### Action Plan: Goal #1. Enhance our standing as the premiere science and mathematics institution within the PASSHE [SD1, 2 & 3, AA1 & 5]

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<tr>
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</table>
| 1    | Maintain a contemporary curriculum in the sciences and mathematics that ensures quality and excellence. | Curricula will be regularly reviewed to ensure currency and alignment with professional organization standards and guidelines; monitor national trends. | a) All programs will maintain national accreditation/approval or conformance to national guidelines, where available.  
   b) Students will be successful in obtaining jobs in their field or admission to graduate or professional schools. | | Ongoing |
| 2    | Advance the quality and excellence for Biology | a) Develop 4+4 and 3+4 articulation agreements with LECOM in Pharmacy, Dentistry and Osteopathic Medicine and with Notre Dame of Maryland in Pharmacy.  
   b) Approve changes in the graduate biology program. | a) 4+4 agreements signed with LECOM in Spring 2012; curricular changes to accommodate 3+4 program articulations currently under review.  
   b) 2011-12: still under discussion. | | Accomplished and ongoing |
| 3    | Advance the quality and excellence for Chemistry | a) Develop forensic chemistry course.  
   b) Develop 3+4 and 4+4 Pharm.D. agreements with LECOM and Notre Dame of Maryland | a) Forensic chemistry course will be developed in 2010-2011  
   b) 4+4 agreements signed with LECOM in Spring 2012; curricular changes to accommodate 3+4 program articulations currently under review. | | Ongoing |
| 4    | Advance the quality and excellence for Computer Science | Earn re-accreditation from ABET in Spring 2011 | Following site team visit in 2010-2011, BS CSCI program was reaccredited by ABET, through 2013. | | Accomplished |
| 5 | Advance the quality and excellence of the Earth Sciences | a) Develop Integrated Earth System Science Program in accordance with 5-year review recommendation.  
 b) Develop a set of “skills” courses in the earth sciences.  
 c) Develop a minor in space physics.  
 d) Develop integrated capstone geology course | a) Department will consider MS in Integrated Scientific Applications.  
 b) 2007-2008: One “skills” course developed-GIS. Forecasting Practicum and Broadcasting Practicum taught as topics courses; curriculum proposals under development.  
 2008-2009: Forecasting and Broadcasting Practicums approved as new courses.  
 c) Currently under development  
 d) To be in place by Fall 2011 | Ongoing  
 Ongoing  
 Ongoing  
 Ongoing |
|---|---|---|---|---|
| 6 | Advance the quality and excellence for Mathematics | a) Shift responsibility for Math student teacher supervision to the Math Department.  
 b) Develop and implement changes in the graduate MEd program. | a) Majority of supervision now conducted by mathematics faculty.  
 b) Grad courses moved to late afternoon and evening; program revisions approved in Spring 2012. | Accomplished and ongoing  
 Accomplished and ongoing |
| 7 | Advance the quality and excellence for Physics. | a) Develop astronomy minor  
 b) Develop a minor in space physics | a) Currently under discussion  
 b) Currently under development | Ongoing  
 Ongoing |
| 8 | Advance the quality and excellence for Nursing | a) Earn re-accreditation for BSN and MSN programs by NLNAC  
 b) Revise RN to BSN program  
 c) Revise MSN curriculum to meet new standards  
 d) Develop seamless transition articulation agreements with RACC and HACC.  
 e) Explore adding a Doctor of Nursing Practice program | a) Self-study report preparation and site team visit during 2009-2010; program reaccredited by NLNAC in 2011.  
 b) Program revision completed and approved during 2011-2012  
 c)  
 d) RACC agreement signed spring 2012; HACC agreement under negotiation in summer 2012.  
 e) Future discussion. | Ongoing  
 Accomplished  
 Accomplished and ongoing  
 Not accomplished |

Revised: May 2012
<p>| 9 | Advance the quality and excellence in the BSE programs for mathematics and science to meet new Chapter 49-2 requirements. | a) Add middle-level BSE programs for mathematics and science students. | a) Middle-level curricula developed in 2008-2009 for BSE students with math emphasis, with science emphasis, and for BSE elementary majors. | Accomplished |
| 10 | Enhance infrastructure and provide improved/enhanced support for distance learning programs. | Improve department’s ability to deliver DL programs. |  | Ongoing |
| 11 | Utilize a Learning Outcomes Assessment protocol to maintain academic quality. | All departments will participate in the university outcomes and assessment plan. | All departments will assess three degree level outcomes per year beginning 2004-05. | Fall 2005-present – all departments have an assessment plan in place. Plan updated yearly. | Accomplished &amp; Ongoing |
| 12 | Enhance and expand our role in the Marine Science Consortium, across all areas of the sciences. | Become a Senior Partner in MSC and give MU input on reorganization of MSC. | MU will become a senior partner in the MSC and take on key roles within the Consortium governing bodies. | MU President now Chair of the MSC Board for 2009-2011. MU Provost now Chair of new Council of Academic Administrators. MU administrators assisting MSC in developing Strategic Plan and creating administrative and financial systems. | Accomplished &amp; Ongoing |
| 13 | MU will assume a leadership role at MSC. | MU faculty will assume key roles on MSC Academic Advisory Board and NASA Collaboration Committee. |  | Ongoing |
| 14 | Investigate mechanisms to increase enrollments and course offerings at MSC and research opportunities at MSC. | a) Number of MU students attending MSC courses will increase by 50% by summer 2013. | a) Enrollment in MU courses at the MSC: 2008 (22), 2009 (27), 2010 (27), 2011 (48), 2012 (53). | Accomplished and ongoing |
|   |   | b) Number of courses taught by MU faculty at MSC will increase by 33% by summer of 2012. | b) Added ESCI 104/105 course partially onsite at MSC in summer 2012. | Ongoing |
|   |   | c) Research projects conducted at MSC will increase. | c) Research collaborations with NASA and others have increased. | Ongoing |
| 15 | Use the MU Center for Environmental Science to promote interdisciplinary environmental science activities on campus | Obtain recognition as a University Center for the MU Center for Environmental Sciences and implement environmental programming | The MU Center for Environmental Science will coordinate interdisciplinary environmental efforts in the University. | CES developed summer 2007 Environmental Institute, but inadequate enrollment available to teach the Institute. Revised and offered again in summer 2008 with earlier advertising, but still had inadequate enrollment. CES identifies possible graduate certificates. Spring 2009 – CES not yet a recognized Center. | Ongoing |</p>
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<th>Objective</th>
<th>Milestones</th>
<th>Status</th>
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<tr>
<td>16</td>
<td>Promote undergraduate student research and co-ops as important capstone experiences in the School</td>
<td>a) Expand undergraduate research and internships experiences by 2006-07</td>
<td>Ongoing</td>
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<td></td>
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<td>b) Expand graduate research opportunities</td>
<td>Ongoing</td>
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<td>c) Continue to pursue funded summer undergraduate research experiences</td>
<td>Accomplished</td>
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<td></td>
<td></td>
<td>d) Expand the number of co-op experiences by four by the end of 2006-07</td>
<td>Accomplished</td>
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- a) 2004-2005: 122 UG research experiences
  2005-2006: 140 UG research experiences
  2006-2007: 148 UG research experiences
  2007-2008: 149 UG research experiences
  2009-2010: 108 UG research experiences
  2010-2011: 108 UG research experiences
  2011-2012: 150 UG research experiences
- 21 students had (off-campus) internships.
- 5 KIZ summer research opportunities.
- 50 poster papers presented at spring School Research Symposium.
- A School record of 65 students presented their research at regional and national professional meetings. Research collaborations involve PA State Library, Lancaster Solid Waste Authority, Penn DOT, Lancaster Conservancy, City of Lancaster, and four regional science start-up companies.
- b) Number of Graduate Nursing research projects are increasing at about 15 per year.
- c) Fall 2006 – funding for UG research coming from individual faculty research grants.
  Summer 2007-2009 – REU program funded for three summers. 11 students did NSF-REU supported research at Millersville and other universities.
  Also have funding from individual faculty research grants

Revised: May 2012
   b) Maintain accreditation of computer science, nursing, and respiratory therapy programs and ACS approval of the chemistry program. | a) 5-year reviews completed for Mathematics (sp’08) and Biology (sp-08).  
   b) 2008 – Respiratory Therapy received CAAHEP continuing accreditation until 2017.  
   NLNAC site visit (sp-10) awaiting re-accreditation decision  
   ABET site visit planned for 2010-2011  
   Still awaiting ACS action on chemistry program approval. | Accomplished & Ongoing |
| 18 | Increase grant-writing activities in the school. | Encourage school faculty to take advantage of grant opportunities. | Number of grants submitted will increase by 10% by 2014 | | Ongoing |
| 19 | Revamp the graduate program in biology, enhance and expand the M.Ed. program in mathematics and explore new curricular directions, especially in developing fields and interdisciplinary fields (such as professional science master’s degree programs). | Develop a Professional Science Master’s program in Integrated Scientific Applications | a) Will develop a PSM program in Integrated Scientific Applications with 4 options: Environmental Systems Management, Geo Informatics, Weather Intelligence and Risk Management, and Climate Science Applications.  
   b) Will revise and develop new options for the M.Ed. Mathematics.  
   c) Will develop a new program to replace the MS Biology, which is now in moratorium. | a) MS ISA program developed and approved by MU and PASSHE BOG in Spring 2011; first cohort matriculates in fall 2012.  
   b) Revisions to the M.Ed. Mathematics have been approved and will be implemented in 2012-2013; the department is also developing a new track in the program, geared to preparing students for teaching in a community college setting  
   c) The department is still considering the characteristics of a new program. | Accomplished and ongoing |
| 20 | Revamp the MS program in Biology to a sustainable program | A new, sustainable program will emerge from moratorium by 2013. | | | Ongoing |
| 21 | Restructure MEd Mathematics offerings | The number of students enrolled in graduate mathematics classes will increase by 10% by 2013. | | | Ongoing |

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<tbody>
<tr>
<td>22</td>
<td>Increase options and enrollments in allied health fields.</td>
<td>Implement new BS ALHT program</td>
<td>The number of students enrolled in Respiratory Therapy will increase by 15% by 2013.</td>
<td>Ongoing</td>
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**Action Plan: Goal #2: Maintain and Expand Facilities and Equipment to Meet the Growing Needs of the School [SD1, AA]**

<table>
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<tr>
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<tbody>
<tr>
<td>23</td>
<td>Obtain resources for equipment as an essential contributor to program excellence.</td>
<td>Establish a long-term plan for enhancements and upgrades of equipment, multimedia and technology</td>
<td>Develop and implement a plan to maintain up-to-date equipment and facilities on an annual basis.</td>
<td>Plan includes funding from Base Equipment, one-time supplement, Long-term Equipment, Student Technology Fee and Revenue Sharing.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>24</td>
<td>Maintain, improve and acquire equipment and technology as needed.</td>
<td>Use Base Equipment and Student Technology Fee budgets to maintain and improve equipment.</td>
<td>Maintain school’s inventory of modern, updated equipment, meeting growing needs of the school.</td>
<td></td>
<td>Ongoing</td>
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<tr>
<td>25</td>
<td>Plan for replacement of Caputo Hall HVAC system.</td>
<td>Work with Facilities to fund through energy efficiency initiatives.</td>
<td>Replace system with reliable, energy efficient system. The system will pay for itself in a few years.</td>
<td>Work completed in spring 2012, under the ESCO initiative.</td>
<td>Accomplished</td>
</tr>
<tr>
<td>26</td>
<td>Properly maintain facilities and plan for renovations, as needed.</td>
<td>Annually review facilities needs and request renovations and repairs, as needed.</td>
<td>Facilities will be maintained and renovated as needed.</td>
<td>Some requests have been submitted and some have been placed on hold.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>27</td>
<td>Plan for design of new science facilities, as needed to support new or expanded programs.</td>
<td>Initiate discussion of feasibility of new space.</td>
<td>Yearly review of space needs.</td>
<td>Space needs are reviewed regularly.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>28</td>
<td>Increase grant-writing activities supporting equipment acquisition and facilities renovation or construction.</td>
<td>Encourage school faculty to engage in grant-writing activities.</td>
<td>The number of grants submitted to external agencies to support equipment and facilities will increase.</td>
<td>Pending</td>
<td>Ongoing</td>
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**Action Plan: Goal #3. Improve retention and graduation rates in the School through an emphasis on a student-centered environment [SD 2, AA 3]**

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| 29   | Improve School’s first-year and second-year university retention rate | Prepare data base that documents retention rates and informs effort to improve retention rates. | Establish a 1-year retention rate for the School of at least 78% by 2006 | **Background:** 2002-2003 Benchmark average retention rate = 77.6%  
First year retention rate for fall 2004 class of 82.4%. Fall ’05- 83.7%. Fall ’06- 82.8%, Fall ’07-80.3%, Fall ’08-83.2%, Fall 2009: 84.4%, Fall 2010: 79.9%. | Ongoing |
| 30   | Establish a 2-year retention rate for the School of at least 70% by 2006 | Establish a 2-year retention rate for the School of at least 70% by 2006 | **Background:** 2000-2002 Benchmark average retention rate = 70.0%  
Second year retention rate for fall 2003 class of 66.8%. Fall ’04- 73.4%, Fall ’05- 68.8%, Fall’06- 68.7%, Fall ’07-69.6%, Fall 2008: 69.8%, Fall 2009: 73.3%.  
Retention strategies include: Living Learning Communities for biology, chemistry, earth sciences, mathematics and physics. Student Peer Mentoring used in chemistry and earth sciences. Freshman Seminars offered in biology, chemistry, earth sciences, mathematics, and physics. | Ongoing |
| 31   | Improve School’s 4-year and 6-year university graduation rate | Prepare data base that documents graduation rates and informs effort improve graduation rates. | Establish a 4-year graduation rate from university of at least 33% by the 2002 cohort | **Background:** 1998-2000 Benchmark average graduation rate = 32.1%  
4-year graduation rate for the class of 2001 was 34%. 2002: 32.5%. 2003: 29.7%. 2004: 39.3%. 2005: 36.6%, Fall 2006: 35.1%, Fall 2007: 36.1% (university mean: 36.7%). | Ongoing |
| 32   | Establish a 6-year graduation rate from university of at least 65% by the 2000 cohort | Establish a 6-year graduation rate from university of at least 65% by the 2000 cohort | **Background:** 1998-1999 average = 60.1%]  
6-year graduation rate for the class of 1999 of 61.0%; 2000: 62.4%; 2001: 63.1%. 2002: 58.6%, 2003: 59.4%, Fall 2004: 62.8% (university mean: 61.1%). | Ongoing |

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<th>Improve science tutoring, learning communities, and peer mentoring to enhance retention.</th>
<th>Develop and implement tutoring strategies for science and mathematics courses</th>
<th>Tutoring process has been in place since September 2005; will be continued and monitored</th>
<th>Protocol established during fall 2005 between Learning Center Director and SCMA to identify tutors in collaboration with SCMA faculty and department chairs. Tutors and tutoring schedule prepared collaboratively every fall and spring semester. The Mathematics Department continues to coordinate math tutoring.</th>
<th>Ongoing</th>
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<tr>
<td>35</td>
<td>Develop and implement strategies for student peer mentoring in the School</td>
<td>Peer mentoring will be implemented by 2007-08</td>
<td>Chemistry uses peer mentoring coordinated through the ACS student affiliate chapter. Earth Sciences uses peer mentoring coordinated through the AMS student club. Began in fall 2004.</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td>36</td>
<td>Maintain the new database that summarizes retention to graduation in the departments and in the school.</td>
<td>Maintain database to monitor retention within the School and movement of students between departments in the School.</td>
<td>Data will show improved retention in the school</td>
<td>Data on six-year graduation of freshmen in their original departments and in the school and university tabulated for entering classes 1996-2001. Six-year graduation rate for Fall 2003 Freshmen from dept/school/university of incoming freshmen of: Biology- 33/35/55%; Chemistry- 25/38/63%; CSCI- 41/43/57%; ESCI- 38/40/65%; Math- 53/53/72%; Physics- 23/46/46%; SCMA- 37/41/59%; Univ- 33/-/-61%.</td>
<td>Ongoing</td>
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</table>
Increase grant-writing activities supporting recruitment and retention of a diverse group of students. | Encourage school faculty to engage in grant-writing activities that support recruitment and retention of a diverse group of students. | The number of grants submitted to external agencies to support equipment and facilities will increase. | A group of faculty are currently writing an NSF proposal to support Hispanic STEM students. | Ongoing

**Action Plan: Goal #4: Improve the quality and increase the diversity of incoming majors in the School [SD4, AA 2]**

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| 38   | Increase the proportion of entering African-American and Hispanic students in the School through coordination of admissions effort with Admissions Office. | Prepare data base that documents diversity in the School. | The proportion of entering African-American students in the School will be at least 7% by fall 2007. | **Background:** Fall 2001: 16/316= 5.1%  
Fall 2002: 27/284= 9.5%  
Fall 2003: 28/291= 9.1%  
Fall 2004: 25/297= 8.4%  
Fall 2005: 24/284= 8.5%  
Fall 2006: 7.2%  
Fall 2007: 7.2%  
Fall 2008: 29/293=9.9%  
Fall 2009: 24/344=7.0%  
Fall 2010: 30/332 = 9.3%  
Fall 2011: 28/340 = 8.2%. | Accomplished and ongoing |
| 39   | The proportion of entering Hispanic students in the School will be at least 3% by fall 2007 | **Background:** Fall 2001: 10/316= 3.2%  
Fall 2002: 8/284= 2.8%  
Fall 2003: 5/291= 1.7%  
Fall 2004: 5/297 = 1.7%  
Fall 2005: 16/284= 5.6%  
Fall 2006: 4.8%  
Fall 2007: 3.0%  
Fall 2008: 12/293=4.1%  
Fall 2009: 18/344=5.2%  
Fall 2010: 25/332 = 7.5%  
Fall 2011: 23/340 = 6.8%. | Accomplished and ongoing |
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<tr>
<th>#</th>
<th>Description</th>
<th>Collaborate with</th>
<th>Secure additional scholarships to</th>
<th>NSF-STEM scholarship grant for $585,000 submitted in November 2007. Emphasis on low income and minority students. Funded July 2008. Schol...</th>
<th>Ongoing</th>
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<tr>
<td>40</td>
<td>Increase available university scholarships for minority students.</td>
<td>Advancement staff</td>
<td>attract minority students to the School</td>
<td>New Department scholarships awarded in 2008-2009: biology (1), chemistry (2), geology (1), and physics (3), math (2). Several new endowed scholarships established in biology, chemistry, geology, mathematics, and physics</td>
<td>Ongoing</td>
</tr>
<tr>
<td>41</td>
<td>Promote diversity and improved recruitment through contacts with high school teachers and prospective students.</td>
<td>high school science and math teachers to help recruit a diverse pool of students to the School</td>
<td>Promotional letters will be sent to selected high school science and math teachers by fall 2005. Dean and Departments promote School in expanded Open House presentations.</td>
<td>Chemistry and Physics Departments send promotional letters to high school teachers. Dean offers 30 minute School overview at all Open Houses; Departments offer 1½ hour departmental orientations for prospects.</td>
<td>Accomplished and ongoing</td>
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<tr>
<td>42</td>
<td>Maintain School and departmental web pages and recruitment literature that attract students to the School</td>
<td>Both School and all departmental web pages will be updated regularly. Departmental brochures developed and updated regularly.</td>
<td>Fall 2006. School Web page completed redesigned by a School committee and implemented. Department web pages regularly updated. Annual updates. Departmental brochures were prepared to replace the older school brochure in collaboration with University Marketing.</td>
<td>Ongoing</td>
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<td>43</td>
<td>Host Central PA Science Olympiad</td>
<td>Pool of potential science and math students, majority and underrepresented, increased.</td>
<td>Successful Science Olympiad offered in spring 2008 for about 700 students and teachers. Olympiad attracted about 600 students and teachers in 2009 and about 500 students and teachers in 2010. Excellent reviews from participants each year.</td>
<td>Ongoing</td>
<td></td>
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<td>44</td>
<td>Promote diversity through development of school diversity plan and recruitment of a diverse faculty.</td>
<td>Review School Diversity Plan</td>
<td>School Diversity plan will be maintained regularly</td>
<td>School Diversity Plan completed spring 2008.</td>
<td>Ongoing</td>
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|   | Recruit a diverse faculty that can act as role models for students | The School will increase its proportion of minority faculty members and women faculty members by 2007-08 towards the goal of matching the national pool for minority and women faculty in the sciences and mathematics. | Fall 2004: Hired Dr. Nazli Mollah (CSCI) and Dr. Natalia Dushkina (PHYS).  
Spring 2005: Hired Dr. Christopher Hardy (BIOL).  
Diversity: Two women, one man, one Asian  
Fall 2005: Hired Dr. Ryan Wagner (BIOL), Dr. Dominique Dagit (BIOL), Dr. Sean Hendrick (PHYS), Dr. Antonia Cardwell (MATH), Dr. Maria Schiza (CHEM).  
Diversity: three women, two men  
Fall 2006: Hired Dr. Judith Cebra-Thomas (BIOL).  
Diversity: one woman  
Fall 2007: Hired Dr. Steve Bonser (CHEM), Dr. Ajoy Kumar (ESCI), Dr. Travis Miller (MATH), Dr. Elizabeth Sell (MATH), Dr. Kevin Robinson (MATH), Ms. Kelly Kuhns (NURS), Dr. Mehmet Goksu (PHYS).  
Diversity: two women, 5 men, one Asian, and one Middle Eastern.  
Fall 2008: Hired Dr. Robert Vaillancourt (ESCI) and Dr. Yuan Zhong (BIOL). Dr. Tae-Wan Park (MATH) hired as TFTF.  
Diversity: one woman, two men, two Asian  
Fall 2009: Hired Dr. Sam Earman (ESCI), Dr. Zhigang Han (MATH) and Dr. Erin Moss (MATH). Dr. Andrey Glubokov, Dr. Louis Levy (MATH) and Dr. John Rosson (MATH) as TFTF  
Diversity: one woman, four men, one Asian  
Fall 2010: Hired Dr. Ofelia Traistaru and Dr. John Rosson (MATH) as TFTF.  
Fall 2011: Hired Dr. Cynthia Taylor (MATH) and Dr. Christopher Nelson (PHYS) as TFTF  
Diversity: one woman, one male  
Fall 2012: Hired Dr. Aaron Haines (BIOL), Dr. Michael Elioff (CHEM), Dr. Duane Hagelgans (ESCI), Dr. Tyron Washington (MATH) and Dr. Xin Li (PHYS); Dr. Steven Kennedy as TFTF  
Diversity: one woman, five men, one African-American, one Asian | Ongoing |