



CENTER FOR MATHEMATICS, SCIENCE, AND TECHNOLOGY

Illinois State University

FY 18 Planning Document

I. Major Objectives for FY18

Describe the unit's most important objectives for FY18. Outline how these support the mission/goals of the Unit/Department/School, College and Educating Illinois.

The Center for Mathematics, Science, and Technology's (CeMaST) three goals are aligned with Illinois State University's strategic plan, Educating Illinois 2013-2018: Individualized Attention, Shared Aspirations. The ISU campus community is committed to the pursuit of learning and scholarship, individualized attention, diversity, integrity, and civic engagement. CeMaST contributes to these core values by pursuing and supporting scholarship in science, technology, engineering, and mathematics (STEM) education for all students. In addition, CeMaST seeks to build on its stellar record of quality achievements in meeting the demand for leadership in curriculum, service, and research related to the integration of mathematics, science, and technology in education.

Goal 1. Stimulate and support activities and research on teaching and learning that aligns with campus, state, and national STEM priorities.

CeMaST pursues and supports the development of funded activities and research that promote the teaching and learning of science, technology, engineering, and mathematics. In addition, CeMaST strives to help shape campus STEM priorities by promoting the state and national STEM agenda to further educational innovation and research. This goal aligns with Educating Illinois 2013-2018 Goal 2: Provide rigorous, innovative, and high-impact undergraduate and graduate programs that prepare students to excel in a globally competitive, culturally diverse, and changing environment. In particular, Strategies 2 and 4 are consistent with this goal ("Promote sustainable, mission-consistent growth in the research enterprise" and "trenchen the University's commitment to civic engagement").

Goal 2. Provide leadership to and foster cross-disciplinary collaborative STEM activities and research on teaching and learning.

CeMaST strives to support connections between disciplines on campus as they pursue STEM activities and research. In addition, CeMaST fosters connections between all educational levels from K-12 through graduate school and between academia, industry, and professional societies. This goal aligns with Educating Illinois 2013-2018: Goal 3 "Foster an engaged community and enhance the University's outreach and partnerships both internally and externally." Strategy 1 "Enhance cross-divisional and cross departmental collaboration," Strategy 3 "Develop partnerships with business, educational, and government entities that provide learning, financial, and mutually-beneficial opportunities" are consistent with this goal.

Goal 3: Direct efforts to increase the diversity of STEM communities through innovative programming, partnerships, and outreach.

CeMaST has a long history of pursuing projects that encourage and assist individuals within underrepresented groups in attaining excellence in STEM fields. CeMaST is committed to continuing these efforts. This goal aligns with Educating Illinois 2013-2018: Goal 1 “Provide a supportive and student-centered educational experience for high-achieving, diverse, and motivated students that promotes their success.” and Goal 2 “Provide rigorous, innovative, and high-impact undergraduate and graduate programs that prepare students to excel in a globally competitive, culturally diverse, and changing environment.” In particular, this goal is consistent with Strategy 1 “Recruit, enroll, and retain high-achieving, diverse, and motivated students” and Strategy 3 “Recruit and retain high-quality, diverse faculty and staff.”

Program Objectives:

Objective B.1. Maintain the following activities:

CeMaST activities for FY17 continue to focus on two main areas which all cut across the three major CeMaST goals: Outreach, Integrated K12 STEM education, and ISU faculty and staff STEM initiatives.

Outreach is an attempt to raise the profile of CeMaST as an important entity within Illinois State University that in turn is a major regional, national and international STEM active institution. (Aligns with Goals 1 & 2 with some Goal 3)

- Retaining Dr. Amy Bloom as Assistant Director for Outreach (25% FTE), hosting the 17th annual ISU High School Research Symposium, organizing the 8th Illinois Summer Research Academy for high school students, supporting World Wide Day of Play and other community outreach events and workshops.
- Developing and facilitating new outreach activities and programs for the Children’s Discovery Museum (Normal, Illinois) and the Challenger Learning Center.
- Developing new regional, national, and international programs of professional development in STEM originating at ISU.
- Supporting existing and developing new efforts aimed at increasing the diversity of STEM communities.

Integrating K12 STEM education is aimed at helping drive the national discussion towards embracing the role of integrated education in K12 schools. CeMaST recognizes that modern problems are interdisciplinary and advocates for integrated solutions. Integrating STEM education in K12 schools is one way of achieving integrated solutions. (Aligns with Goals 1 & 2 with some Goal 3)

- Supporting Associate Directors Drs. Chris Grieshaber and George Rutherford to lead this effort. This includes continued work on developing a Campus/Community MakerSpace, developing stronger Town/Gown STEM relationships, continuing to support and develop the Celebrating High School Innovators program, supporting the Innovation Consulting Community to encourage students and faculty to work on the real problems of real people.

- Retaining Research Associate Dr. Brad Christensen (100% FTE) to conduct research and develop new integrated STEM curricula, organizing professional development and building new relationships with the publisher of the Creative Core Curriculum and exploring new models of advertising and selling the IMaST curriculum. This includes CeMaST staff conducting professional development for STEM teachers across Illinois, across the nation and internationally.
- Retaining one other Research Associate to support a variety of research and evaluation efforts. (50% FTE)
- Supporting existing and developing new efforts aimed at increasing the diversity of STEM communities.

ISU faculty and staff STEM initiatives aims to support those faculty and staff that are engaged in STEM in meeting their own career goals and helping them to have a larger impact. This involves using CeMaST reputation to connect faculty and staff to others across the state and region to develop research projects, professional development programs, funded grant work, diversity initiatives, interdisciplinary programs that are larger and more effective than the faculty and staff might have originally conceived.

- Supporting Associate Director Drs. Tony Lorschach and Jeff Barrett to lead this effort. This includes continued support of the STEM education faculty consortium, continued work with local Regional Offices of Education. It also includes developing new opportunities in the same way that a MakerSpace, CHSI, and ICC developed above.
- Supporting existing and developing new efforts aimed at increasing the diversity of STEM communities.

Objective B.2. Sponsored Research and Projects

- Write new proposals with faculty at ISU and across Illinois
- Maintain and complete currently-funded grant projects

Objective B.3. Journals Project

- Continue to support the Journal of Technology Education and the Journal for Research in Mathematics Education.
- Publish the Journal of STEM Teacher Education in its 5th year.

Objective B.4. Research and Publications

- Continue to conduct original research and present and publish the results.

Operational Objectives

Objective C.1 Assessment Plan

- Continue implement the CeMaST Assessment Plan developed as part of the Center Review Process.
- Develop a meaningful Advisory Board/Personnel Structure.
- Contemplate a CeMaST Staff reorganization to streamline responsibilities.

Objective C. 2 Revenue Stream

- Diversify our revenue streams by marketing existing curriculum, modifying existing curriculum, and writing new curriculum; we hope to generate revenue to support soft money positions.

Objective C. 3 Diversify CeMaST Influence

- Increase in submissions for major external funding by CeMaST as a unit.
- Promotion of CeMaST through national exposure at meetings, conferences, federal agencies, advisory boards, program adoption and professional development.
- Increase in number of individuals (from national, state, and ISU campus) seeking out CeMaST to help them with grant writing, coordination, and evaluation.
- Increase the number of CeMaST Fellows and the development of interdisciplinary gatherings where CeMaST Fellows can interact and connect with ideas and potential interdisciplinary funding.
- Continued coordination, development, and participation with ongoing CeMaST and campus funding.
- Develop innovative integrated STEM projects modeled after previous successes.

II. Permanent Funding Requests

Any initiative that would require permanent funding, currently not a source of funds available through the Office of the Provost, should be outlined in this section. A detailed explanation of the need and budget rationale should be provided. Requests for permanent funds should not be included in the Provost Enhancement Requests.

Program Enhancement Requests: Operating Funds

None.

Personnel Requests: Faculty, Staff, Graduate Assistants program growth

None.

I. Strategic Budgeted Carryover (SBC) Requests ONLY (PERS 937 spreadsheet)

List, in priority order, SBC requests in the **PERS 937 – SBC Only tab**. It is recommended you attend the Strategic Budgeted Carryover training and review the SBC documents before completing the spreadsheet. Access and save the PERS 937 spreadsheet to the *Budget Docs Drive: FINAL Folder*.

none

II. Provost Enhancement Requests and Strategic Budgeted Carryover (PERS 937 spreadsheet)

List, in priority order, PE & PE + Strategic Budgeted Carryover in the **PERS 937 – PE & PE + SBC tab**.

Outreach Events

For each of the past six years we have spent approximately \$2500 on two outreach events.

1. Illinois Summer Research Academy (ISRA)



ISRA students from Illinois, California, and Florida – Summer 2013



ISRA students from Chicago Public Schools – Summer 2013

ISRA (<http://cemast.illinoisstate.edu/students/high-school/summer-academy/>) is entering its fifth year as a one-week summer residential research experience for high school sophomores and

juniors. The goal is to bring excellent STEM students to campus before they have made their college attendance decision and influence them into choosing ISU. Over the past several years we have had 40 students pay \$500 each for the week. With each year both the interest by ISU faculty members in mentoring the high school students and the number of high student applications has grown. CeMaST has provided about \$2000 extra to cover the cost of supervision during the week, advertising, research expenses, and scholarships. **Participating ISU departments and programs include Mathematics, Chemistry, Biological Sciences, Physics, Arts Technology, Geology-Geography, Communications Sciences and Disorders, Information Technology, Psychology, and Criminal Justice.** For some students we have been able to offer further need-based scholarships beyond this subsidy. **Having the Provost's support would allow us to provide scholarships to up to 8 more students.**

Request: \$2,000

2. High School Research Symposium (HSRS)



HSRS Poster set-up in the Brown Ballroom



Participants in the ISU High School Research Symposium

CeMaST has organized the ISU HSRS (<http://cemast.illinoisstate.edu/students/high-school/research/index.shtml>) for the past seven years and we are well-established as an excellent event for outstanding high school research students to share their work. We have grown to about

250 students from across central and northern Illinois and Chicago attending each year. CeMaST has been supporting HSRS with about \$1500 of variance money for the past seven years. The goal is to bring excellent STEM students to campus before they have made their college attendance decision and influence them into choosing ISU. **Participating ISU departments and programs include Mathematics, Chemistry, Biological Sciences, Physics, LSAMP, Robert Noyce Teacher Scholarship awardees, Geology-Geography, and Psychology.** However, as school budgets have become tighter, teachers have a more difficult time arranging buses to bring their students to the event. **Having the Provost's support for student transportation and facilities costs would allow up to 100 more students to attend.**

Request: \$1,000

III. Personnel Requests: Tenure Track Faculty-NEW (PERS 936a spreadsheet)

Based on an assessment of current and projected needs, provide your prioritized requests for tenure track faculty using the PERS 936a forms. It should be noted that all Tenure Track requests should be based on a 9-month contract as limited by AIF. Access and save the PERS 936 spreadsheet to the *Budget Docs Drive: FINAL Folder*.

None

IV. Personnel Requests: Tenure Track Faculty- Non-reappointment or tenure-denial/death (PERS 936b spreadsheet)

None

V. Facilities Requests

[Academic Construction Project Initiation Forms](#) should be submitted through the appropriate Dean to the Provost by December 15th. All Academic Construction Projects that request Provost Funds will be considered as a part of the Provost Enhancement process and **should** be included with the PERS 937 requests.

We are housed in the Campus Religious Center where we have five offices and share two meeting spaces. We are currently using all our allocated space and do not foresee needing additional space in the near future. We have used various classrooms and space on campus for our outreach activities. If however, we continue to successfully obtain external grant funding, we may have fluctuating space needs.