



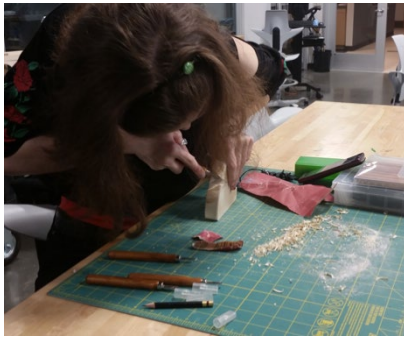
QEP Call for Proposals for Integration of Making into Courses

Date: September 20, 2019



We are excited to announce the third call for proposals for the program aimed at encouraging faculty to integrate making into the undergraduate curriculum.

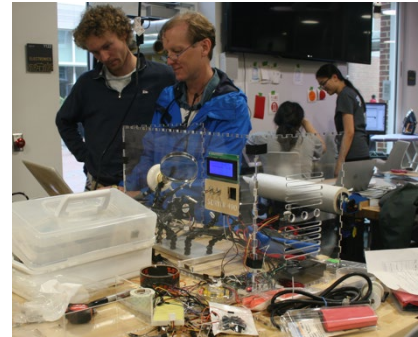
Making is an iterative learning process of tinkering, designing and building that turns ideas into objects. Making enhances learning opportunities for students and provides fun, collaborative ways to deeply engage the content they are exploring.



A student carves a container to explore the material properties of wood as part of an Art History course



A student uses sewing and laser cutting to create an educational tool for teaching Neuroscience



A student and professor discuss an Applied Physical Sciences project, a shoe dryer that uses sensors.

Interested, but not sure where to start? Apply to be part of the Makerspace Course Development Faculty Learning Community (FLC), a growing community of faculty that are integrating maker projects into their courses in novel ways. Accepted applicants will participate in monthly meetings with their peers where they will discuss best practices for integrating making into their courses, from developing learning outcomes to structuring assessment.

As part of the 2017 Quality Enhancement Plan (QEP.unc.edu), applicants accepted into the 2020/2021 Makerspace FLC cohort will:

- Receive a **\$5,000 stipend** for their time as they develop or enhance a proposed course
- Participate in monthly Makerspace FLC meetings, facilitated by makerspace staff and experienced Makerspace FLC faculty
- Gain access to extra support from makerspace staff such as an initial materials budget, faculty prototyping sessions, and scheduling private access to the makerspaces.



Photo: Makerspace FLC professor Bill Brown works with ARTS490/COMM690 students on 3D printing.

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Timeline

October 1, 2019 – January 15, 2020: (Optional) Application consultations available by appointment

January 17, 2020 (by 5pm): Applications due

March 2, 2020: Recipients notified

April 2020: Recipients will participate in BeAM orientation and a planning meeting

Summer 2020: Recipients will prototype their course project in the makerspace with support from the BeAM Program Coordinator

Fall 2020 – Spring 2021: Recipients will participate in the Makerspace FLC (faculty learning community)

Makerspace Program of the QEP

The Makerspace program focuses on one aim of the QEP: translating novel ideas generated through discovery into tangible form. While making has impacted research and extracurricular activities on campus, the QEP makerspace program specifically focuses on the undergraduate curriculum across all disciplines, forging natural connections between the arts and humanities and the sciences. A broad goal of all QEP programs is for students to learn about failure, iteration, and resilience. Makerspace courses have a unique opportunity to give students the time to experience and grow in these ways.

Students who complete a Makerspace course will be able to:

- Apply design-thinking and iterative processes to develop ideas related to course concepts.
- Articulate specific ways experiential learning through Making has enhanced understanding of course concepts.

- Produce work that shows evidence of innovation, risk-taking, collaboration, a design process, fabrication, documentation, and communication of process.
- Effectively critique others' work and use critiques of their own work for improvement.

Project Ideas

Making brings hands-on collaborative learning to students and can take many forms. Here are a few examples of previously accepted projects to spark your creativity:

- PHYS100: Students investigated the physics of everyday objects and applications by creating escapements (the “ticking” part of a clock) to explore the physics of time.
- COMM690/ARTS490: Students explored various methods of creating cinema by recreating and remixing movie-making tools (e.g., 3D printing models for zoetropes.)
- PSYC424: Students use the Makerspaces to design and fabricate interactive, hands-on models that they use to educate a wide range of people in the community about neuroscience processes.

Students in these courses also presented their work professionally on campus at an exposition that occurs each semester. These courses and others can be found at:

<https://qep.unc.edu/makerspace/course-listings/>.

Strong proposals incorporate project-based learning (PBL). These are projects that extend over a semester, are challenging, include student input and reflection, teach effective critique, and include public-facing components. An article from TeachThought nicely summarizes the difference between projects and PBL: “Projects can represent a range of tasks that can be done at home or in the classroom...quickly or over time. While project-based learning (PBL) also features projects, in PBL, the focus is more on the process of learning and learner-peer-content interaction than the end-product itself.”

Makerspace Resources

BeAM@CAROLINA is a network of makerspaces where any UNC student, staff, or faculty member can join the UNC maker community in the design and creation of physical objects for education, research, entrepreneurship, and recreation. The makerspaces are equipped with a wide variety of tools, including 3D printers, laser cutters, vinyl cutters, sewing machines, electronics, a metal shop, and two woodshop areas. A full list of the BeAM resources and facilities may be found at: <https://beam.unc.edu/locations/>. *We strongly encourage you to schedule a visit.*

Instructor Eligibility

Full-time faculty members in all academic units are eligible to apply. They must also be listed as the instructor of record for the course. Applicants need not have prior experience with the makerspace tools. Instructors must be willing to learn and apply new technologies and pedagogies. Applicants must also take responsibility for the development and execution of their projects. Instructors may apply in pairs for shared projects.

Course Eligibility

Existing courses taught at least once during the 2020-2021 academic year, including summer session courses, are eligible. Small or large classes in any discipline are eligible, as are courses falling under categories such as First Year Seminars or Honors courses.

Constraints

The proposed integration should not rely on regularly scheduled class meetings in the BeAM facilities due to limited physical space and time constraints in the BeAM Makerspaces. The assignment should have students working both individually and in small groups outside of class. This should be considered an integration of an extended assignment, not a course redesign.

Awards

Accepted applicants will receive \$5,000 for course development and Faculty Learning Community (FLC) participation upon successful completion (see Deliverables section below). This award of \$5,000 may be split between two instructors working on a joint proposal.

BeAM will provide a one-time materials budget of \$500 during the 2020/2021 academic year to support prototyping and testing new projects. Additional support from BeAM staff will be provided to Makerspace FLC members, including project prototyping sessions for faculty, reserving 2-3 private sessions in the makerspaces for classes, and providing resources for digital design support.

Deliverables

All FLC participants are expected to submit a complete course that incorporates design and making at the conclusion of the FLC. This will be posted on a shared Sakai site, and will include course objectives for making, a syllabus, learning exercises, an early semester making experience, a full semester making project, and rubrics that assess the processes and outcomes involved in design and making for the course.

After the 2020/2021 academic year, accepted applicants are expected to remain a part of the Makerspace FLC community by serving as peer mentors for the 2021/2022 Makerspace FLC cohort through application consultations and classroom observations. Attendance at future FLC meetings is optional but welcomed.

Faculty Learning Communities

Grant recipients are required to take part in regularly scheduled Faculty Learning Community (FLC) meetings. These meetings will allow faculty to share ideas, problems and solutions around their integration of making projects into courses. The FLCs will meet eight to ten times in a calendar year.

Recipients are also required to participate in faculty surveys, interviews, and peer visits. They will prototype a small version of their course project with help from the BeAM Program Coordinator during the summer before the 2019/2020 academic year begins. They will facilitate documentation of student projects and minimal student surveys regarding the project's efficacy. They also must present (alongside their students) in at least one session of

the QEP Making and Research Expo, which occurs once a semester during the 2019/2020 academic year.

How to Apply

Step 1: (Optional) Schedule application consultation

During their application process, applicants may wish to discuss their ideas with faculty who have experience with integrating the BeAM makerspaces in their coursework. Optional application consultations can be scheduled with at least 3 weeks advance notice. The objective of this consultation is to help applicants submit the best proposal possible. Applicants do not need to have a proposal written to schedule the meeting, but it will be helpful to have to best ensure that all required parts of the proposal are present and presented well.

Please fill out the form at <https://makerspacecfp.web.unc.edu/consultation/> and the BeAM Program Coordinator will be in contact with you to set up a consultation.

Step 2: Develop proposal

Proposals will be reviewed by a committee of faculty and staff members, and should include:

1. A signed letter or memo from your department chair endorsing the proposed course and the plan to offer it in the 2020-2021 academic year (including summer sessions), as well as plans for beyond the first year's offering. Stronger proposals will offer the proposed course on a routine basis.
2. A brief narrative of ~ 1,500 words that addresses:
 - A description of the course and plans for how integration of making or fabrication activities will improve student learning.
 - How this course supports learning that is consistent with the learning outcomes described above.
 - Typical student enrollment: class size, whether it meets General Education or academic major requirements, etc.
 - Project's significance within a course/curriculum
 - General scope of the project – unit project vs semester project, several milestone projects vs. single final deliverable, etc.
 - How your proposal aligns with the characteristics of Project-Based Learning (PBL) in which the focus is more on the process of learning and learner-peer-content interaction than the end-product itself
 - Discipline-based student learning objectives for your proposed project and how you plan to assess whether these objectives have been met
3. A statement of feasibility (a pre-application consultation can help you determine your project's general feasibility)
 - Feasibility of proposal implementation within the stated timeframe
 - Project sustainability beyond the initial offering
 - Any experience you may have with making or design-thinking that will help contribute to the success of this project. Prior experience in making is not required.

4. Signed letter acknowledging the following responsibilities:

“I will participate in a faculty learning community (FLC) that will meet eight to ten times in the 2020-2021 academic year to share ideas, problems and solutions with colleagues and professional staff related to the integration of making in my course. I will prototype a version of my course project to better understand my students’ design and making experience. I will participate in assessment activities, including: surveys/interviews/focus groups about my experience with the learning community; facilitating student surveys about their experience with BeAM; and permitting student work to be evaluated by external reviewers. I will participate alongside my students in one of the QEP Making and Research Expo events during the 2021/2020 academic year. In addition, I am willing to share what I have learned with faculty in a future FLC or seminar.”

Proposals must be submitted by **5 p.m. Friday, January 17, 2020** to the form linked here: <https://makerspacecfp.web.unc.edu/application/>

If you have questions, please contact Anna Engelke, BeAM Program Coordinator, at anna@beam.unc.edu.