



**WRIGHT STATE**  
*UNIVERSITY*

**COLLEGE OF SCIENCE AND MATHEMATICS**

**STRATEGIC PLAN 2012**

***OPENING MINDS TO SCIENCE***

**SEPTEMBER 2007**

## TABLE OF CONTENTS

<b>SECTION</b>	<b>PAGE</b>
I. OVERVIEW .....	3
II. VISION AND MISSION .....	4
III. CORE STRATEGIES .....	5
IV. STRATEGIC OBJECTIVES AND INITIATIVES .....	6
V. PERFORMANCE MEASURES OF SUCCESS .....	10
VI. STRATEGIC ACTION PLANS .....	12
A – D. RESEARCH AND GRADUATE EDUCATION .....	14
E. SCIENCE OF TEACHING AND LEARNING .....	19
F. UNDERGRADUATE EDUCATION .....	23
G. ALUMNI RELATIONS .....	27

# I. Overview:

The Wright State University College of Science and Mathematics (hereinafter known as CoSM) currently is developing a five-year strategic plan with special attention to each of its departments.

CoSM provides undergraduate and graduate degrees through six comprehensive science departments, including:

- **Biological Sciences**
- **Chemistry**
- **Earth and Environmental Sciences**
- **Mathematics and Statistics**
- **Physics**
- **Psychology**

In addition, CoSM has two departments administratively affiliated (matrixed) with the Boonshoft School of Medicine, including:

- **Biochemistry and Molecular Biology**
- **Neuroscience, Cell Biology, and Physiology**

CoSM offers nine undergraduate majors serving 1,789 students; eight undergraduate minors serving 86 students; and 14 Masters Degree programs serving 238 students. CoSM has three Ph.D. programs serving 113 students, including the: (which combines human factors/industrial/organizational psychology—HF/

- **Psychology Ph.D. Program IO Program)**
- **Biomedical Sciences Ph.D. Program (BMS Program)**
- **Environmental Sciences Ph.D. Program (ES Program)**

The CoSM faculty are prolific in obtaining grant funding. Comprehensive departments will receive e-mail with new totals. Comprehensive departments have received nearly \$31 million in funded proposals over the past five years. Matrixed departments have received nearly \$22 million in funded proposals over the past five years.

Dr. Michele Wheatly, Dean of CoSM, has engaged Department Chairs and Directors in a five-year strategic planning process to strengthen core capabilities and focus on strategies at the college level. Strategic Leadership Associates has been retained to assist CoSM in developing a **College of Science and Mathematics: Strategic Plan 2012** in the following phases:

- **Phase I – Departmental Core Capability Assessments**
- **Phase II – CoSM Top Level Vision and Strategy Development**
- **Phase III – Strategic Action Plan Development**

Between September and December 2006, department chairs convened representative teams of faculty to complete a core capability assessment for each participating CoSM department. A representative team of science and math educators concurrently convened and completed their own core capability assessment.

A **Core Capability Assessment Report** dated January 12, 2007 summarizes the assessments of these departmental teams, creating a baseline profile from a faculty perspective of current priorities and recommended initiatives.

On January 12, February 27, February 28, and March 1, 2007 department chairs, directors, and administrative team members of the CoSM met with the Dean to develop a 5-year vision and strategy for the college. In the final phase from May through June 2007, strategic action plans were developed for each CoSM core strategy by interdisciplinary teams of faculty and administrators.

## II. Vision and Mission:

### Vision

Opening minds to science

### Mission

To create passion for Science and  
Mathematics through evidence-based discovery, advancing  
knowledge of the natural world

### III. Core Strategies:

The following core strategies represent the integrated top-level priorities of CoSM, based upon the core capability assessments completed with faculty. Together they represent the “one-page” strategic plan for CoSM to the Year 2012. Each strategy will be supported by a set of objectives and action plans. (Strategies A-D will be supported by one research team.)

#### **Research and Graduate Education**

##### **Core Strategy A – Enhance Core Capabilities for a Research Platform**

Identify available and needed core capabilities (support services, technology, and facilities) for a CoSM research platform to position WSU as a nationally competitive research university.

##### **Core Strategy B – Expand Interdisciplinary Capabilities to Solve Complex World Problems**

Partner with other entities to expand our interdisciplinary capacity to solve complex real world problems in science and mathematics; and especially in biomedicine, science and mathematics education, human and organizational performance, energy and environmental systems, and nano-technology.

##### **Core Strategy C – Strengthen Graduate Education**

Strengthen graduate education in CoSM through growth in doctoral and masters programs and recruitment of top faculty, and outstanding students.

##### **Core Strategy D – Position CoSM as a Regional Research and Educational Partner of Choice**

Position CoSM as a research and educational partner of choice for major applied, educational, and research-based economic initiatives supported by WPAFB, AFRL, BRAC, industry, medicine, and the local economic development community.

#### **Science of Teaching and Learning**

##### **Core Strategy E – Exercise National Leadership in the Science of Teaching and Learning**

Exercise national leadership in the science of teaching and learning, responding to society’s need for mathematics and science literacy and a globally competitive workforce.

#### **Undergraduate Education**

##### **Core Strategy F – Improve Undergraduate Student Success**

Strengthen the undergraduate student success through general education, student-centered faculty, research opportunities, the advising process, student-support programming, and the recruitment of top undergraduate students.

#### **Alumni Relations**

##### **Core Strategy G – Develop and Expand Alumni Relations**

Develop and expand relationships with our CoSM alumni to engage them as partners in our mission.

## IV. Strategic Objectives and Initiatives:

**Strategic objectives and initiatives outline the significant projects and priorities to be accomplished within each of the core strategies. Objectives and initiatives will be further defined in strategic action plans, outlining a timetable for completion and identifying individuals or groups responsible for completing each major strategic plan element.**

### A. Enhance Core Capabilities for a Research Platform

1. Identify research infrastructure needed to grow research funding to \$12M per year including equipment, laboratory facilities, service contracts, and technicians.
2. Determine the appropriate levels of institutional support for the research enterprise at the department, college and university levels.
3. Build our capacity to support graduate students, and post-doctoral fellows.
4. Increase technical and administrative support for principal investigators.
5. Grow the capacity for faculty research productivity through new hires, re – assignments, and research incentives.

### B. Expand Interdisciplinary Capabilities to Solve Complex World Problems

1. Develop consensus on target research initiatives and questions, based on regional, national, and global needs while focusing on our internal strengths, and collaborating with other WSU Colleges, especially the College of Education and Human Services, the Boonshoft School of Medicine, and the College of Engineering and Computer Science.
2. Pursue energy and environmental-systems research initiatives at the state and federal levels.
3. Evaluate our unique niche in nanotechnology research.
4. Assess research emphases which emerge from the Biomedical Sciences Ph.D. program.
5. When possible link interdisciplinary research emphases with commercial outcomes.
6. Enhance the performance of Ohio's schools and the scientific and mathematical literacy of Ohio's citizens through science and mathematics education and outreach.
7. Expand and promote our research capacity to improve human and organizational performance.
8. Create a reward structure to encourage interdisciplinary research among faculty and across colleges.
9. Examine the college structure to engage and promote interdisciplinary work (joint appointments).

### C. Strengthen Graduate Education

1. Improve the reputation of our doctoral and masters programs and our competitiveness for top graduates.
2. Benchmark and maintain Ph.D. student stipends at or above national standards for a full five years.

3. Develop a funding mechanism to support master's students for 12 months annually.
4. Explore extramural funding to support graduate students in areas of national need.
5. Explore "Preparing Future Faculty" programs for Ph.D. students, especially those from underrepresented groups.
6. Expand the number of assistantships offered each year to fill un-subscribed spots.
7. Recruit and retain high quality nationally competitive faculty through improved start – up packages and mentoring programs.

**D. Position CoSM as a Research Partner of Choice**

1. Grow our research partnerships systemically throughout the college.
2. Increase awareness of CoSM capabilities within the local community (other institutions of higher education of HE; business; AFRL, etc).
3. Identify WSU / CoSM graduates in key community, government, and industry leadership positions and pursue partnerships with them where appropriate.
4. Evaluate the research prospectus of the Air Force (including BRAC) to identify potential CoSM opportunities.
5. Identify potential collaboration with daytaOhio.
6. Engage AFRL, Dayton Development Coalition, and WBI to further CoSM's research agenda.
7. Help departments expand relevant missions and portfolios, to link research and education capabilities with external government and industry partners and identify extramural funding.
8. Create a staffing structure that capitalizes on new opportunities to link with government and industry partners.
9. Expand our natural partnership opportunities in biomedicine.
10. Develop our partnerships with local hospitals to expand our "Bench to Bedside" capabilities.
11. Examine bylaws issues related to supporting promotions based on diverse collaborative research.

**E. Exercise National Leadership in the Science of Teaching and Learning**

1. Advance a research agenda in the science of teaching and learning.
2. Create an administrative structure to support science and mathematics education with a view to coordinating activities of science and math educators and possibly exploring a Ph.D. program.
3. Grow the capacity of our STEM pipeline to generate engaged and excited students.
4. Expand our capacity to use simulation as a tool for training, and learning.
5. Improve the articulation of CoSM baccalaureate adolescent young adult (AYA) degrees with the College of Education and Human Services licensure programs.
6. Institutionalize outreach programs to schools, communities, and pre- college students.

7. Continue to attract grant funding for providing science and math teachers with research-based professional development.

**F. Strengthen Undergraduate Student Success**

1. Grow opportunities for undergraduate research, co-ops and internships, and promote to top prospective undergraduate students and the high school guidance community.
2. Graduate more students with degrees in STEM disciplines.
3. Implement teaching “Best Practices” in the introductory sequence of courses within disciplines and in the general education sequence.
4. Provide opportunities for students and faculty interaction throughout the undergraduate experience, including departmental colloquia.
5. Create earlier mandatory assistance for students identified as less successful, particularly in introductory courses, utilizing our technology-based tutorial and learning tools.
6. Assess how well we meet the needs of under-represented students. Develop programming to increase graduation rates.
7. Provide consistent and accessible undergraduate academic advising for all students.
8. Evaluate the alignment of faculty rewards with quality undergraduate teaching; explore strategies for utilizing post-docs, retirees, and other professionals to teach important undergraduate courses.

**G. Develop and Expand Alumni Relations**

1. Educate and advocate for more complete identifications of alumni at the university level.
2. Develop and implement consistent department-level communications and engagement plan for alumni.
3. Develop partnership with the Office of Alumni Relations and create a model for coordinating contacts with key alumni.
4. Continue and expand CoSM alumni events.
5. Explore legacy giving from alumni, with special attention to alumni family members.
6. Explore the potential to partner students and graduates with alumni, laying the groundwork for future employment, co-ops, internships, etc.
7. Engage faculty in alumni relations.
8. Develop a process to engage retirees as friends of CoSM.
9. Develop a process to regularly inform departments of alumni contributions.

## V. Performance Measures of Success:

Performance measures are the proposed metrics of success to be realized as the result of the WSU College of Science and Mathematics strategic plan. These performance measures are intended for use in an annual evaluation by the Dean, Department Chairs, and Program Directors to communicate an institutional report card to key stakeholders on the progress of the College on its strategic plan.

### **Research and Graduate Education**

1. Creation of a business plan for research infrastructure development and maintenance.
2. Growth in the number of first choice offers accepted annually for tenure line faculty positions.
3. Growth in the number of research active faculty, based on established benchmarks (funding, publications, and presentations).
4. Growth in the number of postdoctoral fellows and graduate students funded by research support.
5. Growth in the number of faculty involved in multi-disciplinary proposals and awards, tracked by established areas of research.
6. Growth in the number of disclosures to the technology transfer office.
7. Growth in the number of graduate students entering each of our doctoral programs.
8. Growth in graduate compensation.
9. Improvement in the percent of first offers accepted by applicants for graduate assistantships.
10. Growth in the number of students on independently funded fellowships and internships.
11. Growth in the number of full-time master's students completing programs within two years and doctoral students completing in 5 years.
12. Growth in the number of adjunct graduate faculty from industry, WPAFB, and hospitals participating on thesis committees.
13. Growth in submitted and funded proposals with industry and government.
14. Growth in CoSM's investment in staff support devoted to managing partnership efforts.

### **Science of Teaching and Learning**

1. Establish The Science and Mathematics Education Program.
2. Growth in the number of "Middle Childhood" and "AYA" students entering the post baccalaureate program in the College of Education and Human Services specializing in STEM content areas.
3. Growth in the number of graduate students in CoSM's Master of Science in Teaching (MST) programs.

4. Growth in the number of dollars and of state and federal initiatives to enhance preparation of pre- and in-service teachers.
5. Explore the establishment of a Center for Learning Research.
6. Growth in extramural funding to support Learning Research.

### **Undergraduate Education**

1. Growth in the number of honors' theses, presentations, and undergraduate research hours.
2. Improvement in year 1 to year 2 retention rates of undergraduate majors.
3. Improvement in six year graduation rate of undergraduates.
4. Growth in the number of "STEM" graduates, and those pursuing advanced degrees.
5. Growth in curriculum-development grants, new courses, and enhancements to undergraduate teaching and learning.
6. Growth in extramural funding for undergraduate research and scholarships.
7. Growth in the level of participation of undergraduate majors in departmental seminars and colloquia.
8. Establishment of an undergraduate CoSM Dean's Advisory Council to enhance quality of life.

### **Alumni Relations**

1. Increased annual participation rates of alumni in CoSM activities.
2. Increased annual number and average dollar value of alumni gifts.
3. Increased number of annual alumni recognition events.
4. Increased annual level of alumni sponsored jobs, internships, and mentoring / shadowing programs for CoSM graduate and undergraduate students.

## VI. Strategic Action Plans:

### ***Research and Graduate Education***

#### **Core Strategy A – Enhance Core Capabilities for a Research Platform**

Identify available and needed core capacities for a CoSM research platform involving support services, labs, technology, and facilities; and positioning WSU as a nationally competitive research university.

#### **Core Strategy B – Expand Interdisciplinary Capabilities to Solve Complex World Problems**

Partner with other entities to expand our interdisciplinary capacity to solve complex real world problems in science and mathematics; and especially in biomedicine, science and mathematics education, human and organizational performance, energy and environmental systems, and nano-technology.

#### **Core Strategy C – Strengthen Graduate Education**

Strengthen graduate education in CoSM through growth in doctoral programs and recruitment of top faculty, and outstanding students.

#### **Core Strategy D – Position CoSM as a Regional Research and Educational Partner of Choice**

Position CoSM as a research and educational partner of choice for major applied, educational, and research-based economic initiatives supported by WPAFB, AFRL, BRAC, industry, medicine, and the local economic development community.

On May 31 and June 14, 2007, members of the faculty and staff of the WSU College of Science and Mathematics met to develop a strategic action plan for their assigned core strategy as part of the **WSU CoSM 2012: Strategic Plan**. The following action plan was developed by members of the Research and Graduate Education Planning Team. Team members include:

Tim Cope (Chair)  
Neuroscience, Cell Biology, and  
Physiology

Joanne Dombrowski  
Mathematics

Mike Reynolds  
CoSM Administration

Jerry Alter  
Biochemistry & Molecular Biology  
Biomedical Sciences Ph.D. Program

Bill Feld  
Chemistry

Thad Tarpey  
Mathematics and Statistics

Steve Berberich  
Biochemistry and Molecular  
Biology

Eric Fossum  
Chemistry

Yvonne Vadeboncoeur  
Biological Sciences

Allen Burton  
Earth & Environmental Sciences

Mike Leffak  
Biochemistry & Molecular Biology

Dan Voss  
CoSM Administration

Don Cipollini  
Biological Sciences  
Environmental Sciences Ph.D.  
Program

Doug Petkie  
Physics

Dan Weber  
Psychology

Larry Ream  
Neuroscience, Cell Biology, and  
Physiology

Michele Wheatly  
CoSM Administration

Key Decisions and Actions	Start Date	Completion Date	Responsibility
<i>Core Strategy A – Enhance Core Capabilities for a Research Platform</i>			
A1. Consistently train administrative staff and PIs in areas of grant administration and routine policies and procedures.	October 2007	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> <li>• Dean’s Business Manager in consultation with University Administrative Staff</li> <li>• Unit Business Managers</li> </ul>
A2. Identify core research areas of strategic investment across departments leading to recruitment of new faculty and graduate students with potential to build research capacity in areas critical to the state and nation.	Oct 2007	July 2008	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Directors of Doctoral &amp; Graduate Programs</li> <li>• Department Chairs</li> </ul>
A3. Review the findings of the university study on business practices. Identify specific operational problems in the areas of Human Resources, Finance, Purchasing, Travel, Institutional Review Board, etc. that hinder effectiveness of principal investigators. The Dean engages V.P. for Research and V.P. for Business to advocate for specific policy and practice adjustments.	January 2008	July 2008 (ongoing)	<ul style="list-style-type: none"> <li>• Dean</li> <li>• V.P. for Research</li> <li>• V.P. for Business</li> </ul>
A4. Develop an ongoing 10-year CoSM Research Capabilities Plan based upon identified needs of research core areas focusing on common-use facilities (equipment, personnel, and technology) and including a re-evaluation of the use of existing facilities.	January 2008	January 2009 (annual updates)	<ul style="list-style-type: none"> <li>• Deans CoSM, CECS and BSOM</li> <li>• Department Chairs</li> <li>• V.P. Research</li> <li>• Faculty liaison for science lab project and AVP Facilities</li> </ul>

*Core Strategy A – Enhance Core Capabilities for a Research Platform (continued)*

A5. Provide impetus to the Provost’s Office for developing a university-wide policy to help employ “trailing spouses.”	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Provost</li> </ul>
A6. Identify ways to create accountability for increased startup packages for entering faculty possibly re-examining the by-laws and criteria for P&T.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> <li>• Faculty</li> <li>• V.P. for Research</li> </ul>
A7. Create a financial incentive for graduate students and post-doctoral students who compete for and receive independent grants to support their work.	August 2008	August 2010	<ul style="list-style-type: none"> <li>• Dean</li> <li>• V.P. for Research</li> </ul>
A8. Create incentives for faculty to broaden grant applications for interdisciplinary work.	August 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Chairs</li> <li>• RSP</li> </ul>
A9. Seek one endowed chair slot for a research scholar in each core research area.	October 2008	August 2012 (ongoing)	<ul style="list-style-type: none"> <li>• Dean</li> <li>• University Development Office</li> <li>• V.P. for Research</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
<i>Core Strategy B – Expand Interdisciplinary Capabilities to Solve Complex World Problems</i>			
B1. Based upon targeted research areas, develop a critical mass of research-active faculty who can support doctoral students in Environmental Sciences, Biomedical Science and HF/IO Ph.D. programs. Consider joint appointments with the CECS and BSOM	January 2008	June 2012 (ongoing)	<ul style="list-style-type: none"> <li>• Department Chairs</li> <li>• Dean with Deans of CECS and BSOM</li> <li>• Provost</li> </ul>
B2. Examine alternative models of hiring Ph.D. level researchers to support research agenda and to prepare interdisciplinary postdocs for the professoriate.	January 2008	June 2012	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Inter-disciplinary Program and Center Directors</li> <li>• Provost</li> </ul>
B3. Work with the V.P. for Research, Dean of CECS and BSOM to benchmark industry standards for research infrastructure support and occupants of facilities.	January 2008	January 2009 (Recommendations)	<ul style="list-style-type: none"> <li>• Dean with Dean CECS and BSOM</li> <li>• V.P. for Research</li> </ul>
B4. Create an internal searchable CoSM keyword list of faculty resumes and article abstracts to connect faculty on interdisciplinary projects.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Department Chairs</li> <li>• Department Faculty</li> </ul>
B5. Orient new faculty to the opportunities for commercial applications technology transfer.	August 2008	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> <li>• Research and Sponsored Programs</li> <li>• daytaOhio</li> <li>• TTO</li> </ul>
B6. Create a mechanism (retreat, forum, seminars, etc.) for faculty to brainstorm on core research areas for potential collaborative research.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Chairs</li> <li>• Faculty</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
<i>Core Strategy C – Strengthen Graduate Education</i>			
C1. Increase interdisciplinary proposal submissions (e.g., IGERT).	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Faculty</li> <li>• Graduate Students</li> </ul>
C2. Strengthen the CoSM web presence focusing greater attention on faculty and student success and research core areas. This could be a vehicle for seeking State STEM funding to attract new students and faculty.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Department Chairs</li> <li>• Faculty</li> </ul>
C3. Develop mentoring program for new faculty to insure success.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> <li>• Faculty</li> </ul>
C4. Increase identification and solicitation of corporate and individual gifts to fund graduate students.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Department Chairs</li> <li>• CoSM Advisory Board</li> </ul>
C5. Identify improved space and facilities for graduate students in the research capability plan.	Underway	June 2012	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Chairs</li> <li>• Faculty liaison for science lab renovation</li> </ul>
C6. Develop a network of small college affiliates in Ohio and a plan to actively recruit, potential graduate students.	January 2009	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> <li>• Dean’s Office</li> <li>• Faculty</li> <li>• Graduate program directors</li> </ul>
C7. Create a graduate student association at WSU and a graduate student senate within CoSM to improve student interaction and quality of life.	June 2009	June 2012	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Student Affairs</li> <li>• Dean, Graduate Studies</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
<i>Core Strategy D – Position CoSM as a Regional Research and Educational Partner of Choice</i>			
D1. Assemble basic, applied, and interdisciplinary research capabilities in energy and environmental science (CoSM, CECS) as an emerging state priority.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• V.P. for Research</li> <li>• Deans of CoSM and CECS</li> <li>• Department Chairs</li> </ul>
D2. Align CoSM basic, applied, and interdisciplinary research with emerging BRAC core competencies and the Air Force research agenda. Work with the V.P. for Research to advocate for resources to build regional economic development.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• V.P. for Research</li> <li>• Deans of CoSM and CECS</li> <li>• Appropriate Chairs</li> </ul>
D3. Work with existing state entities (i.e., Wright Brothers Institute, Wright Centers for Innovation, daytaOhio, and Wright State Research Institute) to identify connections between CoSM research areas and high priority state investments.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• V.P. for Research</li> <li>• Dean</li> <li>• Department Chairs</li> <li>• Director, WSRI</li> <li>• daytaOhio</li> </ul>
D4. Partner with energy companies to find energy sources utilizing CoSM Earth and Environmental Sciences expertise.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• EES Chair</li> <li>• daytaOhio</li> </ul>
D5. Explore partnership opportunities with the biomedical research and clinical community.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs (Matrix Departments)</li> <li>• Program Directors</li> <li>• BSOM</li> </ul>

## ***Exercise National Leadership in the Science of Teaching and Learning***

**Exercise national leadership in the science of teaching and learning responding to society's need for mathematics and science literacy and a globally competitive workforce.**

On May 24 and June 12, 2007, members of the faculty and staff of the WSU College of Science and Mathematics met to develop a strategic action plan for their assigned core strategy as part of the **WSU CoSM 2012: Strategic Plan**. The following action plan was developed by members of the Science of Teaching and Learning Planning Team. Team members include:

John Flach  
Psychology

Susann Mathews  
Mathematics and Statistics

Ed Rutter  
CEHS & CoSM Dean's Offices

Bill Slattery  
Earth and Environmental Sciences

Key Decisions and Actions	Start Date	Completion Date	Responsibility
<i>Research at the Intersection of Technology and Learning</i>			
E1. Maximize success of the IGERT Program by increasing participation of CoSM faculty, particularly BMS faculty.	Underway	August 2012	<ul style="list-style-type: none"> <li>• Director, IGERT Program</li> <li>• Directors, BMS &amp; HF/IO</li> <li>• Faculty</li> </ul>
E2. Facilitate collaboration between the CoSM Veritas Facility and the daytaOhio Visualization Lab in the Joshi Center to support Ph.D. research.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Psychology Department</li> <li>• daytaOhio</li> </ul>
E3. Market the Veritas Facility to the AFRL Human Effectiveness Laboratory as a key support research facility.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Psychology Department</li> </ul>
E4. Continue to use the Veritas Facility as a stimulus for multi-disciplinary research grant development.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Psychology Department</li> </ul>
E5. Capitalize on BRAC centralization of “human factors” in Dayton as a case for a university commitment and partnership with AFRL.	August 2007 (exploration)	August 2008	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• V.P. for Research</li> <li>• Director, IGERT Program</li> <li>• Wright Brothers Institute</li> </ul>
E6. Develop a proposal for an endowed chair position at the intersection of human effectiveness, computer science and engineering to promote inter-disciplinary research in complex human problem-solving. An Air Force investment could be solicited for this position.	September 2007	January 2012	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Chair, Psychology</li> <li>• Department Chair, CSE</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
<i>National Leadership in Math and Science Education</i>			
E7. Continue to work with CEHS to assure that CoSM programs meet NCATE standards and outcomes.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Science and Mathematics Educators</li> </ul>
E8. The Deans of CoSM and CEHS will create an administrative structure to support science and mathematics education. Faculty and leadership will define the mission and scope of the program's activities and develop by-laws.	January 2008	August 2008	<ul style="list-style-type: none"> <li>• Dean of CoSM</li> <li>• Dean of CEHS</li> <li>• Interim Director of Science and Math Education program</li> </ul>
E9. Conduct a site visit to Texas with the purpose of considering a resubmission of the UTeach Grant to the National Math and Science Institute.	August 2008	August 2009	<ul style="list-style-type: none"> <li>• Science and Mathematics Educators</li> </ul>
E10. Evaluate whether the preferred direction for science and math education is pursuing the "UTeach" model, leading to a four-year licensure program, or developing a doctoral program focusing on early and middle childhood science and mathematics education.	August 2008	August 2009	<ul style="list-style-type: none"> <li>• Dean of CoSM</li> <li>• Dean of CEHS</li> <li>• Science and Mathematics Educators</li> <li>• Interim Director of Science and Math Education program</li> </ul>
E11. Seek ways to improve articulation between undergraduate STEM major programs and fifth-year licensure program such as fellowships or a loan forgiveness program.	August 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean CoSM</li> <li>• Dean CEHS</li> <li>• Provost</li> </ul>

*National Leadership in Math and Science Education (continued)*

E12. Re-examine the middle childhood curriculum for students in the science concentration.	August 2008	August 2009	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Science and Mathematics Educators</li> </ul>
E13. Evaluate the work and mission of the "WeEXCEL Center" to identify its preferred role and contribution to the overall CoSM science and mathematics education mission. Strengthen its capacity to integrate its work with licensure programs.	August 2008	August 2009	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Science and Mathematics Educators</li> <li>• Director EXCEL Center</li> <li>• Interim Director of Science and Math Education program</li> </ul>
<b>Key Decisions and Actions</b>	<b>Start Date</b>	<b>Completion Date</b>	<b>Responsibility</b>
<i>Undergraduate Experience in STEM Teaching and Learning</i>			
E14. Use the Intersession to promote multi-disciplinary interaction through a college-wide colloquia or conference featuring experts on the Science of Teaching and Learning for faculty and graduate students.	August 2008	November 2009 (annual intersession series)	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Chairs</li> </ul>
E15. Continue efforts to increase the number of students planning careers as high school science or math teachers through recruiting and marketing programs, mentoring, and providing early teaching experiences including employment as learning assistants and early school placements.	August 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean of CoSM</li> <li>• Dean of CEHS</li> <li>• Science and Mathematics Educators</li> </ul>

## ***Continue to Improve Undergraduate Student Success***

**Continue to strengthen undergraduate student success through general education, student-centered faculty, research opportunities, the advising process, and the recruitment of top undergraduate students.**

On May 24 and June 8, 2007, members of the faculty and staff of the WSU College of Science and Mathematics met to develop a strategic action plan for their assigned core strategy as part of the **WSU CoSM 2012: Strategic Plan**. The following action plan was developed by members of the Undergraduate Education Planning Team. Team members include:

Joyce Howes (Chair)  
CoSM – Student Services

Mark Mamrack  
Biology

Daniel D. Bombick  
Chemistry

Nick Ritucci  
Neuroscience CBP

Cindy Carney  
Earth and Environmental Sciences

Jim Vance  
Mathematics and Statistics

Julie Konik  
Psychology

Susan Yeoman  
CoSM – Student Services

Key Decisions and Actions	Start Date	Completion Date	Responsibility
F1. Continue efforts to increase student retention in STEM disciplines through such strategies as early identification of students needing extra support, developing a bridge course, and modifying courses that function as gate keepers.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Departments</li> </ul>
F2. Promote the "Wright On Track" Program to current top CoSM majors featuring priority registration and a fifth year option with undergraduate research, international study, etc.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Directors</li> </ul>
F3. Continue to improve and implement the "STEP" Grant to increase "STEM" graduates and identify other possible funding options.	Underway	August 2012	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Faculty</li> </ul>
<p>F4. Continue outreach programs to bring K-12, especially middle school students, to campus to engage in science activities such as:</p> <ul style="list-style-type: none"> <li>• Greene County Science Fair</li> <li>• Exploring Science</li> <li>• Chem Demo Program</li> <li>• Faculty Outreach to Local Schools</li> <li>• PSEO</li> </ul> <p>Collaborate whenever possible with CECS and BSOM.</p>	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Department Chairs</li> </ul>
F5. Collaborate with Undergraduate Admissions to recruit more students to PSEO (Post-Secondary Education Options). This could include undergraduate students promoting these options in their home districts. This may be a good candidate project for STEM funds.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Admissions Office</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
F6. Consistently invite undergraduate majors to departmental colloquia and seminars. Expand this to an annual college-wide research day (i.e., end of spring) with a reception or event.	Underway in some departments	Annual cycle	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Department Chairs</li> </ul>
F7. Develop an exploratory group to seek grant opportunities from anticipated state "STEM Funds" for: <ul style="list-style-type: none"> <li>• Choose Ohio First Scholars</li> <li>• Increased number of science and mathematics educators</li> <li>• Faculty innovation grants in the introductory sequence</li> </ul>	September 2007	August 2012	<ul style="list-style-type: none"> <li>• Dean</li> <li>• Department Chairs</li> </ul>
F8. Create a research scholarship at the undergraduate level. This could be funded by research training grants at the lab level and/or college level.	September 2007	September 2009	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
F9. Collaborate with Career Services and UCIE to increase co-ops, internships, and international study opportunities for CoSM students in the community.	January 2008	August 2008 – April 2009 (implement)	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
F10. Work with the university Admissions Program to have a CoSM presence at programs with guidance counselors, promoting CoSM research and internship opportunities. This may require a review of resource priorities.	January 2008	September 2008 (ongoing)	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
F11. Work with Admissions to highlight CoSM faculty who have undergraduate research opportunities. Promote the web site as a recruiting tool for top prospective students.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Admissions Department</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
F12. Develop an undergraduate student advisory board to create an Ambassador's Program.	January 2008	April 2008 (ongoing)	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
F13. Develop a CoSM Early Intervention Program for students to identify and assist sophomores and above at-risk students who demonstrate poor performance in the 200 level sequence of courses.	January 2008	August 2008 (ongoing)	<ul style="list-style-type: none"> <li>• Dean's Office (Student Services)</li> <li>• Faculty</li> </ul>
F14. Survey CoSM undergraduates on the effectiveness of the advising services of departments. Use data to inform the most effective advising practices in CoSM and to strengthen skills of our student advisors.	January 2008	August 2008 (ongoing)	<ul style="list-style-type: none"> <li>• Student Services</li> </ul>
F15. Strengthen CoSM knowledge of available funding opportunities for under-represented students (scholarships, NSF grants, etc.). Use the advising process to educate and counsel students on these options.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Student Services</li> <li>• Office of Financial Aid</li> </ul>
F16. Develop program for funded STEM coaches for students.	August 2008	August 2009	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
<p>F17. Convene a department chair level task force to evaluate ways to strengthen the quality of undergraduate instruction, including:</p> <ul style="list-style-type: none"> <li>• Faculty incentives to teach General Education Courses</li> <li>• Use of teaching post-doctoral positions in lieu of adjuncts and lecturers, etc.</li> </ul>	August 2009	August 2010 (ongoing)	<ul style="list-style-type: none"> <li>• Dean-appointed Task Force</li> </ul>

*Develop and Expand Alumni Relations*

**Develop and expand relationships with CoSM Alumni to engage them as partners in our mission.**

On May 23, 2007, members of the faculty and staff of the WSU College of Science and Mathematics met to develop a strategic action plan for their assigned core strategy as part of the **WSU CoSM 2012: Strategic Plan**. The following action plan was developed by members of the Alumni Relations Planning Team. Team members include:

Stacia Edwards (Chair)  
CoSM Administration

Harry Khamis  
Statistical Consulting Center

Tom Brown  
Matrix INCBP

Diane Ponder  
Biomedical Sciences PhD

Laura L. Buerschen  
Biological Sciences

Mike Reynolds  
CoSM Administration

David Goldstein  
Biological Sciences

Ken Turnbull  
Chemistry

Michael Hennessy  
Psychology

Paul Wolfe  
Earth and Environmental Sciences

Key Decisions and Actions	Start Date	Completion Date	Responsibility
G1. Expand departmental seminars and speaker programs to include a student “Meet and Greet” component with invited distinguished guests.	Underway	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> </ul>
G2. Develop a Retirees Contact List for each department to be shared with the Dean’s Office.	October 2007	Update annually	<ul style="list-style-type: none"> <li>• Dean’s Office</li> </ul>
G3. Develop a common database system for alumni and current graduates’ contact information working with advisors in each CoSM department.	January 2008	August 2008	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Department Advisors</li> <li>• Statistical Consulting Center</li> </ul>
G4. Encourage departments to create a local department-level listserve to contact and invite local alumni to campus events of interest to them.	January 2008	Ongoing process	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Department Chairs</li> </ul>
G5. Encourage each department to host an open house for its alumni each year to include meeting faculty and touring labs, etc.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Department Chairs</li> </ul>
G6. Coordinate CoSM and departmental marketing (collateral) material for use with alumni and as recruitment tools. Re-develop the annual report as a potential recruitment and marketing tool.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean’s Office</li> </ul>
G7. Engage retirees in CoSM and departmental events as key supporters and participants in the life of the college.	January 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean’s Office</li> <li>• Department Chairs</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
G8. Create a CoSM Alumni Speakers Series featuring three to four public presentations by alumni each year with a day in the classrooms for featured alumni presenters. A corporate donor could be identified as a sponsor.	March 2008	Annual Series	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
G9. Create a signature CoSM annual recognition event for alumni and faculty. Each department would choose an alumni/a graduate to be recognized annually. Departments would have the flexibility to identify the type of recognition and person honored each year.	April 2008	Annually	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Department Chairs</li> </ul>
G10. Interview faculty retirees as they leave the university to identify key alumni and industry contacts of importance to CoSM.	May 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
G11. Work individually with faculty advisors to identify and, as appropriate, to visit alumni who are leaders in their industry. This would be initiated through annual faculty information updates on the graduates they have advised.	July 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> <li>• Faculty Advisors</li> </ul>
G12. As the Banner System becomes more operational, work with the university Development Office to integrate CoSM alumni and graduate data at the university level.	August 2008	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>

Key Decisions and Actions	Start Date	Completion Date	Responsibility
G13. Encourage departments to host alumni gatherings at major national disciplinary meetings. Utilize the CoSM database to contact departmental alumni and bypass conference sponsor overhead fees.	August 2008	Ongoing (annually)	<ul style="list-style-type: none"> <li>• Department Chairs</li> </ul>
G14. Explore the potential model of the Biological Sciences Careers Course for use as a vehicle for career exposure for students in other departments.	August 2008	Ongoing	<ul style="list-style-type: none"> <li>• Biological Sciences</li> <li>• Department Chairs and Director</li> </ul>
G15. Develop a CoSM-level call program to contact alumni and identify their current interests and ideas so the university can support them. (This is not a fund-raising solicitation process.) The program would use current CoSM students.	January 2009	Ongoing	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>
G16. Encourage one or two departments to re-develop the "Board of Counselors" model to meet annually as promoters and advisors to department chairs. Earth and Environmental Sciences is a likely candidate department to initiate this effort.	April 2009	Ongoing	<ul style="list-style-type: none"> <li>• EES Department</li> <li>• Other Departments</li> </ul>
G17. Work with the university Development Office to create a long-term strategy for deferred (legacy) gifts to CoSM and its departments.	August 2009	August 2010 (in place)	<ul style="list-style-type: none"> <li>• Dean's Office</li> </ul>