PSM Report and STEM Outreach

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Associate Dean for Science Education
Programs Currently Approved

- Bioinformatics-enrolled
- Biotechnology-enrolled
- Bioinnovation-enrolled
- Forensic Chemistry-enrolled
- Cyber Defense and Information Assurance-2017
**PRESENT STATE OF PROGRAMS**

**Current Program Enrollments**

<table>
<thead>
<tr>
<th>PSM Program</th>
<th>Expected Graduation Date</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Dec-16</td>
</tr>
<tr>
<td>Bioinformatics</td>
<td>9</td>
</tr>
<tr>
<td>Bioinnovation</td>
<td>4</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>4</td>
</tr>
<tr>
<td>Forensic Chemistry</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
</tr>
</tbody>
</table>
## Professional Science Master’s Degrees

### Present State of Programs

<table>
<thead>
<tr>
<th>PSM Program</th>
<th>College or School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CST</td>
</tr>
<tr>
<td>Bioinformatics</td>
<td>135</td>
</tr>
<tr>
<td>Bioinnovation</td>
<td>79</td>
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<tr>
<td>Biotechnology</td>
<td>227</td>
</tr>
<tr>
<td>Forensic Chemistry</td>
<td>78</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>519</td>
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</tbody>
</table>
Staffing Changes

- Dr. Seema Freer now coordinates CST PSM development in concert with departmental program advisors.
- Mr. Garry Cole has been hired full-time to recruit for CST PSM programs.

Present State of Programs
Professional Science Master’s Degrees

COMING SOON

Scientific Writing PSM
- In final departmental review

New Entry Points
- 4+1 Programs under development for all current PSMs, students can apply as a junior and complete 12 credits toward the PSM during their last 4 semesters in their baccalaureate program. One additional year of study leads to completion of the PSM degree.

New Opportunity
- Pending the outcome of a market analysis, re-affiliation of our Drug Analysis program may be in the works. This program was conceived as the laboratory-based partner of the QA/RA program in the School of Pharmacy.
STEM COMMUNITY ENGAGEMENT PROGRAMS

K-8 Programs
- ExxonMobil Bernard Harris Summer Science Camp at Temple University (EMBHSSC)
- Greater Philadelphia STEM Center (GPSC) Summer Camp at Temple University
- SeaPerch I & II Summer Camp (Ambler)
- Caring People Alliance (CPA) STEM Programming
- Greater Philadelphia Regional SeaPerch Competition

Pre-College Programs
- STEM-UP Leadership Experience
- The Greater Philadelphia Junior Science and Humanities Symposium (JSHS)
- Caring People Alliance (CPA)/ Philadelphia Youth Network (PYN) Summer Programming
- VEX Robotics Club at Local High Schools
- Let’s Get Ready (LGR) SAT Prep “ACCESS” Program

College Programs
- TMI Materials and Engineering Fellowship
- Temple University Alliance for Minority Participation (AMP)
- Frances Velay Fellowship
- Let’s Get Ready (LGR) “SUCCESS” Mentorship Program

Pre-Service Teachers (TUteach)
- Majors of Study: Biology w/ Teaching, Chemistry w/ Teaching, Earth & Space Science w/ Teaching, General Science w/ Teaching, Mathematics w/ Teaching, Mathematics & Computer Science w/ Teaching, Mathematics & Technology w/ Teaching, Physics w/ Teaching
- Enrollments (Fall 16): 65 in Introductory Course, 20 Declared, 118 Continuing Majors
- New Teachers (AY 15/16): 25
- Student Teachers (AY 16/17): 31
- Teaching Interns/Fellows (AY 16/17): 10

Teacher Programs
- Philadelphia Regional Noyce Partnership (PRNP)
- ASM Teachers Materials Camp
- Science Teacher Education, Application and Leadership (STEAL)
- FunScienceDemos
- Broader Impacts: Bioinformatics for Teachers
New Fellowship Programs Offered this Summer

Temple Materials Institute (TMI) Materials Science and Engineering Fellowship

This program targets non-Temple, underrepresented minority students from local colleges. For many it is their first and only opportunity to participate in the research enterprise. Ten students were recruited from CCP, DCCC, Lincoln University, Cheyney University. Three students have transferred to Temple University. All students concluded the program with a research poster.

The success of both programs is due not only to the students, but to the commitment of CST faculty mentors and Dean Michael Klein.

Frances Velay Science Fellowship

Funded by the Panphil/Uphill Foundation, this program encourages leadership in science professions focusing on women across the sciences. Frances Velay was a female chemist, both in France in 1914. She studied chemistry, art and philosophy until her death at 92 in 2007.

Ten promising female students were selected through evaluation of academic metrics and a proposal competition.

All students completed the program with a professional presentation.

Born in France on November 26, 1914 to Dora and Maxime Aldolphe Velay, she received her License SC at the University of Paris. She moved to New York and earned her MS in Chemistry from New York University in 1947 and then continued studies toward a PhD at a time when few women pursued graduate work in science. A lifelong learner, she also studied philosophy at the University of Pennsylvania and actively pursued her avocations—art and music. She exhibited her pastels and was a violinist with the Landsdowne Symphony Orchestra and other community orchestras in Philadelphia and Washington DC.
TUteach and STEM Ed Network Serving Teachers

Science Teacher Education, Application and Leadership (STEAL)

Funded by the State of PA and in partnership with the Delaware County Intermediate Unit, 25 teachers participated in an intense two-week camp entitled: “Moving Matters”. The camp experience not only reinforced physical science content, but also required that teachers create new lessons and share these lesson throughout their districts.

FunSciDemos

FunSciDemos is a unique, high quality, free, online science education resource focused on middle school and elementary aged students. As a global science education resource with a YouTube channel that shows, engaging, relevant science demonstrations connected to every important science concept and standard for elementary school and middle school. TUteach students contributed classroom projects and lessons for each demo.

ASM Teacher Materials Camp

Funded by the American Society of Metals and with in-kind support from CST, 25 high school teachers and TUteach pre-service teachers studied the properties of materials in an intense week-long summer camp. The camp was well received and extremely successful. ASM is committed to the continuation of this project.
New Recognitions and Awards

**STEM Champion Award – Twice!**
Awarded in 2015 & 2016 to Dean Michael Klein for support of city-wide STEM activities as part of the US2020 STEM mentoring program and for commitment to the city-wide research program that culminates in the Junior Science and Humanities Symposium held at Temple University.

**Designated a Center of Influence by the Office of Naval Research**
CST has received recognition as an ONR Center of Influence because of sustained commitment to STEM education both in the classroom and in the field. Specific programs cited include STEM-UP for high school students, afterschool STEM programming in community centers throughout the city, commitment to K-12 coding projects, and SeaPerch, SeaGlide and Vex STEM robotics programs.

**Recognition as a Center for Academic Excellence by The Harris Foundation**
The Harris Foundation has recognition CST as a center for academic excellence after reviewing the community and school based programs offered through the college.
On the Horizon for the STEM Ed Network

City-wide Events: Repeat Performances

March 2017
Greater Philadelphia Sea Perch Challenge
- Underwater robotics competition
- STEM Challenges
- College Day

April 2017
Junior Science and Humanities Symposium
- Research Competition
- Summer Science Camp Job Fair
- Coding Challenges
- STEM Events
- Plenary Speaker
- Visit from Mayor

Certificate Program: Leadership in Science Education

Under discussion: SLE, post-baccalaureate program offering sixteen credits in science content that including inter- and cross-disciplinary sciences course, laboratory training and instructional leadership.

Intended audience: K-8 teachers who teach across the disciplines without certification in science.