Sustainable Design Faculty Grants: Integrating Sustainability Principles and Frameworks in STEM I&E

We are pleased to announce a Spring Faculty Grant opportunity. VentureWell awards faculty grants to colleges and universities for the purpose of strengthening existing curricular programs and/or building new courses and programs at the intersection of invention, innovation, entrepreneurship, and impact. Through the grant funds, these powerful courses and programs lead to the creation and support of student teams while also creating a ripple effect of curricular innovation at higher education institutions.

This solicitation will support faculty and staff who are committed to integrating environmentally responsible practices and methodology into their I & E curriculum. We are seeking proposals with innovative ideas related to the development of new courses/programs or strengthening existing courses/programs that focus on the incorporation of principles and frameworks of sustainability with the end goal of novel sustainable designs and/or sustainable technologies.

Examples of sustainability principles and frameworks include but are not limited to:

- Systems thinking
- Life cycle analysis
- Green chemistry, materials or manufacturing
- Circular economy
- Biomimicry

Sustainable technology fields include:

- Cleantech sectors: energy, water, agriculture, waste, transportation, urbanism
- Novel approaches to integration with materials science, biomedical engineering, biomedicine or other disciplines

Proposals that focus on curricular development that support I&E in topical areas of critical environmental importance are highly encouraged. Topics include but are not limited to:

- Climate change
- Pollution
- Waste management
- Deforestation
- Ocean health
Please read more about the rationale for this solicitation, including information about VentureWell’s history of engagement with this topic, in the Appendix at the end of this document.

Please note: For this Spring 2019 cycle, VentureWell is accepting proposals ONLY for sustainable design or sustainable technology. If you would like to submit a proposal on another topic, please submit to a future cycle (deadline Fall 2019).

Key Dates

May 29 - submission deadline (absolutely no extensions will be made)
Early-mid July - final decisions and notifications
Summer - funds disbursed and grant start date
October - Green Launchpad Educators Workshop; attendance required for grant awardees, details TBA.

About the Grant

This Faculty Grant program provides funding, a hands-on workshop, and peer networking to support your work to integrate environmentally responsible practices and methodology into your institution’s I&E curriculum.

Grants of up to $30,000 are available with a grant duration of three years.

Eligibility Requirements

Faculty Grants are awarded to colleges and universities that are:

● US-based. We do not accept proposals from international universities at this time.
● VentureWell members. Proposals may include non-member partners from education, nonprofits, industry, NGOs, governments and/or the investment community, etc. Check your institution's VentureWell membership here.

VentureWell grants are competitive and successful proposals will include the following:

● Technology innovation/ entrepreneurship with a focus on developing sustainable technology and/or incorporating principles of sustainable design. Disciplines or industries not typically considered “green” are encouraged.
Experiential learning by doing and creative pedagogical approaches to solving real world problems.

The formation of student teams focused on technology invention, innovation, and entrepreneurship with a positive social or environmental impact, and the intention to encourage the best teams to apply to the VentureWell E-Team grant program.

Well-defined connections to a supportive entrepreneurial ecosystem for the most promising student teams to pursue commercialization beyond the proposed course or program.

A plan for continuation, and financial sustainability, of the course or program after VentureWell funding as demonstrated in letters of support.

If the program focus is outside the campus community or outside the US, a local partner must be identified.

A simple work plan or table that outlines major milestones during the grant period.

A multidisciplinary approach is preferred but not required.

Examples of projects that are NOT strong candidates for faculty grant funding include:

- Courses and programs without a focus on technology innovation and/or entrepreneurship.
- Pure research projects.
- Courses and programs that are unlikely to continue beyond the grant period.
- Existing programs where there is little change or improvement proposed (i.e., ongoing support requests).
- Course and programs that are disconnected from the entrepreneurial ecosystem on campus and in the community.
- Courses and programs that do not lead to the creation of student teams.
- Proposals that do not demonstrate support for the most promising technologies and teams to move beyond the classroom, lab, or club.

How to Apply

All proposals must be submitted online by 11:59 pm Eastern on May 29. Anyone on the team may serve as the applicant.

We accept no more than two proposals per institution. If more than two are received from any individual institution, only the first two submitted will be reviewed. Proposals may only be re-submitted once.
To start your application, you’ll need to have a VentureWell account. Creating an account is easy, and anyone can do it. To access your existing account or to create a new one, go here. You may start, save, stop, and return to your online proposal at anytime before submitting.

**Institutional Support**

Before you start your application, you should contact your Office of Sponsored Research or the equivalent well ahead of the grant deadline to inform them of your intention to submit a proposal. VentureWell requires proof of institutional support of your proposal. Most universities require a full proposal for administrative review and approval before it can be submitted to VentureWell.

These institutional representatives must verify their support of your proposal by responding to an automated email request from our proposal system and entering their initials online. (This process is triggered within the online proposal process). The system will not allow you to submit your proposal until support has been verified from each of the following individuals:

- **Principal Investigator (PI)** The Principal Investigator takes primary responsibility for the proposal and will have overall responsibility for the grant and reporting. Ideally, a tenured or tenure-track faculty and/or staff member serves as the Principal Investigator. Co-PIs are allowed, but one lead PI must be identified. Students may not serve as Principal Investigators.

- **Administrative Contact (AC)** VentureWell defines the Administrative Contact as a grants administrator or fiscal officer authorized to commit the institution to the terms of the grant. Often, the AC is someone in your institution's Office of Sponsored Programs/Research or an administrator able to manage grant funding within a department or school. Principal Investigators, other faculty, and students may not serve as the AC.

- **Department Chair (DC)** The Department Chair (or equivalent) will need to indicate his/her awareness of and support for your proposal as a demonstration of institutional commitment to the proposal. S/he has no other direct grant responsibilities beyond this support.

- **Dean of Faculty (DF)** The Dean of Faculty (or equivalent) will need to indicate his/her awareness of and support for your proposal as a demonstration of institutional commitment to the proposal. S/he has no other direct grant responsibilities beyond this support.
Proposal Components

Proposals should be specific, clear, and compelling. The following components are required and should be combined into a single PDF file:

- Project narrative, including your work plan, no more than five pages
- Proposed budget
- Resumes of Principal Investigator and key collaborators (up to four resumes total)
- Letter(s) of support, at least one is required and up to a total of three will be accepted

You may include other supporting documents in an Appendix (optional).

Proposal Narrative (required)

Your proposal narrative may not exceed five pages in length using 12-point Times font and 1-inch margins. Title page and references are not counted as part of your page limit.

The more **specific**, **clear**, and **compelling** your narrative is, the more competitive your proposal will be. Tell the reviewers a story: what currently exists at your institution, where are the gaps, what are you proposing to create and what are the hoped-for outcomes? In other words, why this idea now?

Your narrative should include the following:

**Context** - Limit this to one or two paragraphs:
- What are you proposing? Is it a course or a program? Is it new or an expansion of existing courses/programs?
- What gap(s) are you addressing on your campus; what do you feel is missing?
- What have you accomplished so far if anything? Have you received other support for this work?

**Proposed Initiative**
- Differentiate between what already exists vs. what you are asking for funding to support. Emphasis should be placed on what you are proposing, not on what already exists.
- What is the technology invention or innovation area of focus?
- In what ways do you envision incorporating sustainability principles into the course or program? Which concepts or frameworks are likely to be emphasized? Will you develop your own content? Where will the content come from? (For some materials resources see [HERE](#) and [HERE](#))
● Describe the potential for educational, social and/or environmental impact

● Explain the process: how will the proposed course or program lead to the creation of student teams, how will teams be formed, and where will the ideas come from?

● Is there an experiential learning opportunity for students?

● How will your entrepreneurship ecosystem support the most promising teams and technologies towards commercialization?

Team and Partners

● Describe the role of each key individual involved with delivering and supporting the proposed course and/or program. Keep each description to 1-2 short sentences.

● Identify partners on campus or beyond who will help promising teams commercialize any resulting technologies. If the proposal focus is outside the campus community or outside the US, please note that an off-campus, local partner is required. A letter of support from this partner should be included.

● Describe the “entrepreneurial ecosystem” on your campus and in the community and how your students will access these resources (other faculty, mentors, departments, entrepreneurship centers, incubators, accelerators, industry, NGOs, governments etc.). **Note:** Your proposal should go beyond a listing of entrepreneurial support resources and should also demonstrate that a clear or structured development path to market is available for some teams.

Work Plan - Create a simple table in the narrative that includes:

● A list of the milestones and a timeline for accomplishing each during the grant period.

● The number of estimated student teams formed/supported each year and the number of participating students.

Outcomes

● What does success look like? Complete this sentence: We will be successful if/when...

● What is an example of a tangible work product that you envision sharing publicly for the benefit of other educators?

● How will the course or program be sustained beyond the end of the grant period?

Proposed Budget (required)

Your budget and justifications should demonstrate to reviewers how you intend to achieve the objectives proposed in your narrative. Funds may be proposed for expenses related to curricular development and course or program realization. Equipment and other resources purchased with
grant funds become the property of the institution. Instructions and specific expense definitions can be found in the budget section of the online application, and are also summarized below.

Examples of eligible expenses:
- **Equipment expenses**: VentureWell will typically not fund the purchase of equipment that is considered part of college or university infrastructure such as computers, tablets, 3D printers, or furniture for makerspaces or labs. Equipment expenses should be no more than 10% of the total proposed budget and relate directly to the proposal.
- **Personnel costs**: up to $5,000 total for US-based proposals and up to $10,000 total for global proposals (may be divided or proposed for 1 person, and can include the cost of any applicable fringe benefits).
- **Expenses related to technical development**: of student team innovations, including (but not limited to) materials & supplies, prototyping, technical services, and testing.
- **Expenses related to students performing** patent searches, creating marketing analyses, and business plans.
- **Travel expenses may include** expenses related to:
  - Up to two key participants attending OPEN, VentureWell’s annual conference, for one year only.
  - Up to two key participants attending the Green Launchpad Educators Workshop in October.
  - Other relevant travel

Examples of ineligible expenses:
- **Overhead**: VentureWell does not cover institutional overhead.
- **Expenses that are unlikely to be sustained beyond the proposed grant period**, such as competition prize money, event expenses like food or AV and lengthy student internships.
- **Personnel costs** over the maximums mentioned above.
- **Equipment expenses** totaling more than 10% of the total proposed budget.
- **Speaker honoraria** over $200.
- **Wages for students** during the academic year.
- **Legal and other expenses** of business formation or operation.
- **Publicity expenses**.

Letter(s) of Support (required)
At least one letter is required, and up to three may be submitted. Letters should demonstrate to reviewers that there is ongoing institutional support for your project and technical competence.
and market opportunity in the area of your proposed work. Letters may also serve to verify partnerships discussed in your proposal narrative or verify additional funding to complement the proposed budget. More weight will be given to letters of support from key administrators (Dean, President, etc.) and/or community partners. Note that if the proposal focus is outside the campus community or outside the US, at least one off-campus local partner is required, and a letter of support from this partner should be provided.

**Resumes of Key Individuals (required)**

Include resumes from the Principal Investigator and any other key collaborators. We do not need resumes for the Administrative Contact or non-key team members/collaborators. Up to 4 resumes are allowed and they should be no more than 3 pages each.

**Appendix (optional)**

You may include appendices in your proposal, up to a maximum of ten pages combined into a single PDF file. You should reference any appendix materials in the narrative. **Note:** Sheer volume of material is not an asset. Reviewers are directed to use appendix materials only to supplement the five-page narrative. Key information should be included in the narrative.

**Proposal Selection and Notification**

Proposals are reviewed against structured criteria by a group of external reviewers. We aspire to award up to one-third of the total awards to universities or colleges that have never received a VentureWell Faculty Grant.

We will notify all Principal Investigators via email in **mid-July** whether or not their proposal has been selected for funding. We also will send an approved budget and award letter agreement for signature to the Administrative Contact identified in the proposal. Funds will be disbursed once this award letter is signed and returned to VentureWell.

Upon notification you will also receive additional details about the activities that you and other grantees will participate in to help further your work and grow the I&E education field. We expect you will set aside time and grant funding to participate in these opportunities:

- **Green Launchpad Educators Workshop** (2-day workshop in October 2019, hosted in Boston, MA)
- Regularly scheduled video meetups to discuss progress to date, plans going forward and challenges you would like to troubleshoot (estimated up to 2 hours per month time commitment)
- Contribute to a VentureWell field-facing resource by sharing something you have developed on this topic during the grant or within 90 days of the grant end date, which may include lessons from the field, curricular components, and/or recommended resources.
- Disseminate your learnings and outcomes at OPEN or another I&E-focused conference of your choice.

Reporting

If you receive a grant, reporting requirements and deadlines will be specified in your award letter. Principal Investigators for VentureWell grants are prompted via email to complete reports online (once each year). Failure to submit reports may jeopardize your institution’s eligibility for future grants and pending payments.

Questions

If you have any questions feel free to contact Patricia Boynton, Grants Manager, at 413-587-2172 x115 or grants@venturewell.org.
APPENDIX

Rationale for an RFP to support sustainability and sustainable design in invention, innovation, and entrepreneurship

VentureWell has historically supported green technologies from student innovators and courses that promote environmental and social responsibility through our grants programs. However, given the magnitude of environmental challenges facing the world today, we are working more strategically, and have gained support from The Lemelson Foundation, to address this on three fronts: building capacity directly with educators, spurring systems-thinking with student innovators, and examining opportunities for system-level integration of environmentally responsible invention throughout the sciences.

In a report published in March 2018, Teaching Environmentally Responsible Inventing: Higher Education Environmental Landscape Research and Analysis, two high priority recommendations were made. One was to “invest in faculty by supporting their development and education in this area.” In response, a workshop on this topic was hosted at the VentureWell OPEN 2018 conference, which found that faculty/staff fell into two groups: 1) those eager to learn about ways to integrate sustainability into curricula but are unsure where to start; and 2) those who have generated resources in isolation thus-far, and seek an opportunity share what they have created.

Meanwhile, VentureWell developed a toolkit for sustainability and life-cycle thinking and has been using it with E-Team grantees since 2016. We learned that students are eager to bridge their values and skills but also are often at a loss for where to begin. For example, 70% of E-Team grantees surveyed stated that personal sustainability practices were of the utmost importance in their daily lives (saving electricity, recycling, etc.), yet only 40% had even considered the environmental sustainability impacts of the designs for their inventions. Many students design for only one dimension of impact, and have not considered the unintended consequences of their innovations. Exposure to life-cycle and systems thinking concepts inspired them to optimize impact overall. For students who are already interested in environmentally responsible invention, they are hungry for actionable resources to build new business models or integrate greener design choices into their innovations.

With these lessons in mind, in March 2019 VentureWell and The Lemelson Foundation co-hosted Principles of Environmentally Responsible Engineering - Creating a Roadmap for Change, a roundtable that convened 20 experts from across higher education, industry, government, and philanthropy for an intensive, interactive convening. Participants discussed gaps and opportunities for how best
to support, advance, and scale the integration of sustainability into science and engineering curricula. Together, they identified initial themes (including systems thinking, embracing different views, baseline knowledge/skills/experiences, and a morals- or values-based approach), key stakeholder groups, and preliminary recommendations. Course and program grant funding is one way to support this integration. Another is to provide faculty with tools and resources that can be used immediately with their students in the classroom.

More information can be found here.