



**UNIVERSITY OF
GEORGIA**
*Engineering Education
Transformations Institute*

2021 EETI Augmented, Remote, and Virtual Experimentation Grants

The Engineering Education Transformations Institute (EETI) is offering grants of up to \$8,000 each to promote online laboratories and virtual experimentation in the UGA College of Engineering. EETI is committed to promoting a thriving ecosystem of future-oriented engineering education programs at UGA. In line with this mission, EETI supports a diversity of research, programming, and other innovations that are designed to improve the overall experience of teaching and learning engineering in our College. The introduction of new media and digital technology play a central role in this effort. Furthermore, the current situation with COVID-19 and the connected online teaching efforts in the College point to the importance of online laboratory solutions to develop a sustainable and agile engineering curriculum including virtual experimentation options.

The *2021 EETI Augmented, Remote, and Virtual Experimentation Grants* described in this solicitation focus on the joint development, introduction, and exploration of augmented, remote, and virtual laboratories in engineering education in our College. *Augmented laboratories* include experimental setups that are enhanced with augmented reality during experimentation, e.g., to display real-time data at experimental equipment's point of origin. The term *remote laboratory* describes a test setup that makes use of physically existing experimental equipment, but the experimental procedure can be conducted via the internet from virtually everywhere and at any time. *Virtual laboratories* refer to virtual environments and make use of simulations instead of real equipment for the experimental procedure. All of the above-mentioned approaches include opportunities as well as challenges in terms of flexibility, capacity, range, audience, and teaching and learning methods.

The *2021 EETI Augmented, Remote, and Virtual Experimentation Grants'* goals are to promote the above-explained approaches in laboratories in the College, and to develop an innovative community of faculty around them. The grants are guided by principles of (i) supported, collaborative project development and, (ii) contributions to shared EETI capacity that advance ongoing engineering education discussions in the Institute. More specifically, awardees will participate in the existing EETI Innovative Teaching Lab Group, which will meet regularly at a time that is convenient for the awardees. This group will be facilitated by Dr. May, supported by EETI, and will collaboratively explore educational research methods in engineering education as they relate to the respective projects. This means that this cohort will provide awardees with a community and input in which to bring their projects to fruition and success.

The grants are intended to support the initiation of both (a) teaching and learning projects that directly improve the experience of teaching and learning engineering in CENGR in the context of online laboratories and experimentation and/or, (b) research projects to a point

where they are suitable for attracting extramural funding, based on pilot studies conducted within the project. Project proposals may build on existing online experimentation efforts in the College or may describe entirely new approaches. The awards (**up to \$8,000 each**) can be used for project-related materials and equipment, salary, and undergraduate student researchers. **The projects should start on Jan. 1st, 2021 and all funds must be used by the end of June 2021.** More specifically, the projects should reflect a two-step approach: **An initial research and development phase (until end of June), followed by an implementation and pilot study phase (until end of December).**

To apply for an award, applicants are asked to write a maximum **3-pg. proposal (2-page project description plus 1-page project timeline and budget)** outlining:

1. A description of the **context, problem, need, or opportunity for a new approach to labs in engineering education at UGA**, making use of augmented, remote, or virtual equipment. Applicants are encouraged to refer to their personal experiences made during phases of mandatory online learning in 2020.
2. A detailed description of the **envisioned new or enhanced laboratory within the project**, including details on at least the following aspects: i) subject area, ii) program/course context, iii) related teaching/learning goals, iv) number of impacted students, v) technical lab setup, etc.
3. **Anticipated broader impacts** on one or more of the following areas: student learning and/or professional formation in the context of experiential learning, CENGR programs, or diversity in CENGR.
4. A plan for **future work and sustainable impacts**: E.g. by i) a brief description of how the project will contribute to the College's future development in the context of the strategic plan and renovation process and/or by ii) details of the extramural funding program options that might be targeted for future research.
5. A **12-month project timeline** and plan of work (Jan-Dec 2021). And,
6. An **itemized budget** including a description of how the funds will be used for both i) the technical equipment and materials to be purchased for developing a new experimental set up (augmented, remote or virtual) or enhancing an existing setup and ii) salary.

Successful proposals will be selected by an EETI internal grant committee on the basis of their level of innovation, impact, feasibility within the given time frame, and proposal quality, as well as level of persuasion.

For further questions about the grant and possible project ideas please contact Dr. May (dominik.may@uga.edu). Please submit applications for these awards to kendrag@uga.edu by **Monday, November 30, 2020**. Successful applicants will be informed by December 15, 2020.