Strategic Opportunities Grant**

**PROJECT PROPOSAL NARRATIVE and BUDGET NARRATIVE**

**Application due: May 15, 2018, 5:00PM**

Please use the format provided below to structure your proposal.

**PROPOSAL NARRATIVE**

**Length:** Maximum 4 pages of text (single-space)

1. Describe the project: goals, objectives, activities, etc.

The primary investigators of this proposal are currently developing a 3 credit class *(Foundations of Quantitative Thinking in R)* for the Microbiology & Cell Science department. The class will be

The proposed course will cover basic data science concepts, including statistics and the R programming language. The goal of this project is to create 14 Canvas modules for that class. Each module will be a self-contained learning object that introduces the student to either a fundamental statistical idea (t-tests, z-scores, variance, central tendency, etc.) or a facet of the R programming language (data management, graphing, etc.).

Not only will the 14 Canvas modules be used in this new class, but they will also be available for reuse in other classes across campus. And eventually, the class will be offered as a non-credit (free) option on the Canvas Network, an open education platform managed by the university’s online learning system vendor.

The immediate goal, however, is to create a foundational data science sequence for Microbiology & Cell Science, eventually leading to a departmental minor. The class will be an integrated part of the curriculum, a pre-requisite for Dr. Ana Conesa’s upper-division class MCB4325C (R for Functional Genomics).

The modules to be created with funds from this proposal are listed below:

|  |
| --- |
| Module |
| Getting Started in R |
| Basic Data Management in R |
| Basic Graphing in R |
| Frequency Distributions |
| Central Tendency |
| Variability |
| z Scores |
| Distribution of Sample Means |
| Hypothesis Testing |
| T Tests |
| Confidence Intervals |
| ANOVA |
| Correlation and Regression |
| Chi Square |

1. State why this project is important (e.g., what need does it address, what will it accomplish, who benefits, how does it support the [mission and strategic directions](http://cms.uflib.ufl.edu/portals/communications/Strategic-directions-complete.pdf) of the library).

The demand for quantitative thinking and data science skills has never been greater, especially in the life sciences. For example, the American Association for the Advancement of Science (2011) *Vision and Change* report includes data analysis as a core competency in biology education. They write, “Developing the ability to apply basic quantitative skills to biological problems should be required of all undergraduates, as they will be called on throughout their lives to interpret and act on quantitative data from a variety of sources” (p. 14).

The primary beneficiaries of this proposed project are undergraduates in the life sciences as well as faculty who teach at the undergraduate level. Graduate students who need to review and/or refresh their understanding of basic data science concepts will also benefit from these learning modules. As UF’s Microbiology & Cell Science undergraduate program is the largest of its kind in the United States, the impact of this project will be significant, not just locally but internationally as well.

This grant proposal supports the UF Mission and UF Libraries Strategic Direction: Transformative Collaboration, goals 1 & 2 “*Become a learning organization with a culture that strengthens and encourages collaborative initiatives*” and “*Engage with the University community as an expert partner.”* The project team believes that the data science modules developed for this project will serve as a foundational data science resources for microbiology faculty around the world.

1. What are the innovative components of this project?
2. Compare and contrast the proposed project to other similar projects in academic libraries.

This proposal is similar to two previous Mini-Grant projects. The first – *Developing a 3D Printing Education Resources Collection* – was funded in 2015 and was led by Neelam Bharti and Sara Gonzalez. The second – *Developing a UFDC Teacher Resources Collection –* was funded in 2012. That project, led by Marilyn Ochoa, created the Teacher Resources Collection within the UFDC with the goal to “increase visibility and use of collections hosted by the UFDC by building a usable digital collection of teacher resources for the UFDC.” <http://ufdc.ufl.edu/AA00013459/00001?search=ochoa>.

At present, the primary investigators are unaware of any initiatives similar to the one proposed here at academic libraries in our AAU (Association of American Universities) peer group. While many of our peers offer statistics and R programming support services, this project is unique in the depth of collaboration involved.

1. Explicitly describe the resources needed and committed to complete the project and impacts on other departments (e.g., personnel, equipment, supplies, travel, space, training, IT support, preservation, cataloging, other).

Dan Maxwell will act as Primary Investigator (PI).

Monika Oli will act as a Primary Investigator (Co-PI).

Christine Fruin’s replacement will serve as a copyright consultant.

Barbara Hood will create promotional materials to market the Canvas modules.

1. Provide a plan of action for the project. Include a timeline to show that the project can be completed in 12 months, and specify activities and roles to be performed by the principal investigator (PI) and others involved in the project.

|  |  |  |
| --- | --- | --- |
| Time Period | Activity | People |
|  |  |  |
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1. If the project is collection specific: Who owns the collection and where is it located? What copyright issues, if any, is the applicant anticipating?

All materials created for this project will be housed in Canvas and available from within that system. A supporting GitHub repository will also be maintained by the primary investigator.

1. Provide a means of measuring the success of the project. What are the expected results, final product, and projected use?

The project will be assessed using a variety of modalities, including surveys, usability tests, research studies, and direct faculty input. Additionally, student learning outcomes will be continually measured using proven methods to determine the effectiveness of the Canvas modules.

1. How will the project team disseminate information about the project, and how will it share results?

The project team plans to disseminate information about this project through direct contact with Microbiology & Cell Science faculty, to include promotional emails as well as workshops and seminars that highlight the use of these Canvas modules in the curriculum. As well, scholarly articles that discuss the impact of this project and its outcomes will be submitted to peer-reviewed journals such as *Journal of Statistics Education* or *Journal of Microbiology and Biology Education*.

1. What are the long-term financial implications if the project is successful? For example, if a pilot project using e-book readers is successful, what would be the cost to the Libraries, annually, to support a new loaned e-book reader service?

If this project is successful, it has the potential of becoming an essential resource in the field of microbiology and cell science. Because the deliverables for this project are Canvas modules, the library will incur no ongoing technical support costs as Canvas is supported by UFIT. The project team will continue to support and enhance the modules after this project ends.

1. Provide a plan for what will happen to equipment/supplies purchased with these funds after the project ends.

No equipment or supplies will be purchased.

NOTE: Please see application guidelines for additional instructions to support narrative content.

**BUDGET NARRATIVE**

**Length:** Maximum 1 page of text (single-space)

1. Provide a detailed explanation for how each expense was calculated.

Wages ($3540.00): An OPS students will be hired at $15 per hour. We estimate that this individual will work approximately 236 hours to write sample code, video scripts, and narratives for the modules. ($15.00/hr x 236 hrs/each = $3,540.00 (salary) + $255.00 (fringe) = $3795.00 total).

1. Provide a justification for each expense required to carry out the project.

Funds are requested to hire at least one student to develop the case-studies and produce ancillary educational materials. The individual hired for this project will be proficient in the R programming language and familiar with the literature of the life sciences.

1. Provide a detailed explanation of the PI’s role vis-à-vis effort (does not qualify as a cost share match).

The PI's role constitutes a large part of the planning and execution of the project. The PI will lead the project team in hiring, supervising student employees, and evaluating the Canvas modules. The PI will also be responsible for training the OPS students, resource development, setup of the Canvas repository, and solicitation of feedback from Microbiology & Cell Science faculty and students.

1. Provide a detailed explanation of the contributed cost share by project team members toward the required 10 % matching requirement.

Cost share includes a Copyright Librarian for consultation on primary source usage and PR staff for promotion of the collection.

NOTE: Please see application guidelines for additional instructions to support budget narrative content.

References

American Association for the Advancement of Science 2011. Vision and Change in Undergraduate Biology Education: A Call to Action: a summary of recommendations made at a national conference organized by the American Association for the Advancement of Science, July 15–17, 2009. Washington, DC.