Strategic Instructional Innovations Program
2021 Call for Proposals

The Grainger College of Engineering
University of Illinois at Urbana-Champaign
January 6, 2021

Goal
To accelerate the spread of best practices for teaching, to develop new best practices, and to reimagine what it means to educate our undergraduate students. These efforts are successful when we teach like we do research: with creativity, collaboration, measurement, and continual improvement.

Synopsis of program
The Strategic Instructional Innovations Program (SIIP) is an effort within The Grainger College of Engineering to establish communities of practice and increase the impact of our educational initiatives. These communities of practice are led by engineering faculty and involve collaboration to advance excellence in teaching methods and technologies. The projects take an engineering approach to education innovation centered around prototyping, evidence-based decision making, learning from failures, and iteration.

This year, fourteen teams—over 50 faculty members—are participating in SIIP. They connect with each other to exchange and to develop ideas, and new teams will benefit (and benefit from) this larger community. See recent projects here: https://ae3.engineering.illinois.edu/siip-grants/

We are open to your ideas for education innovation, including projects that intersect with other Grainger Engineering initiatives, such as the Siebel Center for Design, the IDEA Institute, and our newly announced partnership in the KEEN Network. While most new ideas are best-suited for the SIIP Start-up and Implementation & Exploration tracks, the SIIP Adaptation track is an
ideal way to leverage or recast current SIIP projects into new contexts. Each track is described in more detail below.

Important dates
• SIIP informational meeting: Thursday, January 21, 2021, from 10-11:30am, via Zoom
• Pre-proposals for new Implementation & Exploration SIIP projects due: Friday, March 5
• Full proposals for new Startup, Implementation & Exploration, and Adaptation SIIP projects due: Wednesday, May 5
• SIIP continuation proposals and expense reports for existing SIIP projects due: Wednesday, May 5

Description of SIIP funding tracks

Adaptation: The SIIP Adaptation track is for faculty wishing to collaborate with a current or former SIIP team to replicate an innovation in their own course setting. Past SIIP Adaptation projects have included exam revision (with the Computer-Based Testing team) and student communication skill development (with the Engineers SPEAK team). Historically, the typical funding range for Adaptation track proposals has been less than $5,000. See Appendix A below for more on this track.

Startup: The Startup track is focused on bringing new ideas and faculty into the SIIP community and enabling current SIIP teams to create capacity for new efforts. The primary outcome of startup projects must be the creation of a faculty community that is invested in solving a particular problem in undergraduate engineering education. Sample projects include pilots or proof-of-concept studies for new innovations, creating working groups to study certain challenges or opportunities, or creating a workshop/seminar series with external speakers to generate and sustain interest in a relevant problem, opportunity, or innovation (e.g., best practices in teaching diverse students). Past SIIP Start-up projects include a pilot course for teaching assistants and a study of undergraduate student writing needs. Startup proposals are for one-year, non-renewable funding, but may evolve into an Implementation and Exploration project. Historically, the typical funding range for Startup proposals has been less than $8,000.

Implementation and Exploration: This track brings research and design elements to undergraduate educational initiatives. I&E proposals are for one year of funding and may be renewed for up to two additional years; they may also continue as SIIP-supported projects in perpetuity without funding, with some additional consultation and assessment support. Assessment can be challenging, so in this track, a goal of SIIP is to help participants figure out how to do it well. Historically, there is considerable variation in funding for I&E proposals, but common budgetary requests have included funding for: graduate teaching/research assistantships (partial or full), support for hourly student employment (UG and GRAD), equipment/software, conference travel (when possible), and, in special cases, summer salary. Final funding is based upon the scope of the project and overall annual funding allotment.
Implementation-oriented proposals are focused on improving undergraduate student outcomes such as increased learning, satisfaction, or retention. Successful proposals will demonstrate an awareness of evidence-based teaching methods or curriculum designs and will focus on translating those best practices to new/revised courses and to additional faculty. Past SIIP projects that would fit this track include introducing “flipped classroom” teaching methods into a large lecture course, integrating collaborative problem-solving discussion sections into a course, or integrating i>clicker questions into lectures in multiple courses.

Exploration-oriented proposals are focused on pioneering new undergraduate instructional methods, technologies, programs, or policies and sharing what is learned with other faculty. Successful proposals will seek to expand or revolutionize what it means to provide a world-class education to our students and conduct thoughtful evaluations of the innovation. Past SIIP projects that would fit this track include integrating design projects across the curriculum, designing a grand-challenge-inspired curriculum, and developing new online, adaptive-learning systems.

For 2021-22, there are several opportunities on campus that could serve as focal points for SIIP proposals. First, the new Campus Instructional Facility will open next to Grainger Library and will feature many innovative learning spaces, including teaching in the round, active learning classrooms, and the study steps. Projects are welcomed that implement or explore teaching methods that effectively utilize this facility for engineering courses. Second, technologies and approaches that enhance engagement and/or support distance learning initiatives are welcome; these might include the integration of virtual/augmented reality or AI in teaching. Third, projects that promote general student well-being and mental health are also welcome; and, lastly, activities that intersect with other campus programs/initiatives are highly encouraged. These may include:

- Siebel Center for Design’s efforts in human-centered design;
- IDEA Institute’s efforts to support access, equity, and inclusion; Please note: proposals that complement efforts in the IDEA institute in educational practices may be eligible for joint sponsorship between SIIP and GIANT;
- Our newly announced partnership in the Kern Entrepreneurial Engineering Network (KEEN), please see https://engineeringunleashed.com/what-is-keen, for more information.

Further example SIIP projects are available here: https://ae3.engineering.illinois.edu/siip-grants/

Who may submit proposals
Principal Innovators (PIs) for all proposals must be Grainger College of Engineering faculty members (tenure-track or specialized). Team members may be from any department on campus.
• Startup: Startup teams should have at least three faculty members. If needed, AE3 can help PIs who are new to SIIP assemble a team during the pre-proposal phase.

- Implementation & Exploration pre-proposals and full proposals must have at least three members, including at least one tenure-track faculty member.

SIIP administrative structure
1. SIIP teams will meet weekly as a community of practice. Faculty affiliates from AE3, our Education Innovation Fellows (EIFs), will attend these meetings to provide advice and to connect teams to relevant resources.
2. Each project will undergo a review twice a year; renewed funding will be contingent upon acceptable reviews.
3. When relevant, AE3 will help interested teams identify opportunities to obtain external funding to supplement and extend SIIP funding, multiplying the college’s investment.

Budget guidelines and rules
• The commitment for departmental matching funds and/or in-kind support (e.g., TA or RA support) will be factored into the funding decision and should be reflected in the overall budget.
• Typically requested budget items include student (TA, RA, undergrad) support, software/equipment, and travel funds to present project findings.
• No more than $5000 for equipment.
• Requests for summer salary must include explicit descriptions of intended activities.
• Overhead should not be included in the budget.
• There is no explicit cap to proposals, but PIs should be mindful of the overall budget of SIIP and the number of projects we expect to fund. Currently, overall funding of $276,000 is distributed among 14 active teams.

Award process
1. Project identification (Implementation and Exploration proposals): By March 5, interested faculty teams meet to generate project ideas and submit preliminary proposals. Potential PIs are encouraged to consult with AE3 staff, current SIIP teams, and others for ideas and direction. Proposals should describe, in approximately two pages, the problem, the proposed solution, and the potential impact of the innovation. Current Startup teams proposing to continue through the Implementation & Exploration track can submit a proposal directly without the pre-proposal process.

2. Pre-proposal process (Implementation and Exploration proposals): Faculty teams will meet regularly with affiliates from AE3, for up to six weeks, to craft their preliminary proposals into high-quality full proposals that are likely to be funded. This work will include identifying literature, local resources, and evaluation measures that will inform the proposed project. The goal is to refine the preliminary proposals such that potential pitfalls in implementation can be avoided (by clarifying expectations, ensuring team functionality, etc.). The role of the
affiliates is to provide feedback on the proposal and connect the team with relevant resources.

3. **Final proposal submission (Adaptation, Startup, and Implementation and Exploration proposals):** Full proposals must be submitted by May 5 under the signature of the department head of the PI, who will confirm support for the work and that the project supports/aligns with broader goals/initiatives within the department. Proposals should consist of a project narrative (including work plan, at most 10 pages), list of references, biosketches of all participating faculty, and a one-year budget plan. Please indicate what form(s) of financial and in-kind support the department will provide for the proposed project. Such support is not required, but may strengthen the proposal. Examples of previous support include faculty teaching release time, additional TA support, and equipment and space resources. Please also indicate whether the project has other funding (e.g., an external grant).

4. Implementation and Exploration proposals must develop an assessment and evaluation plan to demonstrate progress toward core project goals and demonstrate the collaborative buy-in, administrative support, and projected sustainability of efforts.

5. **Proposal evaluation:** Proposals will be evaluated based on their timeliness, strategic value, appropriateness of budget, and scholarly rigor – as well as the team’s demonstrated commitment to creating a community of practice to implement and sustain efforts.

6. Approved teams will receive funding beginning on July 1, 2021.

Please address questions to Jay Mann, Director, AE3 ([jaymann@illinois.edu](mailto:jaymann@illinois.edu)).

Proposals may be submitted to Kristie Harris ([marquar1@illinois.edu](mailto:marquar1@illinois.edu)).
SIIP renewals and close-outs for 2021-22

Teams in their **first or second year** are eligible to apply for further funding. SIIP teams in their **third year** are welcome and encouraged to continue as a part of the SIIP community in perpetuity without funding; AE3 will provide consultant and assessment support. Current **Start-up teams** are eligible to submit a full proposal for Implementation & Exploration funding (no pre-proposal is required).

Based on your future plans, please submit the following **by May 5**:

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<thead>
<tr>
<th>Planning to continue in SIIP</th>
<th>Current SIIP Year 1 or Year 2</th>
<th>Current SIIP Year 3</th>
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<tr>
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<td>A brief summary of your progress this year</td>
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<td>A “Best of” short paragraph, photo, or link that highlights a particularly positive outcome of your project</td>
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<td>A list of any ways you have publicized your project (papers, faculty meetings, websites, etc.)</td>
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<td>Revised project objectives</td>
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<td>A timeline for next year</td>
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<td>A proposed budget with justification, and a statement of any remaining funds from this year. Please also indicate whether the project has other funding (e.g., an external grant).</td>
<td>If applicable (and essential to your project), a proposal for using any remaining funds from this year</td>
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<td>A description of ways your department is supporting your project</td>
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<thead>
<tr>
<th>Not planning to continue in SIIP*</th>
<th>Current SIIP Year 1 or Year 2</th>
<th>Current SIIP Year 3</th>
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<tr>
<td></td>
<td>A final report (goals met, outcomes achieved, total expenditures and remaining funds)</td>
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*Please note that it is the practice of the College to pull back any remaining funds from discontinued projects.
APPENDIX A. Adaptation track

Description
The SIIP Adaptation track is focused on increasing college-wide interconnectedness and collaboration in instructional excellence. It offers a way for faculty to reproduce and/or adapt best practices from SIIP teams whose innovations are applicable to other instructional contexts. PIs (principal Innovators) will work closely with a member of a current or past SIIP team to learn about the innovation. Undergraduate or graduate hourly workers will be available to help with implementation.

SIIP Adaptation PIs will meet regularly with a member of a recent SIIP team who will provide advice and help connect teams to relevant resources.

Developing the proposal
PIs for all proposals must be Grainger College of Engineering faculty members (tenure-track or specialized). The PI may assemble a small team, but a team is not required. Team members may be faculty, academic staff, and/or students from any department on campus. Preference will be given to teams with faculty participants previously not involved in a SIIP project.

The PI must secure a commitment of collaboration from a current or previous SIIP team. A listing of recent SIIP teams, by year of engagement, can be found here: https://ae3.engineering.illinois.edu/siip-grants/

AE3 staff and Education Innovation Fellows are available to help make contacts and connections:

Jay Mann (AE3) jaymann@illinois.edu
Matthew West (MechSE) mwest@illinois.edu
Jeff Erickson (CS) jeffe@illinois.edu
Marcia Pool (BioE) mpool@illinois.edu
John Popovics (CEE) johnpop@illinois.edu
Chris Schmitz (ECE) cdschmit@illinois.edu
Tim Stelzer (Physics) tstelzer@illinois.edu
Craig Zilles (CS) zilles@illinois.edu
Chris Migotsky (AE3) migotsky@illinois.edu
Yuting Chen (ECE) ywchen@illinois.edu
Molly Goldstein (ISE) mhg3@illinois.edu

Adaptation proposal submission and award process
1. Proposals should include:
   a. A statement of the purpose of the project (the problem, the rationale for the SIIP team collaboration, and the intended outcomes).
b. A timeline and description of the work to be accomplished, the plan for interacting with the “source” SIIP team, and the need for student workers. PIs should recruit their own student workers.

c. An indication of any financial and in-kind support the department will provide for the proposed project. Such support is not required, but may strengthen the proposal. Examples of previous support include faculty teaching release time, additional TA support, and equipment and space resources.

d. A list of the team members (if any).

2. Proposal evaluation: Proposals will be evaluated based on their strategic value, as well as evidence of a demonstrated commitment to implementing and sustaining efforts.

3. Awardees receiving SIIP Adaptation funding will submit a final report on their projects, and share their results at a poster session at AE3’s Celebration of Teaching in April.