

**STRATEGIC FRAMEWORK FOR 2016**  
**Academic Planning Proposals from Clusters**

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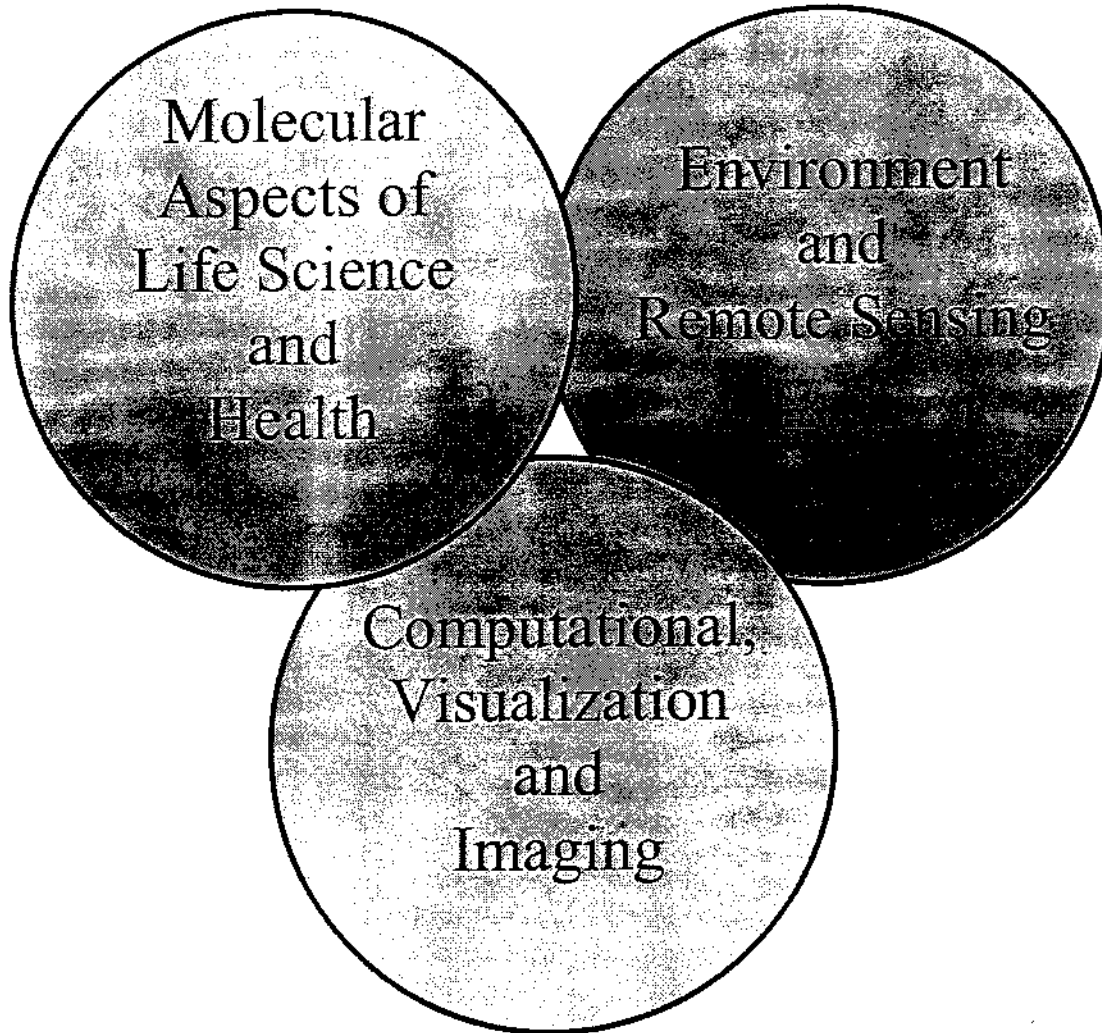
Charge to Academic Planning Groups

*Strategic Framework for 2016*

# Natural Science Cluster Recommendations

Natural Science Planning Cluster  
Themes and Recommendations

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The figure represents the three principal research areas that the departments in the natural sciences and mathematics will emphasize over the next decade. These three areas of emphasis will build upon existing strengths and link research in the natural sciences to other centers and institutes, other departments and colleges at UMBC, UMB, UMBI, and with an array of laboratories and companies in the Baltimore/Washington region. These priority research areas will influence the faculty we search for, the equipment needed, the technicians required to operate that equipment, and the type of facilities to conduct our work. While continuing to support individual research interests, the future direction of research in the natural sciences and mathematics at UMBC will recognize the need for a central core facility (or facilities) where major scientific and computational equipment is housed and supported. Faculty from different departments and disciplines, in addition to “owning” their own equipment, will go to the core facilities along with other investigators and make use of the services. Future research at UMBC will be far more interdisciplinary and the three areas identified will become the areas for which we will become known and recognized.

## Natural Science Planning Cluster-Cluster Recommendation #1

### **1a: Proposed Focus, Theme or Identity: Molecular Aspects of Life Sciences, and Health.**

UMBC has a strong tradition of excellence in the life sciences. This area, which is consistent with the campus mission, provides a basis for the strong undergraduate science program and forms a nucleus for the research of nearly 50 faculty members. It also contributes to the economic strength of the region and the state. This proposal makes recommendations to advance research in this area, building on current strengths in such areas as cancer, virally mediated diseases, toxicology, therapeutics and diagnostics.

### **1b. Relationship of the recommendation to Mission area.**

Several departments have elements that are relevant to this theme. This proposal would enhance research, as well as undergraduate and graduate education in these departments. It will enable faculty members to increase their capability to conduct research at the cutting edge and to compete successfully for funding

**2. Briefly describe what has been done?** Close to 50 faculty members conduct research in the molecular aspects of life sciences and health. These faculty members are concentrated in the Departments of Biological Sciences, Chemistry & Biochemistry, Chemical Engineering and Mathematics & Statistics. Particular areas of strength include structural biology, bioengineering, molecular biology, developmental biology, synthetic chemistry, evolution, neurobiology, sensors, proteomics and bioinformatics. A major investment in this area has been made by the campus over the past 20 – 25 years with renovation of facilities, purchase of expensive instrumentation for mass spectrometry, NMR, fluorescence spectroscopy, microscopy, cell sorting, DNA sequencing, computation, and others. Technical personnel are supported in core facilities for electronics, machining, glassblowing, NMR, mass spectrometry, microscope facilities, animal rooms, and a greenhouse.

**3. Recommendation:** We propose development of the infrastructure necessary to conduct state of the art research and training in these areas, specifically additional cross-departmental core resources based on the model currently operative with the mass spectrometry and NMR facilities. These new facilities should include (1) enhancement of the X-ray structure facility to include small molecule capabilities, (2) enhancement of the microscopy core facility, including cryo-electron microscopy capabilities, (3) a core genomics/proteomics facility with a slide printer/reader, spot picker, computers with up-to date software for data analysis, (4) large-scale production of biological molecules for molecular biological, biochemical and biophysical analysis. These facilities must be staffed with highly qualified technicians (at least Masters level). Creating such facilities will be the key to keeping UMBC competitive with other institutions in the increasingly difficult funding situation in the life sciences. We further propose the addition of several eminent faculty in this area, with emphasis on those with cross-disciplinary interests in structural biology (x-ray crystallography), genomics, and bioinformatics to enhance both research and teaching in these areas. Endowed professorships in the life sciences are also vital if we are to be able to compete for and retain the best faculty. We note, too, that replacement of existing faculty in this area who retire in the next several years is a very high priority, which must be addressed along with other needs in the life sciences.

**4. Estimate the resources required:** Additional space will be needed in several departments to accommodate new hires, and ultimately a new Life Sciences Building should be a priority for the campus. Startup costs for an endowed professorship are approximately \$1M, and startup costs for other positions will average \$500k. Technical staff will cost approximately \$75k/year each with fringes. Completion of the x-ray facility will require an additional faculty member, as well as a technician, in addition to enhancement of the facility to include small molecule capabilities. An approximate cost for either initiation of enhancement of each of the four additional core facilities is \$500,000 to \$2 M. We envision that these facilities will be partially self-supported through cost centers such as those now in place for the NMR and mass spectrometry facilities.

**5. Relationship of the recommendation to the Strategic Framework's supporting goals and objectives -** This proposal supports the major UMBC goal of continuing to build research and graduate education. Specific objectives that are supported are 2e, 3e, 4d, and 5c.

## Natural Science Planning Cluster-Cluster Recommendation #2

### 1a. Proposed Focus, Theme or Identity: Environment and Remote Sensing.

UMBC has often stated as a goal to enhance environmental research as a focus area for further growth. This theme makes a number of recommendations which would advance that goal. Integrated into the theme is an advancement of existing strong capabilities in the areas of remote sensing from the ground and space.

**1b. Relationship of the recommendation to Mission area:** UMBC has academic program elements in over ten Departments and Centers that are relevant to this theme. Instruction in this cluster occurs at the graduate level in Mathematics and Statistics, MEES, and Atmospheric Physics. Additional undergraduate level instruction occurs in the Environmental Science and Studies program and Civil and Environmental Engineering (graduate level as well). Research on these fields broadens across three big-C centers, CUERE, JCET and GEST. The main impact of this theme is in undergraduate/graduate instruction and research.

**2. Briefly describe what has been done?** Close to 25 tenure-track faculty and 140 research faculty in JCET, GEST, Geography and Environmental Systems, Math/Stats, Biological Sciences, Chemical Engineering, Civil and Environmental Engineering, Physics. Satellite remote sensing, air quality, water quality, toxic chemicals, geographic information systems (GIS), land surface processes, soils, atmospheric Physics are amongst research areas in which UMBC has considerable strength. \$5-10M in laboratory resources exists at UMBC plus NASA/USGS/USFS resources on campus, mostly in individual researcher labs.

**3. Recommendation:** We propose development of three core cross-departmental resources, including (1) gas chromatography/mass spectrometry (GC/MS), inductively coupled plasma electron and mass spectrometry (ICP-MS, ICP-ES) for *in-situ* environmental monitoring; (2) GIS core-facility support and (3) computational facilities for remote sensing visualization and modeling (shared with Computation/Visualization/Imaging Theme). Program development in geosciences will be broadened by this initiative. This theme supports the development of a new MEES area of specialization in Urban Environmental Systems but believes that UMBC's interests are broader than MEES. At some point, UMBC should be able to support graduate research in areas of environmental chemistry/physics/geophysics/hydrology outside MEES. This theme supports the JCET/Physics Department Satellite Remote Sensing Initiative (SRSI).

**4. Estimate the resources required:** Technical support for the core facilities (1 person for each, total \$225k). Over 10 years, five new tenure track positions would be added in this cluster to support this theme. Ten additional GA positions would be needed in this area. Total incremental spending on this theme would be \$1 M/year (in 2004 dollars) by 2014.

### 5. Relationship of the recommendation to the Strategic Framework's supporting goals and objectives:

The Strategic Framework restates the University Mission concerning integrating teaching, research, and service, and the Framework principles discuss continual building of research and graduate education, along with providing a distinctive experience for undergraduates. Environment and remote sensing, considering UMBC's placement amongst a number of national laboratories who have this focus, would provide broad career opportunities for its graduates and is an important niche area for the University. Together this focus recommendation supports Goals 2e, 3e, 4d, and 5c.

## Natural Science Planning Cluster-Cluster Recommendation #3

### **1a. Proposed Focus, Theme, or Identity: Computational, Visualization, and Imaging Focus.**

This recommendation is designed to enhance the research capacity on campus, to augment the educational process of future scientists and engineers, and to help provide facilities to draw more attention and perhaps collaborative partnerships with technical off-campus enterprises. Hence, the strengthening of these activities will be beneficial to all the science and engineering departments, most centers, and departments invested in collaborative technologies.

**1b. Relationship of the recommendation to Mission area:** Scientific computation through simulation is now the third component in the research enterprise, along with experiment and theory, of several science and engineering departments. This methodology will continue to gain importance as problems and their models become ever more complex. Projects and methodologies are migrating down to graduate and undergraduate research levels that must address these issues, so equipment and curriculum at all levels must stay current with research frontiers. The recommendation falls into the categories of undergraduate and graduate education, research, and academic support.

**2. What currently is being done to support the recommendation:** Research and instruction in visualization, imaging, and computation, to one degree or another, exists in all science departments. An estimate of 25 science faculty and 20 research faculty are involved in scientific computational activities in Physics, Mathematics & Statistics, Chemistry, Biological Sciences, JCET, GEST, and CASPR, along with other faculty in Geography and Environmental Systems, Chemical Engineering, Mechanical Engineering, CSEE, Information Systems, CUERE and the Imaging Research Center (IRC). UMBC's research strengths include novel imaging techniques, electron microscopy, atomic force microscopy (AFM), nanomaterials, and three-dimensional (3D) visualization, along with expertise in compute intensive physical/numerical modeling and optimization. Areas of research that can be aided by new imaging and visualization developments are remote sensing, molecular and genetic design, and scientific/engineering computation. There are no UMBC core facilities; equipment is distributed across individual research labs and departments. This poses challenges to maintenance and technical support, along with funding critically new peripheral equipment, and presenting a coherent educational approach.

**3. Recommended actions to strengthen the theme:** There has been little support for a centralized high-end computing facility among science faculty. However, there will be an increasing need for more technical personnel in the Science Cluster to provide support to researchers in parallel code development, aid in optimizing code for distributed processing systems, and technical support for visualization, GIS, and 3D design. We might investigate the use of staff within CUERE, IRC, and Geography and Environmental Systems on a part-time basis to alleviate this need in the short term. But technical support will be needed by several campus research groups, so a central resource center housing these technical specialists to accommodate the research community is recommended.

**4. Estimate of resources likely required to implement the recommendations:** The Natural Science cluster would be a obvious place for computational science developments and technical resources. Overall cost for three technical personnel is about \$225K per year and capital outlay of \$300-500K for the high-end visualization/analysis facility.

**5. Relationship of the recommendation to the Strategic Framework's supporting goals and objectives:** The Strategic Framework restates the University Mission concerning integrating teaching, research, and service, and the Framework principles discuss continual building of research and graduate education, along with providing a distinctive experience for undergraduates. Scientific computation, including getting undergraduate students involved in research projects, needs more integrated support. Together this focus recommendation supports Goals 2e, 3e, 4d, and 5c.

## Natural Science Planning Cluster – Campus-Wide Recommendation #1

### Research Infrastructure and Faculty Start-up Costs.

1a. This recommendation addresses the issue of the UMBC research infrastructure and faculty start-up costs.

1b. This recommendation is central to the UMBC mission and cuts across most of the Strategic Planning categories. One of the two major goals in the “Strategic Framework for 2016” documents is to continue to build research at UMBC. Strengthening the research infrastructure and supporting new faculty are critical elements in building research.

2. In 2002 the Graduate School underwent an external review that included the preparation of a self-study and an external review. In addition to a number of positive statements, the external reviewers identified a variety of areas of concern and weaknesses in our support and investment in research at UMBC. Following this external review, the PLT undertook its own review of the state of the research infrastructure at UMBC. The resulting two reports have resulted in considerable discussion and some new planning to respond to the problems identified in grants management, use of F&A (facilities and administrative; a.k.a. indirect) funds, and research compliance. Nevertheless, major issues remain and require our immediate attention.

3. Our recommendation is to support the existing recommendations identified in the PLT review of the research infrastructure. Of primary importance is to re-examine the way the campus makes use of the return of indirect funds associated with grants (F&A). We believe that the current policy of only identifying 50% of the funds returned to research spending is short-sighted. Further, the spending on the “state” portion of indirect should be invested in the research infrastructure in a way that is clear and transparent to all. Most important, faculty start-up costs should be carried by multiple funding sources including state funds and not solely dependent on an overtaxed DRIF account.

4. The process recommended involves reallocation of the F&A return to support research at UMBC. In addition, start-up costs need to be budgeted at \$2M per year of which 50% should come from the return on indirect and 50% from state funds.

5. Funding for infrastructure is a prerequisite to achieve the two major goals of UMBC. This is specifically identified as an issue in items 2.f and 4.d of the “Strategic Framework.”

## Natural Science Planning Cluster – Campus-Wide Recommendation #2

### Graduate Assistantships.

1a. The focus of this recommendation is support for Graduate Assistantships (GAs).

1b. Critical to our mission as a research university is having quality graduate students. The reasons are multiple: i) they represent the next generation of researchers building on the earlier work of a mentor; ii) their productivity and quality are used as measures by which universities are evaluated as to mission (e.g. Carnegie, National Research Council); iii) they are key in being able to carry out a faculty research agenda; iv) they are important in meeting undergraduate teaching obligations; v) they provide intellectual challenge, rewards, and meaning for faculty scholars; and, vi) they form a critical component of the culture and life of a research university.

2. In FY 1999 the university invested additional resources and expanded the number and assistantship funding levels. This has resulted in much better Ph.D. productivity for the campus, which is used as a measure in classifying the institution. In FY 2003 the university consolidated GA support and provided all of the funding directly to the departments with the goal of diversifying the graduate student population (more domestic, women, and minority students) and shifting funds to support more Ph.D. students rather than Master's students. The Graduate School sets an annual rate for the minimum level for a Master's student assistantship and doctoral assistantship, but departments may add funds or fund fewer students at higher levels as a way of competing for top graduate students. In addition, in 2001, the Graduate School set aside a small number of Dissertation Fellowships to assist student in finishing the dissertation. The competitive program has been very successful in achieving its goal.

3. The campus now needs to increase the number of GAs funded by the university and at the same time raise the minimum assistantship levels. NSF has significantly raised the minimum assistantship levels to approximately \$30,000 per year for graduate students. Their goal is to improve the quality of the graduate student experience and attract more and better domestic students to graduate study. This is critical in several departments that are experiencing a dramatic decrease in international student enrollment. In addition to increasing assistantship levels, several departments need more GAs to cover instructional needs. Currently, two departments have had to draw upon undergraduate students to cover their shortfall of TAs. An increase of \$300,000 each year for four years would assist the campus significantly in being able to compete for top domestic graduate students, cover teaching needs, and improve Ph.D. throughput.

4. \$300,000 of new funding each year for four years, totaling to \$1.2 million would help stabilize the GA support needed on campus. Revenue sources include state funds, return on indirect (F&A), or gifts.

5. Funding graduate assistants not only helps graduate students and graduate programs, but also is important in supporting undergraduate teaching and laboratory experience. This is addressed in item 1.b of the "Strategic Framework."



## Natural Sciences Planning Cluster – Campus-Wide Recommendation #3

### Introductory Science and Mathematics Courses.

1a. The purpose of this recommendation is to: *Enhance the learning experience for students in the introductory science and mathematics courses, especially those that are gateway courses for science and engineering students*

Lectures:

- Lower class sizes in lectures
- Enhance the lecture hall facilities including built-in student response systems.
- Purchase demonstration equipment suited for use with the student-response systems.
- Introduce courses that integrate teaching of two or more disciplines.

Recitations:

- Lower class sizes in Discussion Sections.
- Add an undergraduate TA in each recitation to allow more student-instructor interaction based on the demonstrated theme that students learn best when working with their peers.
- Upgrade the discussion classroom using tables and fewer seats for group projects and peer-to-peer instruction, and computer workstations when appropriate.

Additional Areas:

- Provide funding for instructors to attend relevant conferences and workshops on successful teaching techniques.
- Provide funding to allow instructors to attend similar classes at other institutions to examine possible new techniques in action.
- Provide funds to implement a TA training program for graduate assistants prior to the start of the Fall semester

1b. This initiative is aimed at improving student retention in the sciences/engineering programs as well as at improving undergraduate instruction key “gateway” courses.

2. Currently introductory science/engineering courses are taught in a variety of ways in different departments, although the most common approach is large lecture sections coupled with smaller discussion sections, usually led by a TA. Some novel approaches are already being used such as that developed by Phil Sokolove in BIOL 100. A new approach to teaching the Discussion sections in CHEM 101 has been proposed and the Math/Stat Department is working with TAs to change the way some discussion sections are taught. Also a proposal to teach CS 104 in a peer instruction approach is being discussed. Calculus is currently being taught in sections of ~75 students.

3. The Cluster recommends that his program be implemented at the Dean’s level and be funded with new money. Pilot programs will be implemented first, with detailed assessment of the improved performance of students taught in the new format compared to the traditional approach, before full implementation occurs. Release time for faculty instituting the program will be needed.

- Several additional instructor lines for the lectures.
- A large number of additional graduate teaching assistants.
- Support for undergraduate teaching assistants.
- Release time for faculty.

#### 4. Resources:

- Lecturers (each): \$50,000 plus benefits
- Graduate TAs (each): \$25,000 plus tuition and health benefits
- Undergraduate TAs (each): \$1,200
- Renovation of Lecture Halls: \$20,000
- Renovation of Discussion space: \$10,000

5. This initiative supports directly the goal of “Providing a Distinctive Undergraduate Experience.” It also supports 1a, 2a, 2g, 3a.

## Humanities Cluster Priority #1: Strengthen and Expand Curriculum in Diversity and Culture Studies

1a/b. **Description & Relate to Mission/Vision:** Strengthening and expanding Diversity and Culture Studies at UMBC advances several aspects of UMBC's mission, including its commitment to a "community rich in intellectual, cultural, and ethnic diversity," to a strong liberal arts foundation, to "excellence in undergraduate and graduate education," to support for interdisciplinary research and teaching and to "increasing talented and diverse domestic Ph.D. students" by expanding "the number and attractiveness of applied master's degrees and certificate programs." Moreover, the continued absence of specific academic programs in Culture and Diversity Studies areas outlined herein places UMBC at a competitive disadvantage among our peer institutions, many of which include such programs as part of their core liberal arts curriculum. The implementation of this priority also serves the Social Sciences Cluster Priority to establish an International, Global, and Diversity Studies Program at UMBC.

2. **Current Activity:** The LLC Doctoral Program, Africana Studies, Women's Studies, Modern Languages & Linguistics, American Studies, Ancient Studies, History, Sociology/Anthropology, Judaic Studies, and Religious Studies currently provide the core curriculum in Diversity and Culture Studies at UMBC. Most of these departments and programs are substantially under-resourced. While they provide much of the General Education curriculum, few have been able to reach their full potential as teaching and research resources for the campus.

3. **Recommendation:** The Humanities Cluster recommends two approaches, both of which are required to strengthen and expand undergraduate and graduate curricula in the area of Diversity and Culture Studies:

A) **Fully institutionalize and fund existing programming in the following areas:**

- LLC doctoral program – fully funded as an autonomous academic unit with full-time staff and Director, comparable to other interdepartmental programs.
- Women's Studies – grant department status and approve an independent BA, with appropriate support.
- Undergraduate Certificate in Judaic Studies – establish an Undergraduate Certificate, with appropriate support.
- Undergraduate Certificate of Advanced Studies in Intercultural Communication – enhance with appropriate support.

B) **Initiate new programs in the following areas:**

- Asian Studies – approve an Upper Level Certificate and Minor Program; and
- African Studies – establish an Upper Level Certificate
- Freestanding and/or interdisciplinary M.A. programs and graduate certificates -- establish or enhance such options as a means of connecting all participating undergraduate departments and programs to the LLC doctoral program (including the Department of English's proposed M.A. in Literature and Culture).

4. **Resources:** Each individual item involved in fulfilling this priority represents a relatively modest investment. Full institutionalization and funding of existing programs and initiation of new certificates will require a substantial commitment by the University to this critical area of the core curriculum. Top priority should be given to filling existing vacant lines and promised lines in related departments and programs, along with cluster hires, and faculty lines shared with LLC and its participating academic units.

5. **Strategic Framework:** The Diversity and Culture Studies Priority squarely addresses a number of goals outlined in UMBC's *Strategic Framework for 2016*: 1) It substantially advances one of UMBC's major goals in the *Strategic Framework*, the "distinctive undergraduate experience," of which exposure to diversity is a key part; 2) It embodies support for existing successful cross-disciplinary clusters of the kind called for in Goal 3e; 3) It offers new and enhanced programs that can be "created at modest cost," building on existing resources in areas of study identified as critical in Goal 3d; 4) It prepares students for leadership and informed citizenship, identified as a key element of UMBC's mission; and 5) It can provide enhanced interdisciplinary research opportunities for faculty and graduate students in select programs where such support has lagged.

## Humanities Cluster Priority #2: Promoting Critical Inquiry, Values, and Social Responsibility

**1a. Description:** This theme creatively anticipates the central importance of the Humanities in preparing our students to understand, evaluate, and succeed in a complex and ethically challenging world. The recommendations are mutually supporting and invigorate the connections between the traditional, core elements of liberal arts education and twenty-first century goals of student engagement, educational outreach, and faculty entrepreneurship.

**1b. Relate to Mission/Vision:** This theme coincides with UMBC's mission to provide "a strong undergraduate liberal arts foundation" and to develop students who are committed to 'social responsibility and lifelong learning.'" It concretizes UMBC's long-held aspiration to combine "the traditions of the liberal arts academy, the creative intensity of the research university, and the social responsibility of the public university."

**2. Current Activity:** Humanities courses equip students with vital skills and perspectives, all of which must be non-optional elements in each UMBC graduate's intellectual portfolio:

- Identifying and working with different analytic frameworks: ancient, modern, and contemporary, humanistic and scientific;
- Uncovering underlying assumptions of theories, views, and policies;
- Reflectively evaluating their own lives as well as social practices and institutions;
- Effectively articulating, defending, and communicating complex ideas orally and in writing;
- Understanding and negotiating cultural, religious, political and linguistic diversity.

At the graduate level, the LLC Ph.D. program and M.A. programs in Historical Studies, INCC, and Education attract first-rate students and continue to grow. The research productivity of our Faculty is impressive as evidenced by an increasing number of NEH grant, book award, and research fellowship recipients.

### **3. Recommendations:**

*1. Create the "Center for Research in the Humanities"* whose mission is to enhance a strong, integrated Humanities research culture at UMBC. The goals of the *Center* are: foster grant-writing; coordinate individual and collective fundraising between faculty and departments and alumni, foundations, and private business; tangibly support research with travel funds, permission fees, and teaching release fellowships; develop a dedicated program for undergraduate/faculty research partnerships; raise the visibility of the Humanities at UMBC and contribute to community outreach through panel discussions, public readings, and faculty colloquia; continue to operate the existing Humanities Scholars Program.

*2. Curricula and programmatic initiatives strengthening existing cross-disciplinary connections:* a new undergraduate certificate in Philosophy ("Rationality and Responsibility"); the Center for Public and Policy History; and ethics courses across the curriculum (per the existing model in Philosophy and EIT).

*3. Strengthening the role of Humanities in general education* through support of travel abroad opportunities, writing in the disciplines, and public speaking.

**4. Resources:** *1.* Start-up operating funds; FT faculty Director; FT Business Manager and 1 administrative assistant. *2 and 3.* New positions for 1 FT Lecturer, 3 tenure-track faculty, and 2 administrative assistants.

**5. Strategic Framework:** *1, 2, and 3* support both Major Goals. More specifically: *1.* supports: 2a, 2f, 5a, 5c, 5e; *2 and 3* support 3a, 3c, 3d, 3e.

### Humanities Cluster Priority #3: Enhanced Opportunities in Applied Humanities

1a. **Description:** The Applied Humanities Priority is designed to promote a humanities deeply involved with public life and especially with activities associated with science & technology, public policy, public history, communication studies, social entrepreneurship, living & learning communities, and teacher preparation.

1b. **Relationship to Mission/Vision:** The Applied Humanities Priority relates to key elements of the UMBC Mission and Vision Statements by preparing students for “leadership and community service,” “entry into the workforce,” and “continuing engagement with learning and with the world.” The Applied Humanities Priority also supports UMBC’s activities in the areas of “K-16 education, workforce development, entrepreneurship, and technology commercialization in collaboration with public agencies and the corporate community.”

2. **Current Activity:** Existing resources and activities related to the area of Applied Humanities are limited. The Department of Philosophy’s M.A. in Professional Ethics is inactive, the Department of American Studies’ Certificate in Communications and Media Studies currently is supported with one Visiting Lecturer position, and Modern Languages & Linguistics has not been authorized to replace its tenure-track position related to film studies. In addition, MLL and WMST self-support living and learning communities from limited departmental budgets. However, the Department of English just completed a tenure-track search in the area of Communication and Technology, the Department of Modern Languages & Linguistics has grant-funded support for their Summer Institutes for Secondary School Teachers of Spanish, and the Department of History has a successfully secured external funding for its Center for History Education and its existing graduate level public history track.

3. **Recommendation:** The Humanities Cluster recommends implementation of selected initiatives designed to translate the field’s critical insights and methodologies into skill sets for real world applications:

- Support new initiatives related to the study of media and communications at UMBC within the departments of English (proposed *Undergraduate Certificate in Journalism*, Modern Languages and Linguistics (proposed graduate level *Intercultural Media Track* and *Intercultural Training Track*), and American Studies (recently created *Undergraduate Certificate in Communications & Media Studies*). In addition, a campus-wide structure should be developed in cooperation with these departments to promote, and where appropriate, integrate existing curricular activities related to the study of communications and media in contemporary society.
- Develop and implement the *Undergraduate Minor and Graduate Certificate in History Education* in the Department of History, and the *Undergraduate Certificate in Values, Science, and Technology* in the Department of Philosophy,
- Explore opportunities for extracurricular collaborations designed to connect teaching and research activities within the humanities to external constituencies. Such activities include: externally funded research projects, community-service opportunities, internship placements, living & learning communities, and activities related to social entrepreneurship.

4. **Resources:** Funding estimates for each of the identified applied initiatives are included in the statement of departmental priorities submitted by the departments of English, Modern Languages & Linguistics, American Studies, Philosophy, and History. Activities related to the development of extracurricular collaborations between the humanities at UMBC and external constituencies would require support and coordination from the Office of Institutional Advancement, and the newly reconfigured Center for Research in the Humanities as articulated under *Humanities Cluster Priority #2*.

5. **Strategic Framework:** The Applied Humanities Priority supports goals #3a, #3d, and #5c of the Strategic Framework 2016.

**Humanities Cluster Campus-Wide Recommendation #1:  
Growth In Number of Full-Time Faculty Across the Disciplines  
Through Hiring and Retention**

1a. **Description:** The *2003 Report on UMBC Faculty Size, Composition, and Allocation* reveals that growth in student enrollments and retention has not been matched by a corresponding growth in faculty across the disciplines, particularly tenured and tenure-track faculty. UMBC currently compares unfavorably with its peer institutions in terms of the student/faculty ratio. We believe that, along with the filling of existing vacant faculty lines and the hiring of new faculty, faculty retention needs to be made a campus-wide priority.

1b. **Relationship to Mission/Vision:** The hiring and retention of high quality full-time faculty advances UMBC's mission as a research university with a deep commitment to graduate and undergraduate teaching.

2. **Current Activity:** The "First Steps to 2016" document identifies principles to guide UMBC in planning for faculty growth and composition, but notes that growth in full-time student enrollment has not been matched by corresponding growth in full-time tenured/tenure-track faculty, that our student/faculty ratio is higher than the target value we have set, and that UMBC relies more heavily on part-time faculty than other peer institutions. Finally, our ability to support existing curriculum and provide new programming in emerging areas beyond fields related to science and technology has been severely curtailed due to internal and external budget constraints.

3. **Recommendation:** 1) make the implementation of the "Strategic Framework 2016" Faculty Hiring Plan guided by the principles identified in the "First Steps to 2016" an immediate budget priority; 2) identify resources needed to support new programs and emerging areas of research and teaching across the disciplines; 3) create new faculty lines and protect existing vacant faculty lines in all future campus budget and planning decisions; 4) allocate resources for continued support of the Faculty Diversity Recruitment Initiative.

4. **Resources:** This recommendation requires that faculty lines no longer be used routinely as the discretionary pool of money available for reallocation to support budget shortfalls due to poor planning, state reductions in resources, part-time instructional deficits, or unfunded mandates. Full implementation of the faculty hiring and retention plan will require appropriations of adequate funding for searches, space, staff support, and equipment.

5. **Strategic Framework:** This campus-wide recommendation supports goals #2a through #2h of the Strategic Framework for 2016.

## **Humanities Cluster Campus-Wide Recommendation #2: Research Infrastructure Across the Disciplines**

1a. **Description:** Great universities are built with great faculty, and research is crucial to the quality of faculty at a distinguished public research university. We proffer that, along with faculty hiring, faculty development and retention must be a campus-wide priority, and that the creation of a robust research culture across the disciplines at UMBC is crucial to the accomplishment of this goal.

1b. **Relate to Mission/Vision:** Retention and professional development of faculty through research support advances UMBC's mission as a research university.

2. **Current Activity:** Although UMBC workload policy gives discretion to Department Chairs in providing research incentives to faculty, this system unduly privileges some faculty members based on individual departmental resource constraints. This problem is particularly acute for pre-tenure faculty.

3. **Recommendation:** Bearing in mind the Provost's recent response to the Research Infrastructure Report, as well as the fiscal restraints under which UMBC operates, we endorse the PLT's "First Steps" report and recommend specifically:

- that a campus-wide "research leave" policy for junior and mid-career faculty be established. The (recently suspended) Provost's Research Fellowship Program benefited, at most, three individuals per year and was never an adequate tool for faculty development.
- that start-up packages for faculty in the humanities, social sciences, and arts be made more competitive and consistent with those at peer research institutions
- that distinguished professorships or university professorships be established to reward tenured faculty for research productivity (which most of our peer institutions—e.g. the University of Arkansas, Clemson University—already have in place). The current presidential research professorships, which are temporary, do not adequately serve this purpose.
- that mentoring of junior (pre-tenure) faculty at departmental level be made mandatory by the Provost, to be implemented at departmental level but supervised at the level of the Dean's office.
- that more discretionary funds be established at the Dean's level for support of faculty research (travel, publication costs, permission fees, reprint services, etc.).
- that initiatives encouraging the linkage between research and teaching be fully funded and institutionalized (example: the First Year Seminar initiative), that such initiatives be brought into accord with best practice elsewhere, and that the Faculty Development Center be adequately staffed to support not only the teaching but also the research needs of faculty.

4. **Resources:** Some of the recommendations made in #3 will require a reallocation of existing resources or aggressive fundraising, while others require little or no funding. (We recognize that not all the incentives for faculty recruitment, retention, and development are financial ones).

5. **Strategic Framework:** The Strategic Framework recommends a faculty hiring plan "that recognizes the need to hire faculty to support a research mission," that sufficient start-up support be made available (2a), that opportunities to broaden start-up funding be explored (2f), and that faculty attrition be avoided (2c). It also recommends that UMBC be proactive in retaining productive faculty members and in enhancing faculty development efforts (2b).

**Humanities Campus-Wide Recommendation #3:  
Keeping our Promises – Realizing our Goals for Undergraduate Education**

**1a. Description:** An unwavering commitment to enhancing undergraduate education and to improving student retention must remain a campus-wide priority. Graduation and retention rates are intimately connected to UMBC's fiscal health and political position within USM. As UMBC continues to develop its graduate programs and to grow as a major research University, it must not renege on its promise to students to provide them with a "distinctive undergraduate experience."

**1b. Relationship to Mission/Vision:** First-rate undergraduate education is at the core of UMBC's mission. At the same time, UMBC recognizes that learning does not stop at graduation. The "strong undergraduate liberal arts" education our students receive is explicitly understood as a "foundation that prepares [students] for graduate and professional study, entry into the workforce, and community service and leadership."

**2. Current Activity:** Several campus-wide initiatives aimed at improving the First Year experience and (thereby) retention have already been realized. In 2002, the First Year Seminar program was introduced, offering 11 seminars taught by full-time faculty on a wide variety of cross-disciplinary topics. These seminars, which continue to grow in number, have been successful in providing first year students with a supportive intellectual community in which they learn discussion, presentation, and writing skills that transfer to their other classes. Such seminars are crucial in transforming our new students from consumers of knowledge to producers of knowledge. In 2004, the New Student Book Experience was instituted, offering the entire freshman class the opportunity to engage with each other and with faculty and staff in an intellectual discussion of a common set of themes. In addition, several Living and Learning Communities (e.g., the WILL program, and the Intercultural Living Exchange) are demonstrating the benefits of students working together outside the classroom.

**3. Recommendations:** Our obligations to make good on our Mission concerning undergraduate education must remain a priority as UMBC continues its pursuit to be an outstanding research university. Efforts to improve student retention and to really deliver a distinctive undergraduate experience must not take a backseat in our planning. Particular initiatives may be tied to other proposals as they emanate from cluster groups, and some may be considered as targets for the Capital Campaign. In particular we recommend:

- Institutionalizing the First Year Seminar program so that it is available every incoming freshman. This may be accomplished using a three-year phase-in plan.
- Developing a coordinated program aimed at improving competence across several communication modalities (e.g., writing, public speaking). The designation of some courses as writing intensive on student transcripts.
- Funding the writing and production of discipline-specific style guides as a substantive way to support our undergraduate Academic Integrity Initiative.
- Consideration be given to developing students' opportunities to acquire leadership skills in conjunction with their academic work.

**4. Resources:** Departments should continue to receive funds to enable full time faculty to teach First Year Seminars. Similar support should be offered to facilitate the incorporation of communication and leadership opportunities into Departmental curricula. The Faculty Development Center can play a vital role here in assisting Faculty make innovations in their teaching practices.

**5. Strategic Framework:** This priority reiterates our first Major Goal. In addition it supports: 1b, 2b, 2g.; 3a., 3b.

Arts Cluster  
Academic Plan Recommendation  
"The Center for Arts Research"

1a. Current identity: Contemporary art in practice and performance

1b. Category: faculty research

2. The arts faculty at UMBC are unique in that they not only produce art, but they also do research into arts practice, production, and performance. Each of the four departments emphasizes contemporary arts research in its own way; in the visual arts and dance departments through the incorporation of technology into production and performance; in music through a focus on contemporary compositional techniques, including technology, in performance; and in theatre through the application of new pedagogy to classic, new, and lesser-known works. In all, nearly 50 faculty members share in this enterprise.

3. The establishment of an endowment for research in the arts would provide much needed support for faculty research, particularly for junior faculty who have suffered tremendously from the large budget cuts to state and national arts agencies during the past decade. We envision this center as a source of funds for equipment, productions, travel, and course releases or semester-long fellowships that would provide more time to devote to research. Small stipends for student research assistants would provide faculty support while at the same time providing our students important research experience. The center could also serve to develop interdisciplinary collaborations across departments, thus providing momentum for the Inter-Arts Studies Program as it works to develop a core faculty with interdisciplinary interests to support and develop this program.

4. An annual budget of \$100,000 would enable four annual course replacements for faculty needing additional time to devote to their research (\$16,000), 2 1-semester fellowships for faculty to devote an entire semester to research (\$16,000 for course replacements), 6-8 students research assistants (\$8000), and a pool of funds to support faculty research projects (\$60,000). Such funds could be used to purchase needed materials, equipment or upgrades; provide travel funds to work with collaborators, or to bring collaborators to campus, or to attend conferences or visit research centers; provide summer stipends for summer research projects; to hire necessary performers or technicians for the realization of projects; to produce performances on and off campus; or to document projects so that they may be disseminated to a wider community (websites, recordings, portfolios, DVDs, CDs, etc). We envision that an interdisciplinary research committee established among the four departments would be charged with developing grant proposal formats, and with reviewing submitted proposals to determine funding.

Such a center should be an attractive naming opportunity for private donors to UMBC, with individual opportunities from corporate sponsorship for selected programs.

5. This proposal supports the Strategic framework for 2016 in its emphasis on developing the research infrastructure at UMBC. Works and scholarship created under the auspices of the Center for Arts Research would enable a more focused dissemination of information related to the arts at this institution, and coupled with the efforts of individual departments would enhance the regional, national, and international standing of UMBC in general. Any institution with a national reputation for excellence not only touts its science and social science research, but also its artistic excellence as a cultural credential signifying a thriving intellectual community. With the establishment of such a center, UMBC would be poised to promote itself as a well-rounded intellectual community on par with its aspirational peers.



## **Arts Departments Cluster Proposal:**

### **Course initiative for Entrepreneurship, Career Development and the Arts**

1a. The four UMBC arts departments require support to implement more activities and to launch an interdisciplinary course that would further the skills of their majors in their career development.

1b. Many arts students have entrepreneurial goals: they want to open private teaching studios; they want to begin their own theatre or dance companies; they want to teach in schools or to create their own specialized schools. Because grants for independent and small companies of artists require an educational or outreach component, art students need the necessary skills to write grants that support their own artistic visions while serving their communities. A new interdisciplinary course in entrepreneurship and career development in the arts would help students learn how to develop career plans and learn the necessary grant-writing, research, marketing, and self-promotion skills to implement those plans. This course would serve our mission to strengthen the education and preparation of our undergraduates.

2. The arts departments have implemented courses and co-curricular activities to strengthen the preparation of their students for success upon graduation and to support the interests of many students in service to the community. The Department of Dance has developed Project Reach, where students and alumni teach and perform in elementary schools. The Department of Music has developed a new course, "Arts in Education," which prepares students to become teaching artists and includes year-long fellowships for select students. Also they have created a practicum course in concert management and an internship in recording studio management. The Department of Theatre developed a course, "Auditioning and the Business of Acting," which prepares actors to enter the acting profession, and a course "Stage Management," which trains technical theatre majors. Also, the department regularly brings in guest artists from the business side of the theatre profession in to meet with acting and design students. The Department of Visual Arts requires a course in which graduate students learn to prepare their portfolios.

3. and 4. The course would be taught annually and would require a budget of **\$25,000**:  
\$16,000 to support three course sections taught by one or more instructors from outside the university, or to replace current faculty

\$4,000 honoraria for guest speakers who are drawn from the business community, the individual arts professions and our alumni.

\$5,000 to provide stipends for student interns to receive on-site training and mentorship from professionals.

5. This initiative supports the Strategic Framework 2016 by strengthening our commitment to excellence in undergraduate education and by providing training for our students so that they will be better prepared to serve the cultural life of the Baltimore-Washington region.

## Arts Cluster Proposal: InterArts Studies (IAS) Series/Artist-Educator (AE) Residencies

1a. This proposal deals with Contemporary Arts with regard to InterArts Studies Series/Artist-Educator Residencies, i.e., an expanded guest artist series in which selected invited artist-educators are funded for extended residencies in a variety of shorter and longer time frames.

1b. Mission area, undergraduate instruction, research, outreach, faculty.

2. The current InterArts Series is funded at \$25,000. This permits one substantial residency/performance by a world-class company/artist per year along with possibly four very modest guest lectures. Up to approximately \$500 from the IAS budget is available for marketing, supplemented by a similar amount from Thomas Moore's office. We have been unable to gain substantial audience from off-campus.

3. It is vital to support the infrastructure for a revitalized IAS Series/AE Residencies by adequate support for the writing of future grants, marketing of the program throughout the region, facilities and equipment upkeep, hosting of guests in adequate housing and studio space if necessary, transportation, and box office needs.

4. A budget of \$80-100,000 is suggested. Approaching donors with the opportunity to name the series or specific events (i.e., the Linehan InterArts Series, the Erickson Elder Arts Performance, the Mariner Bank Guest Artist Residency) holds promise as well as applications to such foundations as the Nathan Cummings and Rockefeller Foundations for creative arts projects which involve other institutions, ranging from educational and social service agencies to other arts institutions. The current collaboration between the Liz Lerman Dance Exchange and Charlestown Retirement Community is a model for future projects.

5. The development of the InterArts Studies Series/Artist-Educator Residencies relates to several goals of the Strategic Framework. A more substantial IAS Series with AE Residencies will provide all of our undergraduates with vital exposure to leading artists as well as the opportunity for our arts students to have intensive educational contact with them, promoting a distinctive undergraduate experience. These contacts encourage students to further study and provide them with the benefit of networking with leaders in the field for their own career development. Establishing UMBC as an area arts destination serves outreach goals and enhances UMBC's reputation in a general way beyond our reputation as a technical/scientific campus. Bringing outside artist/educators on campus supplements what faculty can provide in vital ways. An adequately supported AER program will allow for more team-teaching in a variety of short and long residencies with invited guests and on-campus faculty. These collaborations would extend the kinds of educational experiences our arts students must have in a diverse and constantly changing art environment. Thus our program and curricula offerings would be diversified and extended. High quality faculty are attracted to and wish to stay in university settings in which they themselves have a chance to interact with leaders in the field, enhancing their own opportunities for networking and career advancement.

## Arts Cluster Proposal: General Education Courses in the Arts

### 1a. Focus: Arts Experiences for non-majors

### 1b. Category: Undergraduate experience

As stated in the report, "Task Force on the Arts at UMBC, October 2003":

"It is *participation* in Arts-related activities, according to Light's research, that so successfully enhances students' undergraduate experience. Studio courses offer the greatest opportunity for such participation. Through intensive hands-on experience, students learn the craft, practice, performance, and production skills that dancers, musicians, actors, and artists employ in their work."

2. The four arts departments currently offer a range of introductory courses taught by both adjunct and full time faculty. Music alone offers 7 lecture courses annually, of 75-150 students each. Courses such as DANC 100 Introduction to Modern Dance and THTR 110 Introduction to Acting both hold an AH general education designation, and as such, they consistently fill and have waiting lists. More sections of these courses, and similar studio courses in Music and Visual Arts, could satisfy the interests of students in other disciplines.

3. The need for a new building in order to provide studio space for these courses is pressing. The Music Department envisions providing GFR credit for active engagement with music through private lessons and ensembles, as many UMBC students want to continue to develop the musical skills they bring with them from high school. In addition, they see as a priority re-writing the current MUSC 100: Introduction to Music lecture class so that it is more interactive. This will require adding more sections with smaller numbers of students (so more classrooms and part-time faculty). The Visual Arts Department has plans to offer multi sections of two new courses, ART 211 Visual Concepts:2 Camera Vision and ART 214 Drawing 1. Also, ART 215 Introduction to Art and Media Studies (100 students) could be offered now if the resources are available. The Dance and Theatre departments will offer more sections of the studio courses mentioned above. Theatre would like THTR 120 Introduction to Theatre to become more participatory with the inclusion of student attendance at professional theatre productions in Baltimore.

The majority of the more recently created lower level studio courses do not fulfill the general education requirements because of the established guidelines that prevent studio courses in the arts from receiving AH designation. The Interim General Education Committee needs to approve the recommendation to lift the ban on these courses so that they can be offered more frequently to the campus community.

4. A budget of \$52,500 would enable the art departments to support more sections of existing studio courses, to expand the scope of lecture courses, and to provide needed equipment to support these courses. The annual budget is \$24,000 for adjunct faculty hires or to cover courses of full time faculty in all departments with an additional \$2,000 for Music, \$2,000 for Theatre, \$2,000 for Dance, and \$22,500 for Visual Arts. It is anticipated that the GFR courses could benefit from the Arts Exchange program, which would provide students access to professional performances and exhibits in Baltimore.

5. This proposal supports the Strategic Framework 2016 in the ways it expands the quality of undergraduate education. Also, student retention will be addressed by providing more students with collaborative and participatory experiences.

## Arts Cluster University-Wide Initiative: ArtsXchange

1a. The ArtsXchange program supports student engagement, recruitment and retention; builds a university community by bringing together faculty, staff, students and the greater Baltimore public; supports art performance and exhibition; and supports research in the Arts.

1b. This theme supports UMBC's mission to provide "a strong undergraduate liberal arts foundation" and also supports outreach. As described in the 2003 report of the Task Force on the Arts at UMBC, Richard J. Light has shown in his research that the chances of a student's engagement and satisfaction with his or her undergraduate experience are vastly improved by the student's involvement with the Arts: "Working with others in the Arts...students report a high level of engagement, and satisfaction, with their overall college experience." Additionally, and perhaps most compelling among Light's findings, is the community-building aspect of student engagement with the Fine Arts. On an Arts cluster level, the presence of visiting artists from other institutions increases opportunities for our Arts faculty to expand and enhance their research.

2. The four Arts departments, the InterArts Studies Program, the Center for Art and Visual Culture and the Albin O. Kuhn Library Gallery offer modest public programs (performances, exhibitions, lectures, and panels) throughout the fall and spring semesters. Financial resources to bring major artists to campus are not available; Arts events and programs are not adequately marketed to the campus community or the greater Baltimore community. The Office of Institutional Advancement provides one fulltime arts advancement position and an annual Arts marketing budget of \$5,000 per year.

3. This recommendation proposes the implementation of ArtsXchange, comprising six interconnected elements designed to enhance dramatically the presence and visibility of the Fine Arts at UMBC, to have a profound impact on university life, to connect our faculty with artists at other institutions, and to establish UMBC as a destination point for arts and culture in the greater Baltimore area, as follows: 1) CommonArtsAccess, which would give all UMBC students opportunities to create, perform, record or exhibit their own art by establishing an equipment lending facility in The Commons that would also provide training and Arts mini-courses; 2) weekend performances featuring high quality and culturally diverse presentations by renowned artists; 3) support to enhance the ongoing programs at the University's exhibition and performance spaces; 4) a public art program (e.g., outdoor art); 5) an Arts shuttle to downtown Baltimore arts destinations with free student admission to those destinations; and 6) short- and long-term artist residencies. As part of its operations, ArtsXchange would market these events and programs to internal and external constituencies: The size of audiences at our artistic and cultural events is directly proportional to our institutional investment in marketing those events. Implementation of ArtsXchange would require hiring two additional exempt staff (one to direct CommonArtsAccess and one marketing/programming assistant in arts management), student assistance, space for the staff, and space in The Commons for CommonArtsAccess.

4. We recommend that ArtsXchange be funded as a new \$30 per-semester student fee. In spring 2004, ArtsXchange was presented as a referendum item to the student body and was defeated by a narrow margin: 48% in favor; 52% opposed. (Details of ArtsXchange as proposed to the student body in spring 2004 are here: <http://www.umbc.edu/newsevents/arts/taskforce/artsxchangetitle.html>.) The \$30 per-semester fee would generate approximately \$480,000 toward ArtsXchange, funding its artistic programs, operations, staffing and marketing. Cost-sharing from UMBC (non-student fee funds) would enhance ArtsXchange's chances of passing the student referendum and would provide opportunities for expanded programming that would in turn help frame the program of the new Performing Arts and Humanities Facility. After ArtsXchange is established, funds would also be generated through ticket sales to the general public. The new performing arts series would enhance UMBC's ability to secure larger government grants (e.g., NEA), foundation support and corporate sponsorship. Additionally, charitable contributions (an essential mainstay of the arts) would be requested from new arts patrons and current donors. In essence, the \$30 per-semester student fee would be a springboard to larger streams of revenue that would further enhance the ArtsXchange program, thereby improving students' return on their investment.

5. This recommendation relates to the Strategic Framework by addressing co-curricular learning experiences for undergraduate and graduate students; addressing student recruitment and retention; and strengthening the relationship between UMBC and the Baltimore-Washington region, with the campus serving as a destination point for cultural and intellectual activity. It will provide "regular cultural and intellectual events for the campus that will also be attractive to the broader community."

**ARTS CLUSTER PROPOSAL**  
**For UNIVERSITY-WIDE OFFICE OF EDUCATION OUTREACH**

- 1a. The Arts Cluster Group strongly recommends that UMBC establish a university-wide Office of Education Outreach to support P-16 initiatives.
- 1b. As UMBC moves toward its campus mission goals of forging stronger relationships with P-12 schools, and becoming a more viable player in the areas of teacher preparation, professional development and education outreach, it is time for the university to make a clear commitment to establish the infrastructure necessary for success in this arena.
2. Prior to the budget cuts that were made two years ago, many departments across campus had begun to make progress in P-16 efforts, either through the creation of departmental advisory boards, or through the offering of professional development opportunities for secondary school teachers. Unfortunately, many good initiatives have not continued because of the lack of university support. The Arts Cluster Group believes that many departments are eager to find ways to become involved in P-16 initiatives, but cannot do so without resource staff. Neither the department chairs nor the faculty have the background necessary to navigate the world of state and county public school systems. It seems neither efficient nor effective to expect each department to take on the immense task of education outreach, which, while extremely important, often falls outside departmental expertise.
3. The Arts Cluster Group proposes that the university establish an office with a small, expert staff to provide coordinated support for educational outreach to individual departments, or clusters of departments, within and across discipline areas, thereby maximizing both the offerings and the benefits of outreach efforts of the university as a whole. In their role as P-12 liaisons, the staff would work with the departments to develop and implement focused outreach initiatives. Working from a centralized office, the staff would have knowledge of the vision and offerings of departments all across campus, and could facilitate connections among them.

For students in the Arts, outreach is regarded as a form of professional development and entrepreneurship. In addition to facilitating connections between UMBC's arts departments and the schools, an arts liaison could set up residencies and internships for student teaching artists. Talented students could apply for internships, supported by endowed funds, which would provide stipends for student interns and the teachers who work with them.

4. Implementation of this proposal would include the following:
  - A full-time staff position for a Director of Education Outreach,
  - An operating budget to support outreach activities (including substitute reimbursement for school teachers participating on UMBC departmental advisory boards)
  - A phase-in of additional staff with expertise in broad discipline areas
  - Creation of an endowed fund to support for student interns and participating teachers
  - Appropriate office staff support
5. This proposal supports UMBC's mission goals of "public service of students, faculty and staff," as well as "initiatives in K-16 education, workforce development, and entrepreneurship." It also supports "student learning outside the classroom through applied experience" in #3b of the Strategic Framework.

# Social Science Cluster Recommendations

## Social Science Planning Cluster – Cluster-Wide Recommendation #1

### Enhancing Health and Urban Environments.

1a. This proposal concentrates on an important set of issues broad enough to cut across many social science disciplines yet focused enough to be distinctive and intellectually coherent. The proposal seeks nothing less than building an internationally recognized center of research excellence and service dedicated to understanding important connections between health and urban environments and to enhancing the health and well-being of children, individuals, families and communities. The proposal embodies interdisciplinary, action-orientated and policy-related research with important implications for connecting with local, national and global concerns.

1b. This proposal serves the university missions in many areas but particularly research, instruction/training, outreach and social responsibility.

2. There is already faculty through the various social science departments, including LCC, researching and teaching in this area and working on such specific topics as ageing, the community context for physical and mental health, health services, mapping of disease and crime and identification of suburbs in distress. Centers that focus on selected aspects include CUERE, JCET and the Erickson School. Student-linked internships and research programs are available through the Shriver Center and the Sondheim Scholars Program. This initiative will build upon existing programs and allow innovative interactions with UMB's public health focus. This initiative will transform the existing interests into a synergistic research focus that placing UMBC as a leading center for developing social science perspectives on urban environmental health

3. We propose hiring 4 new faculty members to be spread through the social science departments, specifically hired to conduct research and teach in the various aspects of this urban environmental health focus. Together these hires will allow a substantial increase in UMBC's visibility and competence in this area. We propose making these hires in a 1-2 year period so that significant momentum is quickly realized. The Interdisciplinary Faculty Fellows Initiative with its urban environment theme is a potential hiring partner. Accompanying these faculty hires will be the creation of 4 graduate assistantships and 2 postdoctoral positions as well as the creation of an enhancement fund that will provide the seed for collaborative research and teaching, undergraduate research, training, conferences and outreach.

4. The four faculty hires will cost in total \$400,000 to include salary, benefits and start up, the 4 GAs \$100,000, the 2 postdocs \$120,000 and we propose an enhancement fund of \$100,000 to be administered by a social science committee to help in the creation of synergistic activities. Total start up costs will be \$720,000. In the medium to longer term, this area is eminently fundable from a variety of governmental and foundation sources.

5. This proposal directly addresses issues of undergraduate/graduate teaching and research and will strongly enhance UMBC's performance as a research university with emphasis on a distinctive focus of major significance. It will also allow an opportunity for linkages with the local community, UMB, private foundations and such grant giving bodies as NSF and NIH. This addresses Major Goals # 2e, 3d, 3e, 4d, and 5c.

## Social Science Planning Cluster – Cluster Wide Recommendation #2

### Supporting Engaged Scholarship And Translational Activities.

**1a.** The focus of this recommendation is to strengthen and expand faculty and student involvement in engaged scholarship and translational activities by creating an office with close ties to academic departments in the social sciences to oversee, coordinate, and facilitate such activities.

**1b.** The proposed activity relates to key elements of UMBC's mission focusing on "social responsibility" and "experiential learning" and enhancing "access to an honors university experience." The proposal also "actively promotes interaction between students and faculty, undergraduate participation in research projects, and service to the community." By focusing on applied research in "health care, . . . , public policy, education" and related social science fields, it promotes "service learning, civic engagement and community-based service delivery." The proposed activity also will "promote cutting edge research . . . and high quality graduate education," and enhance collaboration with "the private and public sectors to contribute to the growth of Maryland's economy" and bring "knowledge resources of the University to bear on the problems and concerns of the communities we serve" through faculty research collaborations in applied research. (All quotations in this paragraph are from the UMBC Mission Statement.)

**2.** Several social science departments currently offer capstone courses. In addition, many undergraduate and graduate students engage in internships, field placements, and service learning either through the Shriver Center or through academic departments. However, these varied activities are not centrally coordinated and not all are adequately supported. There is little systematic support for engaged scholarship activities by students and faculty in the array of social science departments/programs. Similarly, existing efforts to disseminate research conducted by UMBC students and faculty with implications for policy and practice in government, nonprofit organizations, businesses, and communities conducted by UMBC students and faculty in the social sciences are very limited. Moreover, where they do exist (e.g., seminar and lecture series and forums, some of them departmentally based, often include presentations relevant to this proposal), they are uncoordinated and often poorly supported and rarely well connected to external audiences.

**3.** The cluster recommends that an office be created, directed by an individual with an academic appointment and also including an exempt staff member as well as an administrative assistant. This office would be responsible for promoting opportunities for students and faculty in the social sciences to connect research to policy and practice. Included in these responsibilities are:

- Supporting research by undergraduate students, graduate students, and faculty, that is of interest and value to government, nonprofit organizations, businesses or communities. This research might take a variety of forms, including, but not limited to, action research, evaluation research, and policy analysis. A key form of support is a competitive mini-grant program for supporting engaged scholarship by undergraduate students, graduate students, and faculty in the social sciences.
- Supporting and coordinating the dissemination of research conducted by UMBC students and faculty that has implications for policy and practice in government, nonprofit



organizations, businesses, and communities through such mechanisms as policy fora and conferences as well as research briefs.

- Sponsoring exchanges of personnel between UMBC and external organizations, including schools, government agencies, and nonprofit organizations. This would include supporting a Visiting Fellow/Practitioner in Residence and facilitating the temporary placement of faculty in government agencies, nonprofit organizations, and schools.
- Funding four graduate assistants who will be used to support departmental efforts at engaged scholarship, allocated among social science departments on a competitive basis.
- Enhancing opportunities and support for undergraduate and graduate students in capstone courses, internships, and other courses to engage in partnerships with government agencies, schools, nonprofit organizations, businesses and communities.

4. The proposed office will require personnel costs (including benefits) of \$430,000 and additional costs of \$240,000 for a total of \$670,000 per year. It is conceivable that gifts could be focused on several of the items included in the tentative budget, such as Visiting Fellows, research support for students and faculty, research briefs, the policy forum series and annual conference.

5. The activities proposed clearly integrate with several of the major recommendations of the Strategic Framework. Major goals #3d, 3e, 5a, 5b, 5c are addressed by this initiative.

#### Office of Engaged Scholarship and Translational Activities

##### Personnel

Director (salary plus benefits)	\$ 150,000
Exempt Staff Member (salary plus benefits)	\$ 80,000
Administrative Assistant (salary plus benefits)	\$ 50,000
Visiting Fellow (salary plus benefits)	\$ 150,000

##### Operating

Undergraduate Student Research Support	\$ 22,500	15 awards @	\$ 1,500
Graduate Student Research Support	\$ 30,000	10 awards @	\$ 3,000
Faculty Research Support	\$ 37,500	5 awards @	\$ 7,500
Graduate Assistants	\$ 80,000	4 @	\$20,000
Production and Distribution of Research Briefs	\$ 10,000		
Policy Forum Series	\$ 20,000		
Annual Conference	\$ 10,000		
Travel, Office Supplies, etc.	\$ 30,000		

TOTAL

\$ 670,000

## Social Science Planning Cluster – Cluster Wide Recommendation #3

### Establishing an International, Global, and Diversity Studies Program.

1a. The International, Global, and Diversity Studies (IGDS) Program fills the substantial hole that currently exists in UMBC's undergraduate degree programs. UMBC has no formal major in the study of international relations, globalization, or intra/intercultural relations. This proposed program will go beyond the traditional "International Studies" program. It will include a global (as opposed to a strictly "territorial state") perspective and will recognize diversity as an essential aspect of our shared human, making the program somewhat unique among other international studies programs. Moreover, the continued absence of an independent academic program that addresses these issues certainly places UMBC at a competitive disadvantage among our peer institutions, many of which include programs focused on issues of international relations, globalization, and diversity as part of the core liberal arts curriculum. The IGDS program would be set up under the aegis of a multi-disciplinary committee under a director.

2. Faculty in a number of departments and programs, (ECON, SOCY/ANTH, HIST, POLI, AMST AFST, ANST MLL, WMST, JDST, GEOG PSYC, INDS) offer courses that can be brought together to support a core curriculum in the IGDS. Some of these courses have been brought together in the individualized global and international studies option piloted in the INDS Program over the last two years. In addition, proposed and existing undergraduate minors and certificates could be linked or incorporated into IGDS including: African Studies, Asian Studies, InterCultural Communications, Judaic Studies, and Women's Studies. The program also envisions links to existing graduate programs such as LLC and Public Policy. Immediate linkages could come in the form of GA and TA placements for graduate students.

3. The Social Sciences recommends that UMBC develop an independent IGDS undergraduate program and degree. The new program should be organized as an Interdisciplinary Program on the same model at LLC, Women's Studies, and Public Policy, which are governed by a Coordinating Committee and Director. The Coordinating Committee should be composed of faculty from contributing departments and should be responsible for developing the undergraduate curriculum for a freestanding major that encompasses the three broad areas of "world" studies: **International Relations, Global Issues, or Diversity Studies**. The development of the IGDS Program explicitly includes the allocation of resources needed to strengthen the contributing departments and programs, as well as those needed specifically for by the IGDS Program.

4. Exact budget details are properly a part of the formal New Program Approval Process. As a preliminary estimate, the resources needed to support this initiative include: 1) allocation of part-time funds to support course releases for the Director, who might be a new hire, and 2) funding for part-time faculty to allow the IGDS Program to reimburse Departments and Programs whose faculty teach core courses for the IGDS major. These resources are necessary to ensure that the Program's curriculum will be offered on a consistent and reliable basis. At the same time, the success of the IGDS Program depends upon the strength of its contributing departments. Therefore, additional resources, as identified in through the planning process, will also need to be provided to contributing departments and programs.

5. The International, Global, and Diversity Studies (IGDS) program squarely addresses a number of goals outlined in UMBC's *Strategic Framework for 2016*: 1) The IGDS Program contributes to one of UMBC's major goals in the *Strategic Framework*, the "distinctive undergraduate experience," of which exposure to diversity is a key part; 2) It brings together existing faculty and curricular strengths to fill a programmatic gap in UMBC's undergraduate programs. (*Strategic Framework* Goal 3d); 3) It embodies the kind of cross-disciplinary clusters called for in Goal 3e; 4) It is a new program that could be created at modest cost, employing existing resources in an area of study identified as critical by the Provost and in the *Strategic Framework* document (Goal 3d); 5) It prepares students for leadership and informed and citizenship, identified as a key element of UMBC's mission; and 6) can provide interdisciplinary research opportunities for faculty and potentially for graduate students in select programs, where such support does not now exist.

## Social Science Planning Cluster – Campus-Wide Recommendation #1

### Faculty.

**1a.** A great university needs a strong and diverse faculty base. This recommendation is designed to support the hiring of more full-time faculty. In order to achieve our multiple objectives of greater undergraduate student engagement, better student advising, increased retention of current students, better graduate student mentoring, more nationally recognized research and scholarship, and increased intensity of university, community, or business dialog, the ratio of full-time faculty to students needs to be reduced. Growing the faculty and ensuring a steady flow of new scholars to the community is crucial to the overall vitality of UMBC.

**1b.** Professors and students are fundamental to a university; without them we have none. It is for this reason that this recommendation supports both of the major PLT goals. Further, UMBC has excelled in the area of diversity in terms of gender and race. This path to excellence should continue to be supported.

**2.** While there has been considerable analysis as to current full-time faculty to student ratio, the number of net new faculty has not kept pace with our academic needs. Constraints exist in the state budget and in funds available for faculty start-up. This interrelated issue of funding availability needs to be resolved in a planned way such that UMBC can have resources to replace its faculty. Right now no comprehensive plan for faculty replacement and expansion across departments exists.

**3.** The recommendation is: 1) develop a faculty replacement and growth plan based on anticipated retirements and identify the amount of money needed to hire new faculty and cover essential start-up costs; 2) examine the staffing necessary to support the research, teaching, and service associated with the academic functions of departments and programs; 3) identify the resources needed to support interdisciplinary initiatives either by funding faculty lines in the program itself or by compensating departments whose faculty are participating in the interdisciplinary program; 4) identify the number and areas needed for Endowed Professorships and Endowed Chairs to fill strategic faculty and staff positions; 5) allocate resources as needed to ensure a steady flow of new and diverse faculty.

**4.** The exact cost depends on the results of the plan, but key to the plan is the linkage of faculty hiring and the supports they need to be successful – this includes appropriate space, staff support, equipment, and materials needed to carry out their teaching, research, and service.

**5.** The recommendation is pivotal for the university to meet its Strategic Framework goals and objectives. Specifically, the recommendation supports the Strategic Framework Goal and Objective #2.

## Social Science Planning Cluster – Campus-Wide Recommendation #2

### Library.

**1a.** UMBC's national reputation in research and scholarship has grown significantly over the past decade. Along with this increased recognition have come a variety of accolades in terms of financial and honorific awards. A key component of a fast moving research university, however, is a library collection and staff that is aligned with the faculty and students that it supports. Unfortunately, while the research has grown and continues to grow at UMBC, its library collection and staff has not been able to keep up – this needs to be addressed.

**1b.** The library is a core component of the university's mission; it serves students, faculty, staff, and the surrounding community.

**2.** The financial needs of the library have been well known. It has done extraordinarily well with the modest resources it has. Nevertheless, costs are increasing to maintain current services and collections let alone expand. This recommendation goes beyond providing support to maintain current services and seeks resources to expand collections, staff, services, and hours.

**3.** New state resources for the library are limited. We therefore recommend that a high priority be placed on securing gifts to significantly enhance the library operating budget.

**4.** As a start, a funding plan should be developed with the library to begin a budget phase-up. With seed of funding of an additional \$1M and annual increments supported from gifts, tuition increases, and/or state funds.

**5.** This recommendation supports the two major goals identified in the Strategic Framework and in particular goal and objective 3g.

## Social Science Planning Cluster – Campus-Wide Recommendation #3

### Staff.

1a. The focus of this recommendation is in the area of management, organization and staffing. Over the years, UMBC has accomplished a great deal with an energetic faculty and a relatively small administrative and professional staff. As a consequence of attaining DS-2 status in grant volume, federal/state compliance and regulations, the oversight and day-to-day operation of academic programs, and the infrastructure needed to manage a research university, UMBC has reached a tipping point where new highly trained administrative and professional staff are needed to conduct the business of the university.

1b. The Strategic Framework category is staffing. However, having adequate and trained staff directly intersects with other academic functions of the academy discussed in the Strategic Framework.

2. As a result of the current fiscal situation in only a few selected critical academic areas has staffing in been expanded at UMBC and, in a few, there have actually been reductions. Currently, there is discussion about modest expansion to support the growth of research as well as additional staffing associated with PeopleSoft in the departments. Staff shortages in academic departments has meant historically that faculty have been asked to take on additional duties or, in some instances, the administrative functions were simply not done. We recognize that many professors who voluntarily gave time to carry out the needed administrative functions of the university during its earlier years may have often done so at the expense of their scholarship. Newer faculty entering the academy are joining a more developed research university and, out of necessity, must be focused on insuring that their scholarly credentials are in order. The consequence is that the UMBC in the near future must hire and cultivate staff to carry on much of the business, research support, and administrative program obligations of the department.

3. We need to carefully assess the business, administrative, and programmatic functions needed at the department and college level. In some cases functions may need to be reorganized for better efficiency and in others additional staff will be needed. The campus will need to develop a multi-year plan identifying a sequence for expanding the staff so crucial to effectively carry the kind of complex programs, services, and research undertaken in departments in particular and Academic Affairs in general.

4. Support for additional staff can come from several sources including return on indirect funds (F&A) or growth in state resources.

5. Having a trained, engaged, and adequately supported administrative and professional staff is needed to accomplish both of the campuses major planning goals. It specifically addresses goal and objective #4e in the Strategic Framework.

# College of Engineering and Information Technology

## Academic Plan Recommendations

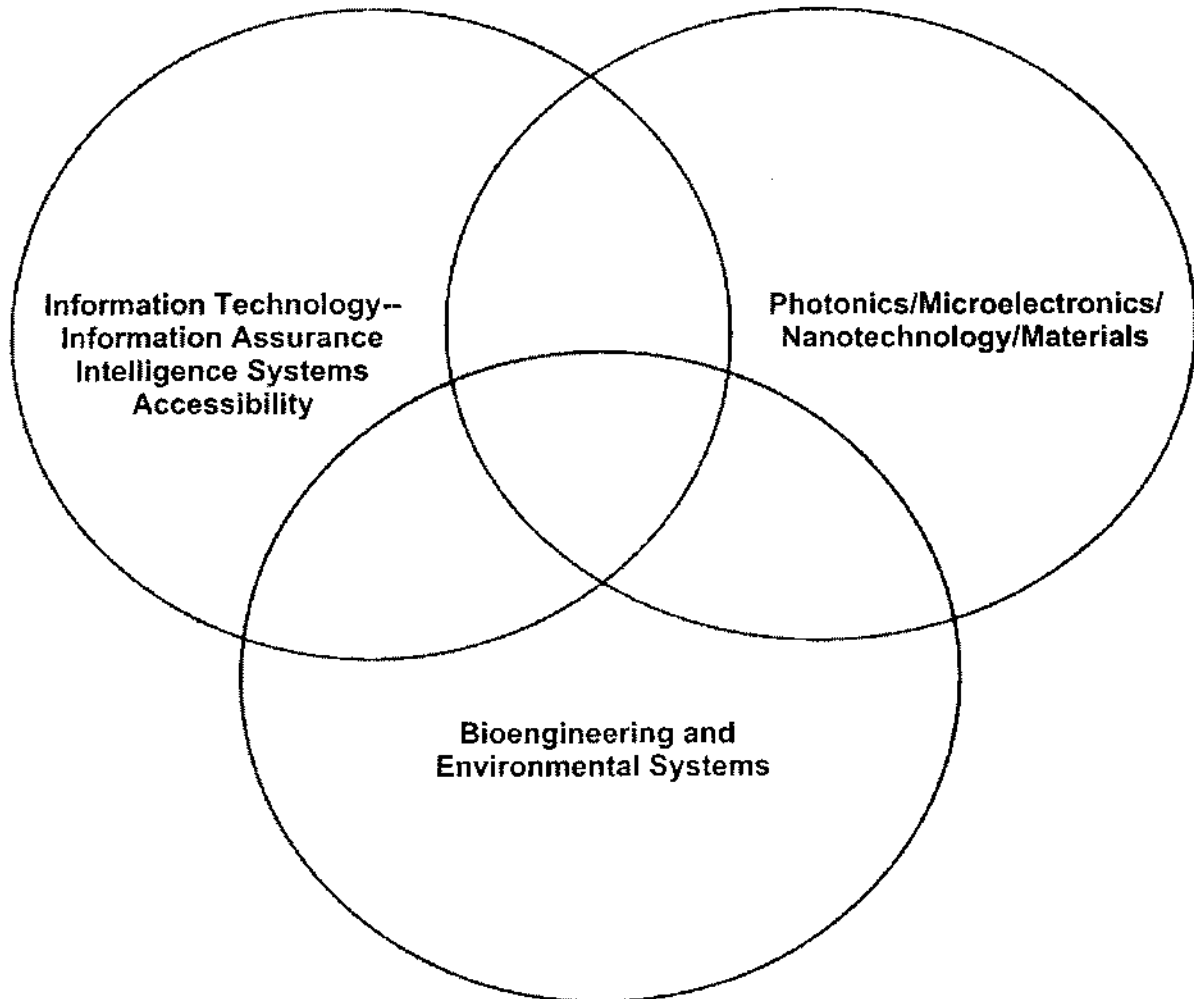
### **Vision**

The COE&IT strives to make an impact on the national scene in the engineering and information technology arena by developing an education/research enterprise around clusters representing thrusts of leading technologies: Biotechnology, Information Technology, Nanotechnology while simultaneously building a well-balanced core instructional portfolio. In order to attract and retain the most talented and diverse student body and faculty, we strive to build a college that excels in the following engineering and IT disciplines (undergraduate and graduate): Chemical and Biochemical Engineering (CBE), Mechanical Engineering (ME), Civil and Environmental Engineering (CEE), Computer Science and Electrical Engineering (CSEE: 2 programs) and Information Systems (IS). We aspire to be recognized by industry and government as a premier source of outstanding graduates, who in turn will help their enterprise attain and sustain global competitiveness. Research results will generate innovative technologies leading to new products and improved business processes, thus enhancing economic development. By implementing our academic plan, we aspire to attain top 50 national ranking (US News & World Report).

# College of Engineering and Information Technology Recommendations

S. Carmi (Dean), G. Rao (Chair, CBE); P. Charalambides (Chair, ME); B. Reed (Chair, CEE);  
C. Nicholas (Chair, CSEE); A. Sears (Chair, IS); A. Johnson (Director, CASPR);  
C. Welty (Director, CUERE); C. Morrell (Director, CWIT)

## **COE&IT Clusters**



**1a. Proposed focus, Theme and Identity: Bioengineering and Environmental Systems (BES Division-NSF: same title)** Numerous scientists and engineers are calling the 21<sup>st</sup> century the BIO-century. The environment also plays a central role in this equation. The tremendous advances in life sciences, notably in medicine, can be accomplished when collaboration occurs between scientists, engineers, and medical professionals. The COE&IT is proud to have faculty who run academic programs and conduct cutting edge research in the bioengineering, biochemical engineering, biotechnology, and environmental engineering fields. These areas, centerpiece to the UMBC mission, have strong undergraduate and graduate programs, complemented by intense research productivity: tissue engineering, proteomics, bioreactors and sensors, biofluid and bioheat transfer, accessibility for the disabled, bioremediation, clear air and water resources, biological environmental engineering, to name a few.

**1b. Relationship of the recommendation to Mission area:** All COE&IT departments have programs related to this theme, some more substantial than others: CBE, ME, CEE, CSEE, IS. This recommendation will build on existing faculty strengths and solidify cooperations within the college units and with outside entities like UMBC's Natural Science Cluster, UMB's Medical, Dental, Pharmacy, and Nursing schools, UMBI's COMB and government agencies like NSF, NIH, EPA, USGS.

**2. Briefly describe what has been done?** Currently there are at least 25 COE&IT faculty members involved in the education/research enterprise of this theme: 10(CBE), 4(CEE), 4(CSEE), 7(ME). Particular areas of research strength include: electrophoresis, cellular engineering, biocomplexity, chemoheterotrophic bacteria, proteomics, genomics, biodownstream processing, enzymatic polymer modification, optical sensors, biomaterials, microbial transport, biological processes in the environment, water and waste water treatment, pathogen transport in the environment, bioinformatics, biomedical data analysis, medical imaging, biological models of computation, sensors for detection of biological agents, blood flow, mechanics of osteoarthritis, biomechanics, bioheat transfer, brain cooling. Major campus investments were already made in instrumentation and facilities renovations and one endowed chair was already established, the Lillian and Willard Hackerman Chair. CUERE is a major asset in this arena. Technical personnel are supporting the machine and electronics shops, cleanrooms and are maintaining the computer hardware and software enterprises. With the Medical school, collaboration already exist in: radiology, surgery, orthopedics and we do joint projects with the R Adams Cowley Shock Trauma Center.

**3. Recommendation:** The programs development component of our recommendation includes: a) the development of a B.S. degree in Environmental Engineering, first to be incubated as a track within CBE or via a BS-Engineering (interdisciplinary degree) which will complement the graduate MS/PhD degree program in this area and b) the development of a graduate MS/PhD degree in Bioengineering which will formalize the multitude of activities in this important field and provide additional opportunities for major funding (e.g., Combined UMBC/UMB-Medical School Bioengineering Center). c) A bioengineering/biotechnology track already exists in CBE and a biomechanics track is being developed in ME. They will need to be fully funded to be viable. Provide funds for common central lab facility for bioengineering (proteomics, microscopy) to serve the of education/research programs involved in this area of research. We strive to be a recognized leader and major player in Maryland's thriving biotechnology industry. In the environmental area, the close connection that already exists with CUERE should be further expanded with UMBI's COMB. Environmental issues, especially urban and those related to the Chesapeake Bay and water resources, are focal points in UMBC's mission. We should capitalize on our strategic geographic location.

**4. Estimate Resources required:** To fully implement our recommendation, the following resources should become available: a) 2 faculty members to fully implement the BS-Environmental Engineering, one in CBE and one in CEE, to get the CBE/Environmental Engineering track going and plan for the baccalaureate degree eventually; b) 1 faculty member as director of the MS/PhD program in bioengineering. Probably endowed chair professorship. c) 2 faculty members, one in CBE and one in ME to fully implement the Bio-track in CBE and ME, respectively. Proper start-up packages should be provided for all positions. In addition, as part of the research infrastructure enhancement (campus-wide cluster) a major investment should be made in a bioengineering facility (probably jointly with the Medical School) to facilitate development of biosensor and medical devices. Eventually, a Bioengineering/Life Sciences building should be made a campus priority. Cost Center mode could be employed as part of the funding.

**5) Relationship of the recommendation to the Strategic Framework's goals and objectives:** The proposed cluster theme strongly supports objectives #3 (3b, 3c, 3d, 3e) and #5 (5b, 5c, 5d, 5e).



## COE&IT Planning Cluster - Recommendation #2

### **1a. Proposed focus, Theme and Identity: Information Technology- Intelligent Systems, Information Assurance, and Accessibility.**

The Information Technology cluster, in addition to quantitative artificial intelligent systems, will include accessibility (helping legitimate users to access information) as well as information assurance-security (preventing illegitimate users from having access) with an emphasis on the application of information technologies to support the specific goals of individuals and organizations. The COE&IT is very fortunate to have outstanding faculty educating students and conducting research in the important and vital field of Information Technology. This area, a main component of the UMBC mission, has very strong undergraduate and graduate programs producing the most and best graduates in the State. We are a recognized Center of Academic Excellence in Information Assurance by NSA. Research is very advanced in many fields, especially: structural complexity, artificial intelligence, machine learning and translation, semantic web, natural language processing, intelligent agents, distributed and parallel computing, mobile and wireless computing, data/web mining, databases, multimedia systems, ubiquitous data and text mining, biological models of computation, quantum computing, cryptography, software engineering, computer graphics, animation and visualization, computer and neural networks, information assurance, wearable computers, wireless mobile and sensor networks, network security, digital libraries, medical and bio-informatics, decision support, human computer interaction, e-commerce, e-government, accessibility, knowledge management, decision making support systems, systems analysis and design.

**1b. Relationship of the recommendation to Mission area:** Both CSEE and IS departments, as well as others, have programs related to this cluster theme. Graduate and undergraduate instruction and research areas noted above constitute a central part of UMBC's mission. Many collaborations could be envisioned with units within and outside the COE&IT and UMBC. A great opportunity to collaborate and provide a technology component to the Erikson School of Aging Studies has recently presented itself. The Wearable Computer Program already developed collaborations with Visual and Digital Arts as well as with the Bioengineering theme.

**2. Briefly describe what has been done?** Over 40 COE&IT faculty members are working in this broad area, mostly in CSEE (24) and IS (22), in a number of labs (CDL, eBiquity, Mobile & Wearable Computers lab, Interactive Systems Research Center). Well-developed graduate programs exist in this area, supporting many RA's by external funds. Extensive campus investments were made in this area including the new, modern, and well equipped ITE Building. The Aether endowed chair was already established. In the outreach and scholarship arena, we are fortunate to have CWIT. Enabling equitable access to Information Technologies is on the national agenda. At UMBC, stake-holder driven research projects are integrated with educational, outreach, research and knowledge transfer initiatives. Challenges with physical, visual, auditory, vocal and cognitive impairments are addressed to make IT globally accessible. In response to industry needs, we recently instituted a graduate certificate in Systems Engineering, which can also be used as a track within the MSCS and MSEE.

**3. Recommendation:** Programmatically, we have the degree programs in place, BS/MS/PhD in CS and IS. However, we will examine whether other graduate programs should be created to serve the needs of area industries, using the successful model of the new systems engineering tracks and certificate. We need support to strengthen these areas with additional faculty both in CSEE and IS and beyond, as it relates to the cluster. An additional Flex Masters program could also be considered. At least 2 faculty should be endowed chairs with accompanying fellowships. Considerable research funding, available for computer security, should be tapped. Joint appointments and labs between IS, CSEE and the Erickson School are desirable. The Visionary lecture series may be helpful to attract scholarship funds, working with CWIT with significant input from the IS and CSEE departments. Further develop relations with IBM, Motorola, Microsoft and others and the National Federation for the Blind and strengthen our relations with the State's IT industry.

**4. Estimated resources required:** Four faculty positions, 2 each in the CS component of CSEE and 2 in IS, will be needed in addition to technical staff to implement recommendations for this cluster theme. We also need fellowship and scholarship funds, under the control of the appropriate academic departments, for domestic and/or under-represented graduate and undergraduate students. Support the Information Assurance Lab with equipment and technicians, some using the cost center mode.

**5. Relationship of recommendation to the Strategic Framework's goals and objectives:** Builds on existing strengths; ties to local government and industry fits very well within UMBC's science, engineering, and public policy research mission. The proposed IT cluster theme strongly supports specific objectives in #2 (2e) and #5 (5e).

## COE&IT Planning Cluster - Recommendation #3

### **1a. Proposed focus, Theme and Identity: Photonics/Microelectronics/Nanotechnology/Materials.**

The Photonics/Microelectronics/Nanotechnology/Materials cluster is another jewel in UMBC's mission crown. The COE&IT is endowed with a considerable asset by having nationally/internationally renowned faculty working in this field. We have very strong undergraduate and graduate degree programs delivered by a faculty who conduct cutting edge research in the ECE component of CSEE, as well as in ME & CBE: biosensors, optics, photonics, optoelectronics (design and fabrication) and integrated circuits, high speed fiber optics communication, medical imaging, remote and fiber optics sensing, optical networks, nanophotonics, biophotonics, neural networks, communication theory, quantum electronics, mechatronics, electro-microfluids, composites, semiconductor growth, micromechanics of materials, nanoscale structured materials, actuators.

**1b. Relationship of the recommendation to Mission area:** A number of COE&IT departments have faculty members working in this cluster theme area, mainly CSEE as well as CASPR and also ME and CBE. This theme builds upon considerable existing faculty strength and will further expand collaborations within the college, with other UMBC units like Physics and beyond, with NSA's LPS, NASA Goddard, NSF, NIST, NIH and other agencies, as well as the considerable Maryland high technology industry, Northrop Grumman, Lockheed Martin, JHU/APL.

**2. Briefly describe what has been done?** Currently there are more than 20 COE&IT faculty members involved in the education/research enterprise of this theme: 12(CSEE), 10(ME), CBE(1). Areas of strength, listed in 1a, have a considerable impact on the nation's R&D and the economy. Many campus investments have been made in TRC, like the cleanrooms and crystal growth facilities, as well as CASPR's labs, whose mission is closely intertwined with this cluster's mission. 3D solid modeling and printing, rapid prototyping and design realization in ME are an integral part of this education/research cluster theme. The establishment of a proposed Digital Manufacturing Lab could lead to close collaboration with Visual Arts, resulting in a another substantial benefit for the campus. Technical personnel in place are maintaining the cleanrooms, shop (electronic and machine) and computer power.

**3. Recommendation:** As clock rates in computers approach and exceed 1GHz, the traditional threshold above which digital design stops and analog microwave design starts, the need for expertise in high-speed electronics/opto-electronics is growing rapidly. We should make 2-3 strategic hires in this rapidly developing area that lies at the interface between our current VLSI and photonics research efforts. This thrust complements our educational needs. The program development component of our recommendation includes the development of a communication track, in addition to the VLSI testing track, within the computer engineering BS degree program. This should be fully funded and is vital since it fills in the existing gap in our program portfolio menu, due to the lack of BS in EE. An additional benefit will be the potential for enhanced recruiting of domestic graduate students, from a diverse pool. Partnerships with Hampton University and Bucknell University and others should contribute towards that goal. The Entrepreneurship program should also help achieve that goal. Internships, fellowships and scholarships could all be made available coupled with an increase in research faculty and fundraising drive for an endowed chair professorship.

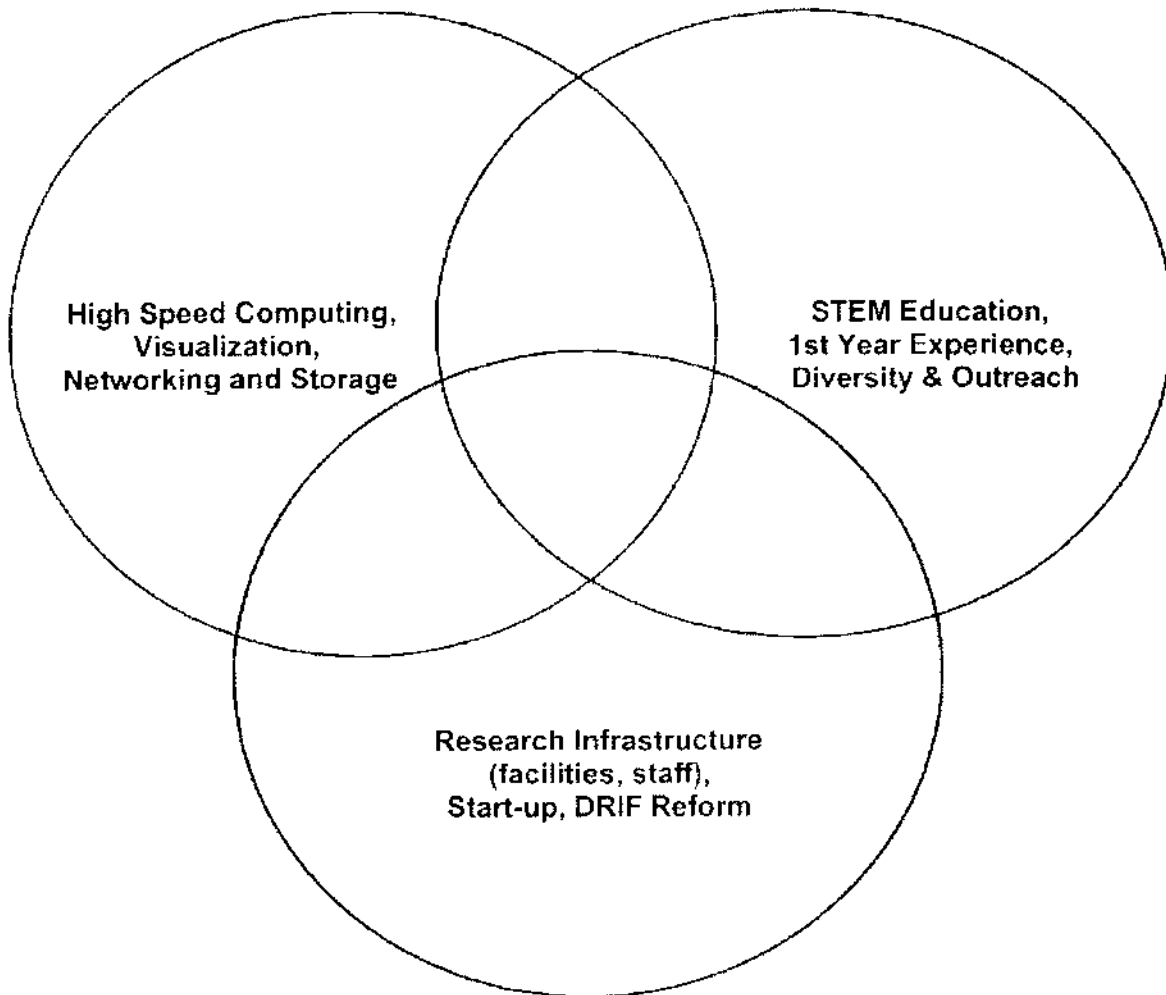
**4. Estimated resources required:** To implement on recommendation, we need 3 faculty members (one possibly a Lecturer) in the Computer Engineering area to complement the faculty strength in the ECE component of CSEE and to fully implement the communication track. One additional faculty in ME would be needed to strengthen the nano/materials component of this theme. Additional lab space and instructional equipment will be needed, some leveraged with contributions from industry, like Tektronix, Agilent/HP. Proper start-up packages should be provided for new faculty and more technical staff will be needed to meet the H/R research infrastructure requirements (campus-wide cluster). Cost center model should be implemented when feasible.

**5. Relationship to the Strategic Frameworks goals and objectives:** The proposed cluster theme strongly relates to supporting goals #1 (1b), # 2 (2a, sf, 2e) and #3 (3c ).

# College of Engineering and Information Technology Planning Cluster

S. Carmi (Dean), G. Rao (Chair, CBE); P. Charalambides (Chair, ME); B. Reed (Chair, CEE);  
C. Nicholas (Chair, CSEE); A. Sears (Chair, IS); A. Johnson (Director, CASPR);  
C. Welty (Director, CUERE); C. Morrell (Director, CWIT)

## **Campus-Wide Clusters**



## Campus-wide Planning Cluster - Recommendation #1

### **1a. Proposed focus, Theme and Identity: STEM Education; 1st Year Experience, Diversity and Outreach.**

There is a nationwide effort to develop the engineering and IT workforce, to promote education, research and innovation in these fields, which in turn will lead to job creation and economic development. UMBC approaches this important issue covering the entire spectrum from K–12 for recruiting, then retention, by providing the best College of Engineering and Information Technology (COE&IT) curriculum and education to our students. This includes a heavy dose of liberal arts and continuous outcome assessment. Throughout this effort, diversity will be the strategy and the underlying theme.

To accomplish this overarching goal, COE&IT proposes to establish a Science, Technology, Engineering and Mathematics (STEM) Education Cluster for the purpose of: 1) providing the best engineering & IT education and advisement in the Freshman Year and 2) promoting outreach to High Schools (Grades 9–12) and beyond (K–8) and developing an articulation with community colleges. Advisement in the freshman year would include registration for classes for the fall and spring semesters and students would be required to meet with an advisor before registration. The gateway courses and requirements for the major would be explained and monitored by Undergraduate Student Services (advising), who would also check student's transcripts at the end of the semester and monitor their progress. Students need to be aware of the retention policies of the University and the options available. This is an opportunity to build a strong collaborative relationship between the COE&IT and the Sciences, Humanities and Education departments at UMBC.

**1b. Relationship of the recommendation to Mission area:** This initiative constitutes a central part of UMBC' mission. Departments directly related to this cluster theme are all COE&IT units, including CWIT, and UMBC's Chemistry, Physics, Biology and Mathematics, the Department of Education as well as other units. Partners external to UMBC are: the Maryland State Department of Education and a number of school systems (Baltimore City, Baltimore County...) and Community Colleges.

**2. Briefly describe what has been done?** In addition to pre-service programs, an essential component of this proposal will involve UMBC's Education Department which provides professional development for teachers (in-service). Science and Technology teachers will pursue a Graduate Certificate by successfully completing four new graduate courses (12cr.), jointly developed between COE&IT and the Department of Education. Upon completion, teachers will have credentials to teach Engineering and Information Technology in a High School curriculum. These credits would also count towards a Master of Education degree. Workshops and summer short courses could complement such a plan of study. Project Lead the Way, as well as NSF's super STEM project with the Baltimore County Public Schools, have statewide implications that will contribute to high skilled workforce development for years to come. It's a great opportunity for UMBC, nationally recognized for advisement and mentoring through the Meyerhoff program, to move further up in this arena.

**3. Recommendation:** The recommended Center will constitute a focal point and hub of activity for all outreach programs currently underway (Project Lead the Way, Introduction to Engineering in High Schools (H.S.), H.S. teachers and counselors workshops for professional development, etc.). The Center will also house the Advising Center, the Tutoring Center, as well as student societies like Women in Engineering and Minority in Engineering Programs. CWIT involvement and participation will be essential in this enterprise. In addition to outreach and providing the service to the college by taking responsibility for the Freshman year, especially the ENES 101 course, the Center will function as the home for the BS in Engineering degree program, already approved by MHEC. This degree could serve as a career launching pad for prospective teachers (pre-service) of engineering and information technology in H.S. This B.S. program will consist of courses in other disciplines and will confer an interdisciplinary engineering & IT degree.

**4. Estimated resources required:** Two faculty positions, one in COE&IT and one in Education. These will be tenure track positions in Engineering Education (not discipline specific). The faculty will be evaluated for Promotion & Tenure based on their contributions to teaching and research publications in the scholarship of teaching area. The Center will also have two TA's. Professional advisors, who have a great impact on retention, as well as other COE&IT and Education faculty, will also have affiliation with this Center. The ABET accreditation process can become a powerful tool to improve retention by setting clear objectives to the curriculum and attain outcomes and assess results, with feedback from alumni and the IAB (industry).

**5. Relationship to the Strategic Frameworks goals and objectives:** The proposed cluster themes strongly supports objectives #3 and #5.

## Campus-wide Planning Cluster - Recommendation #2

### **1a. Proposed focus, Theme and Identity: High Speed Computing, Visualization, Networking and Storage.**

Intense computation is an increasingly important component of research in a variety of disciplines, especially engineering and science. Intense computation serves, for example, as a simulation tool, validating theoretical as well as experimental results. High speed computing is now an integral part of the education and research enterprise serving the undergraduate and graduate student population and faculty researchers. With the recent awards from IBM, a leading supercomputer facility at UMBC could become an asset serving the education and research community here, at government agencies like NASA, the Army Research Lab, and industry.

**1b. Relationship of the recommendation to Mission area:** The proposed cluster theme fits naturally in UMBC's central mission of providing a distinctive undergraduate experience and cutting edge research and graduate education. Fields like engineering, physics, computational biology and chemistry are just a few examples in which high speed computing and data mining are used extensively.

**2. Briefly describe what has been done?** More than 25 faculty members are involved in high performance computing. They are part of many departments mainly Math/Stat, CSEE, Mechanical Engineering, Chemical Engineering, Information Systems, Physics, Chemistry, Biology, Geography, OIT and the Imaging Research Center as well as Research Centers. Several high performance computing installations are scattered around campus. Imaging and visualization projects are one of UMBC's recognized strengths.

**3. Recommendation:** Create a graduate certificate in computational science that could be earned on its own, or in conjunction with an MS in science or engineering. We will need to develop a number of new courses, including a project course that lets the student apply computation in their home discipline. Alongside the instructional component, a state-of-the-art computation/visualization/networking/storage research facility is recommended. Projects to be conducted will include traditional and novel applications from the physical and social sciences.

**4. Estimated resources required:** We will need a faculty position, preferably a joint appointment between Math/Stat and CSEE, to be the program director for the computational science education/research center. An initial half-time appointment could get it started, with an estimated cost of \$50k per year. In addition to the program director, there will be a need for another full-time staff member, two graduate assistants, and an increase in operating budget for OIT. OIT is already providing the space to be used by the new IBM cluster.

That program would be expected to use OIT's supercomputing facilities, which at this point means the new IBM Beowulf cluster. That facility will be supported in part by sponsored research funds, via paying customers with grants. When the cluster will be used for instruction, a modest fraction of the IBM cluster's operating expenses would need to be covered. An estimate of \$25k per year seems adequate.

The resulting pool of students who add in their own disciplines, a supercomputing component, should be able to generate research funds with their respective faculty from sources like NSF training grants. The additional research that could be performed on campus would be very valuable.

**5. Relationship to the Strategic Frameworks goals and objectives:** A strong connection exists to the strategic framework. The proposed certificate should help with graduate student recruiting and retention, which is goal 1b. We already have faculty in this (as yet informal) strategic cluster, which is goal 2e. The proposed certificate is interdisciplinary by definition, which is goal 3e. DPET may turn out to have a role in operating the graduate certificate program, which is goal 3f. The possibility of collaboration with outside agencies is goal 5c.

## Campus-wide Planning Cluster - Recommendation #3

**1a. Proposed focus, Theme and Identity: Research Infrastructure (facilities, staff), Start-up, DRIF Reform.** This campus-wide cluster theme encompasses the entire UMBC education/research enterprise as we take our place among top notch research universities.

**1b. Relationship of the recommendation to Mission area:** The theme cuts across disciplines and departmental/college boundaries and is central to the UMBC mission, as delineated in the “Strategic Framework for 2016.” It supports the “honors university” designation, where student retention is enhanced by a considerable research experience. It reinforces scholarships and research, which are the trademarks of an academic institution and it connects it to society at large.

**2. Briefly describe what has been done?** Considerable investments in facilities and equipment have been made (CASPR, CUERE, other TRC labs, cleanrooms, new fully equipped ITE building, build MEMS/Nano labs in Engineering Bldg., etc.), but much more work has to be done to: a) to maintain existing faculty strengths and programs and b) build upon it and bring us to the next level, in order to support the clusters in COE&IT, Natural Science/Math and in the entire campus.

**3. Recommendation:** a) to maintain existing strengths, we need to invest in a highly skilled workforce, so we have technical business support to manage grants from external sources and maintain labs and equipment (electronic/mechanical, both instructional and research) and computer/IT persons (hardware and software) and financial experts (grant accounting) and b) build new labs/centers to support proposed intra-/inter-campus thrusts like: Bioengineering/Life Sciences in collaboration with Medical School, CBE’s advanced sensor technology facility to support the State’s biotechnology and pharmaceutical industries. Support environmental programs collaboration with COMB on bioremediation and with USGS on water resources and the digital manufacturing program for design realization, in conjunction with the nanotechnology thrust, c) reformulate DRIF distribution, to generate a steady stream of start-up funds at the departmental/program level, where most initiatives get started, so new faculty hired to reinforce the clusters will get off to a great start. Provide a source for matching funds to make our research proposals more competitive which in turn will generate more funding for RA’s. Provide necessary technical (facilities), business (grants management) and administrative (payroll) staff support to maintain enhanced research infrastructure. Maintain and enhance library strength.

**4. Estimated resources required:** a) technical and business support personnel are critically needed to support existing operations: an Engineering Lab Technician III (\$50k salary and benefits) is needed to maintain educational and research labs in CSEE in the ITE bldg. Over the next several years, two additional staff are needed to assist in financial and grants management to include a Business Services Specialist (\$40k) and an Accountant I (\$37k). b) Research facilities in proteomics, microscopy, bioengineering, nanotechnology, super computing and homeland security, already in our plan, will help attract and retain top faculty and undergraduate and graduate students, especially from a diverse domestic population. A new facility (capital funds of \$25mil in the next 10 years) will be needed to accommodate Bioengineering/Life Sciences thrust and to house collaboration projects with UMB’s Medical School. c) other state-of-the-art facilities, new or renovated space, are needed to support clusters in nanotechnology, MEMS, digital manufacturing and supercomputing (\$10mil over 10 years). The College is developing these areas of State and national needs and is rapidly running out of space; especially space with the necessary square footage to handle the complexities of some of the newer technologies.

**5. Relationship to the Strategic Frameworks goals and objectives:** This cluster supports the major mission spelled out in the strategic framework, specifically 2f and 4d.

## Campus-wide Planning Cluster - Recommendation #3

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**1b. Relationship of the recommendation to Mission area:** The theme cuts across disciplines and departmental/college boundaries and is central to the UMBC mission, as delineated in the "Strategic Framework for 2016." It supports the "honors university" designation, where student retention is enhanced by a considerable research experience. It reinforces scholarships and research, which are the trademarks of an academic institution and it connects it to society at large.

**2. Briefly describe what has been done?** Considerable investments in facilities and equipment have been made (CASPR, CUERE, other TRC labs, cleanrooms, new fully equipped ITE building, build MEMS/Nano labs in Engineering Bldg., etc.), but much more work has to be done to: a) to maintain existing faculty strengths and programs and b) build upon it and bring us to the next level, in order to support the clusters in COE&IT, Natural Science/Math and in the entire campus.

**3. Recommendation:** a) to maintain existing strengths, we need to invest in a highly skilled workforce, so we have technical business support to manage grants from external sources and maintain labs and equipment (electronic/mechanical, both instructional and research) and computer/IT persons (hardware and software) and financial experts (grant accounting) and b) build new labs/centers to support proposed intra-/inter-campus thrusts like: Bioengineering/Life Sciences in collaboration with Medical School, CBE's advanced sensor technology facility to support the State's biotechnology and pharmaceutical industries. Support environmental programs collaboration with COMB on bioremediation and with USGS on water resources and the digital manufacturing program for design realization, in conjunction with the nanotechnology thrust, c) reformulate DRIF distribution, to generate a steady stream of start-up funds at the departmental/program level, where most initiatives get started, so new faculty hired to reinforce the clusters will get off to a great start. Provide a source for matching funds to make our research proposals more competitive which in turn will generate more funding for RA's. Provide necessary technical (facilities), business (grants management) and administrative (payroll) staff support to maintain enhanced research infrastructure.

**4. Estimated resources required:** a) technical and business support personnel are critically needed to support existing operations: an Engineering Lab Technician III (\$50k salary and benefits) is needed to maintain educational and research labs in CSEE in the ITE bldg. Over the next several years, two additional staff are needed to assist in financial and grants management to include a Business Services Specialist (\$40k) and an Accountant I (\$37k). b) Research facilities in proteomics, microscopy, bioengineering, nanotechnology, super computing and homeland security, already in our plan, will help attract and retain top faculty and undergraduate and graduate students, especially from a diverse domestic population. A new facility (capital funds of \$25mil in the next 10 years) will be needed to accommodate Bioengineering/Life Sciences thrust and to house collaboration projects with UMB's Medical School. c) other state-of-the-art facilities, new or renovated space, are needed to support clusters in nanotechnology, MEMS, digital manufacturing and supercomputing (\$10mil over 10 years). The College is developing these areas of State and national needs and is rapidly running out of space; especially space with the necessary square footage to handle the complexities of some of the newer technologies.

**5. Relationship to the Strategic Frameworks goals and objectives:** This cluster supports the major mission spelled out in the strategic framework, specifically 2f and 4d.

# College of Engineering and Information Technology

## Academic and Strategic Planning

### 2004/05 Report: Specifics and Background

#### Planning Process AY 2004/2005

The College of Engineering & Information Technology (COE&IT) Chairs and Directors Advisory Committee meetings in Fall 2004 were, for the most part, devoted to the College's academic/strategic planning process with a 5-10 year implementation horizon. The entire UMBC academic community is currently involved in this process. The Fall '04 Industrial Advisory Board (IAB) meeting on December 3, 2004 as well as the Spring '05 meeting on May 27, 2005 were also mainly devoted to this agenda item. The discussions at the Chairs' meetings continued at faculty departmental/retreat meetings. A great deal of input from faculty and staff was sought and obtained. This plan concentrates on the academic planning (education and research) while plans for staff (administrative and business), infrastructure (facilities) and fundraising are addressed in one of the campus-wide clusters.

Main focus was:

- 1) Taking stock of existing and projected student enrollments (undergraduate & graduate), faculty size and teaching/research strength and infrastructure needs.
- 2) Delineating long term vision for the college, including academic program development, to address professional, local industry and national needs.
- 3) Developing collaborations between faculty, inside and outside COE&IT units, to create education/research clusters that will drive future faculty recruiting efforts.

#### Vision (Cover Page)

**Mission:** To attain our vision, we have to provide quality education to talented students in the core fields of engineering, computer science, and information systems, in order to prepare them for future careers in these professions, taking advantage of the unique features of the UMBC education experience (e.g., special mentoring, involvement of undergraduates in research). The COE&IT has a rather unique opportunity to carve a special education/research niche due to the considerable synergy generated by the fields of engineering and IT coming together under one roof. The objectives include:

- Provide programs in the CBE, ME, CEE, ECE, CS, IS, disciplines and build upon an excellent reputation of faculty. Additional programs, intertwined with research, will be necessary to enhance the education/research enterprise (e.g., Bioengineering, Environmental Engineering). This approach will help recruit and retain the most talented and diverse student population and outstanding faculty.
- Provide industry with the skilled workforce needs, namely the graduating students in the above disciplines of engineering, computer science and information systems. This will help make their corporations globally competitive, thus contributing to the economic well being of the State of Maryland and the nation.
- Conduct cutting edge research in engineering, computer science, and information systems, disciplinary and interdisciplinary, thus enhancing innovation, generating new technologies, facilitating technology transfer and commercialization. This process leads to job creation and economic development.

#### Undergraduate programs objectives:

- Undergraduate student body of 2,600 and a graduation rate of 520 BS/year. High caliber Freshman class with average SAT score of 1,250 consisting of at least 25% women and 25% minorities. Conduct outreach to K-12 to promote STEM Education and articulate with Community Colleges (for the benefit of transfer students).



- Continuous quality improvement of the curriculum to achieve excellence and maximize undergraduate student recruiting, retention and graduation rate. Maintain ABET accreditation of all Engineering and Computer Science programs and attain ABET accreditation of the IS program.
- Promote research and teaching, with technical and non-technical (general education) components, including project-based learning, with emphasis on design and experimentation.

Objectives for graduate program:

- Graduate student body of 800 (600 MS and 200 PhD) and a graduation rate of 200 MS/year and 35 PhD/year (2 MS and 0.4 PhD degrees awarded/faculty/year).
- Increase graduate student recruiting (especially from a diverse domestic population), improve retention and graduation rate.
- Increase research funding and promote disciplinary and interdisciplinary research in established and emerging fields: Biotechnology-Information Technology-Nanotechnology.

**Faculty:** Hire 13 new tenure track faculty members to reach a faculty size of 113 (101 tenure track +12 lecturers) from the current 100 (88 tenure track + 12 lecturers), to accommodate new programs, support increased enrollments and the expanded research enterprise. The size of research faculty will also be considerably increased to support the expanded research activity.

**Research:** Enhance research productivity from \$9 million research expenditures per year to \$16 million in 5 years (\$170,000/faculty/year - the "top 50" range in the US News & World Report metrics). The proposed interdisciplinary clusters are key for this goal to be attained.

**Infrastructure:** Provide a research and education infrastructure commensurate with the research and education enterprise: major equipment in modern facilities and technical/administrative staff (4 new positions). As spelled out in the campus-wide cluster write-up.

**Historical programmatic background and future plans:** The baccalaureate BS level programs offered by the college were constrained from its inception in 1985, when only Chemical Engineering and Mechanical Engineering were authorized. Of the four "core" engineering disciplines, two are missing at the undergraduate BS level: Electrical Engineering (EE) and Civil Engineering (CE). To respond to industry professional needs and in order for the college to develop its full potential and gain national reputation, the lack of these two BS programs had to be addressed. On the other hand, and on the positive side, the COE&IT enjoys a special advantage which makes it unique: Computer Science and Information Systems are an integral part of its fabric and that constitutes a substantial asset, which provides crucial vitality.

In brief, at the BS level, the COE&IT currently offers five degrees in: Mechanical Engineering, Chemical and Biochemical Engineering, Computer Science, Information Systems and more recently, Computer Engineering. Each one of these five programs also offers MS/PhD graduate degrees. In addition, a strong MS/PhD graduate program is being offered in EE and we have recently reactivated the previously approved MS/PhD graduate program in Civil Engineering, with an emphasis in Environmental Engineering. In CSEE, the Computer Engineering program is designed to build a bridge between the Computer Science and the Electrical Engineering disciplines. The missing BS in EE will therefore be handled in conjunction with the Computer Engineering program, to form the ECE component of CSEE. The fundamental electronics courses of Electrical Engineering will now constitute the special Communications Engineering track, developed within the BS in Computer Engineering. This track will cover a portion of the Electrical Engineering discipline spectrum. A combination BS-Computer Engineering/MS-Electrical Engineering is another attractive alternative offered to interested

students. The missing BS in Civil Engineering will be handled within the CEE framework, where we intend to develop an undergraduate BS program in environmental engineering. A track within the BS in CBE could be a first step. Collaboration with other units like Geography, Chemistry and Interdisciplinary Studies are also possible options.

Other programs: COE&IT offers a MS degree in Engineering Management jointly with UB. Information Systems, at the baccalaureate level, in addition to the BS in IS degree, also offers a BA degree in Business Technology Administration. A distinct interdisciplinary MS/PhD graduate program in Bioengineering is to be established in collaboration with units within and outside COE&IT, using existing faculty strengths, and with UMB and UMBI. We note that an undergraduate track in Bioengineering already exists within the BS in CBE and one is planned within the BS in ME.

Graduate certificates will be developed to further enhance existing or new graduate programs. Systems Engineering, developed by CSEE with DPET and with support from the Northrop Grumman Corporation, is an example in a series of such certificates to be established. Another one is the e-Government graduate certificate established by IS with other units.

### **Department/Academic Plans**

At the outset, each department was asked to take inventory of their academic programs and faculty strengths and articulate a vision for their future growth and development, including the education/research infrastructure to support it (staff and facilities). As an integral part of the discussion, considerations were to be given to building interdisciplinary teams within and outside their own units. Each department's faculty was engaged in these discussions. The Academic Plans for: Chemical & Biochemical Engineering, Civil & Environmental Engineering, Mechanical Engineering, Information Systems, and Computer Science and Electrical Engineering (both CS and ECE programs) are attached. Plans for Centers affiliated with COE&IT: CASPR, CUERE, and CWIT, are also incorporated.

### **COE&IT and Campus-wide Clusters** (detailed descriptions provided separately)

From the individual departmental/program plans, the following COE&IT-wide clusters emerge and they parallel national emerging technology thrusts: Information Technology, Biotechnology, Nanotechnology.

### **COE&IT Planning Clusters**

#### **Recommendation #1: Bioengineering and Environmental Systems**

#### **Recommendation #2: Information Technology - Information assurance, Intelligent Systems, Accessibility**

#### **Recommendation #3: Photonics/Microelectronics/Nanotechnology/Materials**

### **Campus-wide planning clusters**

**Recommendation #1: STEM Education, 1<sup>st</sup> year experience, diversity and outreach.**

**Recommendation #2: High Speed Computing, Visualization, Imaging.**

**Recommendation #3: Research infrastructure, start-up, DRIF Reform (facilities, staff).**

## **Undergraduate Education: Recommendation #1**

**Proposed Focus, Theme or Identity:** The focus of the work in undergraduate education is on student success. Student success is typically measured in terms of retention and progression to degree. **Academic stimulation and assistance** are critical to retention and graduation rates, and hence, to student success.

**Relationship of the Recommendation to Mission:** UMBC, an Honors University in Maryland, is committed to providing undergraduate students an excellent and distinctive education. The overwhelming majority of students enrolled at UMBC are undergraduates; we cannot afford to provide them anything less than a high quality education. Recent tuition increases have been accompanied by concomitant increases in students' expectations. Failure to meet student academic needs will likely result in their leaving the University prior to earning a degree.

**What has been done:** The design and implementation of retention strategies is not a process with a clear beginning and a definitive endpoint. Rather, retention is a dynamic, complex, and ongoing process requiring constant evaluation and vigilance. Retention efforts begin as soon as a student is enrolled and must be sustained continuously throughout a student's enrollment. That being said, student achievement is an obvious factor in retaining and matriculating students.

Achievement is directly related to curriculum and instruction, as well as to the quality and types of support available to students struggling to master requisite content and skills. Academic stimulation involves offering challenging coursework using pedagogical approaches insistent on active learning. UMBC has hired an **outstanding faculty** who work with undergraduates. The presence of full-time, dedicated faculty knowledgeable in their discipline and on top of cutting-edge research is a hallmark of an honors experience. The creation of a **Faculty Development Center** has been helpful in providing assistance for faculty desiring to improve their teaching and focus on learning outcomes. **First Year Seminars**, which by design are student-focused and reliant on active learning approaches, offer all new students, transfer and first year, the opportunity to study with a full-time faculty member in a class capped at 20 students. **Undergraduate research** initiatives provide students the opportunity to earn stipends to be used to investigate research questions they pose and to participate in the dissemination of their research through presentations and publication in the undergraduate journal. **Internships, study abroad, and service learning** opportunities also contribute to a stimulating academic environment. We think that part of this connection relates to the ability of students to see a concrete connection between the theory of their coursework and real-world practice.

Support for students' academic performance is available through the **Learning Resources Center (LRC), Student Support Services, the English Language Center, and the many tutoring centers** on campus. UMBC's early warning system, the **First Year Intervention** or FYI program, requests that faculty provide first-year students feedback early in the semester (and certainly prior to the drop date) and to inform the

LRC staff, who contact the students and offer appropriate support. **Introduction to an Honors University** seminars are one-credit seminars attached to content courses in a variety of disciplines and include but are not limited to modules on time management, study skills, information gathering, and academic integrity. **For Undeclared and Exploratory Learners** (FUEL) provides advising for students who need to identify a major and career objectives, and **Getting Over Academic Life's Setbacks** (GOALS) offers study skills and time management workshops for students in academic jeopardy.

**Recommendation:** Require every new student to complete an approved University small-group experience focused on academic stimulation and success. Programmatic efforts to be included are: First-Year Academic Seminars (FYS); one-credit success courses—"Introduction to an Honors University Seminar" (IHUS); GFRs that are linked around interdisciplinary research, problems, or themes, and enroll a common cohort of students; a Living Learning Community (LLC); departmental courses that already exist and are geared to these purposes; requiring or encouraging all students to participate in applied learning (specifically internship, co-op and service-learning, study abroad, and research); and participation in one of our many scholars programs (such as Meyerhoff, Honors, Humanities, Sondheim Public Affairs, and Linehan Artist Scholars).

FYS are taught by full-time instructional faculty and are limited to 20 students. FYS are academically rigorous and use active learning strategies. IHUS integrate academic advising, career/life planning, study groups, and an early warning system with modules that include study skills, academic integrity, time management, involvement and other workshops oriented to aiding students' transition to UMBC. Thematic GFRs provide an interdisciplinary focus and may be offered across student levels (first-year, sophomore, junior) to a set cohort of students. LLCs create residential cohorts interested in a common area, issue, discipline, etc., who live and study together. Scholars programs offer a wide range of engagement opportunities including summer bridge programs, special courses, advising, tutoring, and social events.

Career exploration is a vital part of a student's mission toward a fulfilling life and success in college. Through the Career Development Center, the Academic Advising Center and the Counseling Center (although less so this year due to staffing shortages) all provide students with the opportunity to link their career goals to academic majors and course work, thereby making the important linkage to academic motivation. There is also great value in internships and co-ops that allow students to test a career interest prior to graduation.

**Resources Required:** Knowing that the scholars programs are relatively stable, we project needing the following: Four new LLCs for a cost of \$100,000; 78 sections of IHUS at \$1000 per course or \$78,000; 50 sections of FYS courses @ \$4000 each or \$200,000; at least three additional staff persons to assist with implementation and planning (FYS, IHUS, GFRs, and LLCs) @ \$50,000 each or \$150,000 and curriculum development costs of \$60,000 for all the programs. Fully funding the counseling center (by replacing two positions—\$120,000, including benefits and fully funding the Registrar's office which would include a Registrar at \$70,000.

**Relationship to Strategic Framework:** The goal as stated in 2016 calls for a distinctive undergraduate experience and increased retention. First-year programs have been identified in the literature as practices responsible for the greatest contribution to retention in four-year public colleges/universities. The programs suggested here are consistent with the needs of our diverse student population. Not all new students need the same thing. The opportunity to match the experience to the student represents an effective retention strategy that is professionally, ethically and fiscally responsible. The Honors Task Force Report clearly articulates the need for a cohesive first-year experience and many of these activities are therein mentioned.

Last updated 4/22/05 Diane's edits

## **Undergraduate Education: Recommendation # 2**

**Proposed Focus, Theme or Identity:** High quality academic advising is essential to student success. Advising entails course selection, assistance with registration, degree audit, the identification and clarification of student goals and direction, referral to appropriate sources of support as needed, and encouragement to become engaged.

**Relationship of the Recommendation to Mission:** Advising connects students to faculty and staff over matters of academic substance and engagement. Research consistently documents that advising plays a pivotal role in student retention and timely graduation.

**What has been done:** Recognizing the importance of advising to student success, UMBC has established the Advising Resource Center, hired professional advisors in several large departments with large transfer populations, established **For Undeclared and Exploratory Learners (FUEL)** to assist students in identifying a major and career objectives as well as to provide help with course selection, developed the **Getting Over Academic Life's Setbacks (GOALS)** program for students in academic jeopardy, extended and enhanced the advising time during orientation, with leadership from the SGA created the First Year Council which offers peer advising, and engaged a consultant from NACADA to review our advising offerings.

**Recommendation:** Develop a comprehensive model of advising that assures that all students receive appropriate advising from the time they are enrolled and throughout their entire academic journey at UMBC, realizing that students require differentiated advising and that some students will require assistance after they graduate. This will require defining the role of faculty in student advising, developing specialized advising interventions with targeted student populations, increasing professional advising staff to work with departments/clusters and the Advising Center, integrating academic advising with first-year transition programs, establishing centers that combine advising and counseling with career and life planning, and providing a degree audit system through the implementation of PeopleSoft SA.

The distributed model of departmental advisors has been largely successful where implemented. However, resources are unevenly available. In order to develop a realistic assessment of staffing needs to extend the model, the expectations and responsibilities of faculty in academic advising need to be more clearly defined. Professional advising staff could then support academic departments or clusters; the Advising Center could focus on undeclared students and students in academic jeopardy, working closely with the Learning Resource Center to facilitate academic support services. An on line degree audit system is needed to free academic advising resources from the manual preparation of degree audits and graduation reviews and allow them to focus on academic advising.

The need for a comprehensive model cannot be overstated. If we are serious about retention and about faculty participation in advising at any level, we need to clarify our model, our expectations, and the reward system, especially with regard to faculty.

**Resources Required:** A staff person in Academic Services will be required to maintain an online degree audit system. Further discussion is needed to develop a staffing model for distributed advising. At a minimum, approximately six to eight advisors are likely needed to support existing academic departments and scholars programs; an additional two advisors would be needed to support the Advising Center. Currently the average USM salary for advisors is approximately \$38,000 plus benefits. One new staff person in the Advising Center is needed to follow up with students leaving UMBC prior to graduation. This is a past practice that needs to be reinstated. Understanding why students withdraw prematurely would inform retention efforts.

## **Undergraduate Cluster Recommendation #3: Learning Communities**

**Proposed Focus, Theme and Identity.** Strategically focused learning communities with an array of “applied experience” opportunities inside and outside the classroom emphasizing undergraduate research, engagement with the arts, career development, internships, service learning, and study abroad, for example should be available to every UMBC undergraduate. Students’ out-of-class experiences have a positive effect on learning. Student learning and development is positively impacted when out-of-class interactions with peers and faculty extend and reinforce a student’s academic experience. Such positive learning outcomes are also observed when students are involved in learning communities; that is, linked courses, cluster communities or coordinated studies offering collaborative, connected learning.

Learning communities positively impact student learning and persistence because:

- students form peer networks of support beyond the classroom;
- the social and academic divide is bridged through student relationships with peers and faculty that form in the classroom and continue beyond it;
- students’ academic and social engagement or involvement is increased;
- students’ access to formal support systems such as tutoring or study groups is increased.

All entering UMBC students should be afforded the opportunity to participate in a learning community that supports the positive impacts on student learning, development, and persistence. Learning communities are a demonstrated pathway to student success.

**Relationship of the Recommendation to the Mission:** This proposal serves the University mission, to guide students in critical thinking, creative problem solving, experiential learning, and development of conceptual skills while actively promoting interaction between students and faculty. UMBC is committed to diversity at all levels and seeks to create a campus community rich in intellectual, cultural, and ethnic diversity. The emphasis is on quality, high achievement, and integration of research, teaching and learning, and civic engagement in all coursework designed to prepare all students for rich academic opportunities such as those described here are success in graduate and professional education as well as success in the workplace.

**What has been done:** Currently there are eight learning communities that are residential in nature (living learning communities). The current living learning communities include: Shriver, Intercultural Living Exchange, Humanities, Emergency Health Services, Women in Leadership and Learning, Visual and Performing Arts, Honors College, Center for Women in Technology. These learning communities are coordinated by academic departments/programs in cooperation with Student Affairs (Residential Life).

**Recommendation:** All new UMBC students should be afforded the opportunity to participate in a learning community offering a wide array of applied experiences both inside and outside the classroom. These opportunities should emphasize undergraduate



research, engagement with the arts, career development, internships, service learning, and study abroad. These opportunities should cross divisions and be widely supported.

A career exploration floor could be specifically proposed for students participating in Shriver Center Professional Practice experiences, i.e., internship and co-op along with students involved in Career Development Center initiatives.

**Estimated Resources Required:** This proposal requests funding and support for additional learning communities that are both residential and non-residential. Future learning communities in the sciences, education, and social sciences are possible. Additionally, possibilities for future learning communities could focus on issues/themes such as; social problems, interdisciplinary problem solving, research, entrepreneurial enterprise, political engagement, social activism, health and well-being, career development, leadership development, diversity and culture, etc. Learning communities could include linked courses and co-curricular experiences.

Estimated resources required include a full time academic program coordinator (\$60,000 each) for each learning community and half-time administrative support staff (\$25,000) to assist in the administration of each learning community (for programs of 30-50 students, additional numbers of students will require additional program and administrative assistance). (Although existing structures such as the Shriver Center, the Study Abroad Office, Career Development Office, etc. would need to review their capacity. For example, The Shriver Center approaches all of these efforts in the spirit of collaboration, and embraces the chance to partner with other campus departments on any effort that enhances students' overall experience and success at UMBC, viewing themselves as a resource to the campus. As is the case with most offices on campus, there are challenges when it comes to resourcing both new and existing efforts, and The Shriver Center would appreciate any consideration of the inclusion of support to the Center.) Additionally, each academic department or program would need to provide a learning community curriculum (including possible linked courses with other departments), faculty involvement in advising and extracurricular events (workshops, discussions, teach-ins, etc.). Communities that are residential may require funding (\$50,000 per building) to renovate residential space to include faculty offices or faculty workspace. Growth in residential learning programs will require a director of living learning communities in the residential life office (\$70,000). This position should be funded by both Student Affairs and Academic Affairs. The costs associated with programs depend on the projected growth of programs.

**Relationship to the Strategic Framework, Goals, and Objectives:** This proposal addresses the major goals of 3b, 3d, 3e, 5b, 5c. Recent assessment of UMBC's living learning programs show that when compared to a control group, living learning community students report:

- socializing more with people in social clubs and other people in living learning;
- discussing academic, career and sociocultural issues more;
- positive peer diversity interactions;
- more involvement in arts, music activities, political/social activism, ethnic/cross cultural activities, community service;

- more time volunteering and in student clubs/activities;
- there is application of knowledge abilities;
- more growth in liberal learning;
- more interpersonal self-confidence;
- sense of civic engagement and empowerment;
- more satisfaction with sense of belonging; and
- higher cumulative GPA.

We need to extend this opportunity to more new students and particularly to those at greatest risk for dropping out prior to graduating.

Last updated 4/22/05

## **Undergraduate Campus-Wide Recommendation #1 Assessment Office**

**Proposed Focus, Theme and Identity:** UMBC, an Honors University in Maryland, is committed to providing all students an excellent and distinctive education; thus we are oriented to student success. Nevertheless, our six year graduate rate is lower than it would like it to be, leaving us, like many universities in the nation, to explore best practices at more successful institutions and to experiment with unique programming that best meets the needs of our diverse student body. This focus on programming related to student success, retention, and graduation rates requires us to create a set of standards for measuring the effectiveness of our programming. These measures and benchmarks need to be used in both formative and summative evaluation. We need to know what is working, what is not, and if we are to make informed decisions and remain competitive, we need data that are derived within a comprehensive assessment model. We participate in regular accreditation reviews and Middle States mandates a model focused on student learning outcomes. They, along with our students and fellow Marylanders, will hold us accountable. As a research university we know the importance of inquiry and the role of data in informing what we do. We need to practice what we believe.

**Relationship of the Recommendation to Mission:** Producing successful graduates is arguably our core mission. Creating real, meaningful accountability for success consistent with our values and strengths will help us achieve this goal. Valid and reliable data are needed to assure that we are making smart decisions for our students and for how we invest available resources.

**What has been done:** The Office of Institutional Research (OIR) has consistently met the demand for required reports. These reports are typically summative and designed to provide information standardized across campuses. We participated in the NSSE, surveyed students leaving residence this semester, conducted focus groups with select groups of students, and pulled together an ad-hoc assessment group to examine existing assessment tools and determine their applicability to UMBC.

**What needs to be done:** As part of an overall reporting strategy, UMBC needs to establish an Assessment department within OIR to develop innovative performance measures, to conduct formative and summative evaluation of new and existing programs, and to oversee the resulting comprehensive assessment emphasizing student learning outcomes. This department would work with the current Campus Assessment Coordinating Committee (CACC) and Data Management Council to develop policies and procedures to meet the analytical needs of the campus.

Reports and accreditation activities inform us on our progress and may point to strengths or areas in need of improvement. However, we need to evaluate existing and new programs on our campus using formative as well as summative approaches. We need to understand who is succeeding and why, as well as who is leaving prior to graduating and why. We must be able to disaggregate data and delve closely and candidly into the factors related to our success and into areas in need of improvement. We need to know

our students from the time they enter and post-graduation. The more thorough and rigorous we are, the greater the likelihood that we will achieve our goals related to student success.

Additional effort and resources are needed to meet a variety of operational reporting needs in support of the academic enterprise.

**Estimated Resources Required:** A high level assessment expert would need to be hired; no one on campus is currently dedicated to assessment alone. This person would have an earned doctorate and salary range of \$75,000-\$95,000. Research analyst support would include two master's level analysts at a salary of \$50,000-\$60,000. IT and clerical support could be shared with OIR until resources allowed staffing (\$30,000-\$45,000). (Note: Clerical support in OIR is currently 25% of a full-time staff person's time shared with the Provost's office.) Additional software licensing, hardware, and survey support may be required as well.

**Relationship to Strategic Framework:** A goal of the Strategic Framework is to bring budget and resource decisions in line with strategic goals and objectives. Adequate assessment capability is critical to making informed decisions in allocating scarce resources to support the retention effort.

Last updated 3/30/05 – Diane's edits

## **Undergraduate Campus-Wide Recommendation # 2: Scholarship and Financial Aid Review**

**Proposed Focus, Theme and Identity:** Unequal access to higher education is a national and local issue. The urgency of this problem has been exacerbated by recent and rapid double-digit increases in college tuition. Participation rates found that the amount of need-based aid provided per student was the single most important financial variable influencing college-going (St. John, et al., 2004). Furthermore, the amount of student financial aid available is the number one institutional factor cited as making the greatest contribution to attrition at four-year public institutions (ACT, 2004). Importantly, national data show that those who fall short of seeking the credentials they seek are disproportionately low-income and students of color (Carey, 2004). Whether considering admission or graduation rates one thing is clear--financial resources matter.

**Relationship of the Recommendation to Mission:** Our core mission is education. In describing our major goal to "provide a distinctive undergraduate experience" we note the importance of "exposure to diversity" as a characteristic of a distinctive curriculum. Equal access is predicated on affordability. It is clear we must examine our aid model and policies. The distribution of merit-based and need-based aid and the resulting impact on student demographics needs to be clear and used to inform our recruitment, admissions, and retention policies.

**What has been done:** Merit scholarships have been an important vehicle in growing both the size and quality of UMBC's freshman class. Beginning with the Fall 2004 class, award criteria were raised; the total number of awards were reduced; and new merit awards were no longer tied to escalating costs. Institutionally-funded need-based offers were increased by 25%.

**Recommendation:** Further analysis of the need for institutionally-funded aid is needed. State financial aid resources are no longer increasing at prior levels, and Federal campus-based aid has seen a modest decline. We need to examine the distribution of all student aid on our campus and seek to assess the impact of various types and amounts of aid on yield and retention. Such analysis is needed to balance enrollment goals with net revenue needs, critical to making informed budgetary decisions.

In addition to funding issues, attention needs to be given to the delivery of services. Legacy systems do not provide adequate self-service capabilities for students; are not flexible and responsive in billing; and are not responsive in disbursing aid to students.

**Estimated Resources Required:** Given the limitations of legacy student systems, including the legacy financial aid system, data and data access is limited. The campus should consider external consulting resources for developing the appropriate analytics to model various aid strategies and policies. Additionally, a Financial Aid Policy Committee, comprised of staff persons from all affected departments should be established to review policies and procedures and make recommendations. Representation should include, but not be limited to, the Office of Financial Aid and

Scholarships, Undergraduate Admissions and Orientation, the Graduate School, Academic Services, Student Affairs, [Judicial Affairs?], the Budget Office, the Bursar's Office, and OIR.

**Relationship to the Strategic Framework, Goals, and Objectives:** Among the goals and objectives stated in 2016 we note that we should "...assess UMBC's scholarship and financial aid policies in terms of their budgetary implications and impact on increasing the quality of students and their diversity (especially socio-economic)." Once we achieve our goals related to access we need to meet our retention and graduation goals as well. In this regard, substantial research shows the importance of realistic financial aid policies; students who receive adequate financial aid in their first year at a four-year institution were less likely to depart within three years (prior to graduation) than those who received less aid (Fiske, 2004).

Similarly, student satisfaction is an important aspect of retention. The Regents' Efficiency and Effectiveness initiative makes several specific recommendations for streamlining the delivery of financial aid and student financial services. Meeting these objectives will be important in remaining competitive for enrollments.

Last updated 3/30/05 – Diane's edits

### **Undergraduate Campus-wide Recommendation #3: New Programs**

**Proposed Focus, Theme, and Identity:** UMBC's program mix for undergraduates is unusually small. We are consistently benchmarked against other campuses with a much broader array of programs. Many of our students leave prior to graduation so that they can earn a degree in a field not available on our campus. It is difficult to know how many students don't even apply knowing that we don't have a major in their desired area. We need to broaden UMBC's array of undergraduate courses and programs while simultaneously meeting the needs of our existing programs.

**Relationship of the Recommendation to Mission:** A wider variety of curricular choices increases our ability to recruit and retain students. Strategically focused curricula could significantly increase our student enrollment at low cost. Tuition benefits from low cost, high enrollment programs would benefit the entire university while meeting student needs. Attention to alternative delivery methods, times, and locations will be critical as we consider new programs.

**What has been done:** The primary focus on new programs has occurred at the graduate level, with an emphasis on applied master's programs. We have repackaged some courses to meet student and work force needs at the undergraduate level, but we have not marketed those well, nor have we created many new programs.

**Recommendation:** Create new undergraduate programs (advanced certificates and degree programs) to broaden UMBC's curricular breadth, attract new students, and retain good students. In the short term, given the fiscal climate, take a conservative approach and prioritize programs with modest start-up costs and the potential for significant enrollments. Areas related to interdisciplinary clusters, alternative modes of delivery, and existing strengths should also inform our decisions.

**Estimated Resources:** Clearly, the health of existing programs would also need to be assessed with the intent to strengthen those as necessary. Resource needs will be program specific. Any new program, whether it is repackaging existing courses, creating some new courses, or comprised of completely new courses, will require marketing, space, and likely some new faculty and staff support staff. Careful cost effective analyses will have to be conducted prior to any decision making.

**Relationship to the Strategic Framework, Goals, and Objectives:** The 2016 Framework clearly endorses strategic program development consistent with the recommendation proposed. It is also consistent with the Honors Task Force Report.

## Graduate Education Campus-Wide Recommendation #1 Graduate Assistantships

1a. The focus of this recommendation is support for Graduate Assistantships (GAs).

1b. Critical to our mission as a research university is having quality graduate students. The reasons are multiple: i) they represent the next generation of researchers building on the earlier work of a mentor; ii) their productivity and quality are used as measures by which universities are evaluated as to mission (e.g. Carnegie classification, National Research Council rankings); iii) they are key in being able to carry out a faculty research agenda; iv) they are important in meeting undergraduate teaching obligations; v) they provide intellectual challenge, rewards and meaning for faculty scholars; and, vi) they form a critical component of the culture and life of a research university.

2. In FY 1999 the university invested additional resources and expanded the number and assistantship funding levels. This has resulted in much better Ph.D. productivity for the campus, which is used as a measure in classifying the institution. In FY 2003 the university consolidated GA support and provided all of the funding directly to the departments with the goal of diversifying the graduate student population (more domestic, women, and minority students) and shifting funds to support more Ph.D. students rather than master's students. The Graduate School sets an annual rate for the minimum level for a master's student assistantship and doctoral assistantship, but departments may add funds or fund fewer students at higher levels as a way of competing for top graduate students. In addition, in 2001, the Graduate School set aside a small number of Dissertation Fellowships to assist students in finishing the dissertation. This competitive program has been very successful in achieving its goal.

3. The campus now needs to increase the number of GAs funded by the university and at the same time raise the minimum assistantship levels. NSF has significantly raised the minimum assistantship stipend levels to approximately \$30,000 per year for graduate students. Their goal is to improve the quality of the graduate student experience and attract more and better domestic students to graduate study. This is critical in several departments that are experiencing a dramatic decrease in international student enrollment. In addition to increasing assistantship levels, several departments need more GAs to cover instructional needs. Currently, two departments have had to draw upon undergraduate students to cover their shortfall of TAs. An increase of \$300,000 each year for four years would assist the campus significantly in being able to compete for top domestic graduate students (including more women and underrepresented minorities, particularly in STEM fields), cover teaching needs, and improve Ph.D. throughput.

4. \$300,00 of new funding each year for four years, totaling to \$1.2 million would help stabilize the GA support needed on campus. Revenue sources include state funds, return on indirect (F&A), or gifts.

5. Funding graduate assistants not only helps graduate students and graduate programs, but also is important in supporting undergraduate teaching and laboratory experiences. This is addressed in item 1b. and 2g. of the "Strategic Framework."



## **Graduate Education Campus-Wide Recommendation #2 Interdisciplinary Programs**

**1a.** The focus of this recommendation is enhanced support for interdisciplinary programs.

**1b.** Many of the most exciting research discoveries occur at the intersections of traditional academic disciplines. Building on our strengths in existing areas, UMBC has launched several innovative interdisciplinary graduate programs, sometimes in concert with multidisciplinary research centers. Graduate students gain depth and breadth in an academic discipline while understanding the issues in the broader context of other disciplines. This prepares graduate students for research careers at the frontiers of knowledge.

**2.** Programs such as Language, Literacy and Culture (LLC) span multiple departments, while others like Biochemistry cross campus boundaries. Gerontology and Marine, Estuarine, Environmental Science (MEES) cover several departments over more than one campus. The challenges are i) allocating resources; ii) recognizing faculty workload; and, iii) modifying administrative processes to accommodate student needs. Every graduate program, including interdisciplinary programs, has a graduate program director (GPD). However since universities are partitioned into academic units such as colleges and departments for purposes of allocating resources and delegating authority, interdisciplinary programs are often without the infrastructure necessary for them to provide satisfactory customer service, let alone meet their full potential. In several cases a department has agreed to share resources or provide supplemental support to one of these programs, however this can unduly tax the infrastructure of the host department and provide strain when the majority of students are working with faculty from departments other than the host. Another challenge for these programs is recognizing and rewarding faculty contributions across department boundaries. Department and university workload reports often undercount graduate mentoring and team-taught courses that span departments. Individual sections of 799 and 899 research courses have been designated for each faculty member in these programs to assist with tracking workload. Programs that cross campuses face unique challenges administratively for students who should experience a seamless process of registering for courses and having these courses appear on their transcript properly.

**3.** Every graduate program should have permanent staff support and core faculty. Some, such as LLC, rely on a graduate assistant to perform most administrative functions. Besides the inherent conflict of interest in having a student processing paperwork for another student in the same program, there is a lack of continuity from year to year and the sometimes fluctuating schedules of students. \$40,000 per year is needed for a permanent administrative assistant in the interdisciplinary doctoral programs. University record keeping systems must be modified to reflect faculty contributions outside of the department of their primary appointment. This may require extensive programming by OIT staff. The existing student information system (SIS) cannot accommodate properly the enrollment and administrative needs of students who take courses across campuses. Records must be maintained manually and often require multiple layers of adjustments. The planned migration to the PeopleSoft Student Administration module will address most of these needs. An assessment of resources for core faculty needs to be undertaken for these programs and resources provided to the home departments for replacement of faculty migrating to interdisciplinary programs.

**4.** \$40,000 per year for an administrative assistant position is required for LLC in the short term, with resources allocated based on faculty needs. In the longer term, MEES and Gerontology will need administrative support independent of the departments that are currently hosting them. The PeopleSoft SA module will address the record keeping issues for faculty workload and for registration across campuses. State funds should be used.

**5.** This builds on 1b. graduate enrollment, 2e. faculty clusters to support cross-disciplinary work, 3e. interdisciplinary program and curriculum development, 4a. campus staffing and 4b. business processes of the "Strategic Framework."

### **Graduate Education Campus-Wide Recommendation #3 Professional Master's and Accelerated Master's Degree Programs**

- 1a.** The focus of this recommendation is developing professional master's degree programs that meet the needs of citizens of the Baltimore-Washington region and promoting the accelerated master's degree programs to the UMBC community.
- 1b.** Public universities have an important mission to help drive the economic development of the state and to provide educational opportunities to its citizens. UMBC has several applied master's degree programs that achieve this goal. However there are areas of opportunity that have yet to be tapped. Careful planning and market analysis can determine where to concentrate resources. The accelerated master's degree program allows students who are completing a bachelor's degree to begin work on the master's degree and count certain courses toward both degrees. This shortens the time and cost to complete the master's degree.
- 2.** There is a movement in the graduate education community nationally to promote professional master's degree programs that prepare students to be competitive in the workforce. Such programs can combine traditional academic disciplines with areas such as business, policy or law to give graduates an advantage in applying their knowledge. The Sloan Foundation has been a leader in providing funding to universities to develop these degree programs and to entice students to try a non-traditional approach. Other professional master's degree programs can be structured to meet the needs of area industry (such as the systems engineering certificate and track within existing programs). Certificate programs in areas such as electronic government and the non-profit sector have been developed to respond to perceived market needs. A more formalized structure for the accelerated master's degree was recently adopted. With proper marketing and promotion, a greater number of undergraduates will be able to take advantage of this option.
- 3.** Greater incentives are needed to encourage faculty to develop professional master's degree programs. With the need to maintain research productivity while providing quality education, many faculty are not able to devote the time and resources necessary for applied master's degree programs to be successful. Having DPET assist with program development and the opportunity for return on tuition generated to the department is an example. Other incentives should be developed and existing ones need better promotion. OIA is helping undergraduate and graduate programs to market the accelerated master's degree program to UMBC students. Several departments are also developing partnership programs with area colleges and universities to build a pipeline to their graduate programs.
- 4.** No new budgetary resources are required. The task is identifying the return to the departments and developing staff/faculty leaders to create and sustain these initiatives within the priorities that have been established.
- 5.** The following "Strategic Framework" goals and objectives are addressed in this recommendation: 1b and 1c on graduate education and differential tuition, 3f applied professional programs, and 5c and 5d economic and workforce development.

## Division of Professional Education and Training Planning Overview

### DPET Recommendations:

1. New, applied and professional program development
2. Alternate delivery methods
3. Strategically focus Summer, Winter and Special Sessions on retention, degree completion and enrollment management objectives

### DPET Campus-wide Recommendation:

Implement PeopleSoft Campus Solution SA

Over the past five years, UMBC's academic leadership, including the Provost, Deans, Department Chairs, and the Faculty Senate, have recognized the potential contribution that the Division of Professional Education and Training can make to achieving UMBC's broad institutional goals. Formal institutional analysis and planning groups have called for the development of new and/or revised programs which emphasize "applied master's and certificate programs which will attract non-traditional students...a market UMBC has not generally targeted"<sup>1</sup>. UMBC is an institution that is at once "sensitive to the needs of non-traditional, evening, international, and part-time students"<sup>2</sup> and also seeks to connect its "intellectual and research capacity to significant social, economic, and technological challenges in a search for understanding, applications, and solutions"<sup>3</sup>. Recognizing the necessity and potential for academic departments to connect with new adult audiences, UMBC's Planning Leadership Team (PLT) has specifically encouraged "departments to create applied professional programs with DPET"<sup>4</sup>. In addition, DPET can play a critical role in supporting departments in addressing the call for a greater program mix for undergraduates and the development of accelerated MA opportunities. As such, UMBC requires a unit such as DPET "that is characterized by an entrepreneurial spirit, innovation, and flexibility"<sup>5</sup>.

While there is broad consensus that DPET plays an important role as a program partner to academic departments, it is also recognized that new applied and professional programs must be "limited in number....[in order to] meet UMBC's enrollments needs without imposing unrealistic costs upon the institution"<sup>6</sup>. In addition, given the current fiscal climate, the PLT has recommended a short term "conservative approach to new program approval, giving priority to investment in existing programs"<sup>7</sup>. The call, on one hand, to create new programs and the caution, on the other, to focus attention on existing programs illustrates the need for

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<sup>1</sup> *Report of the UMBC Enrollment Management Task Force, 1999*

<sup>2</sup> UMBC Mission Statement

<sup>3</sup> *ibid*

<sup>4</sup> *Strategic Framework for 2016, November 2003.*

<sup>5</sup> *Task Force Report on Continuing Education, June 1999*

<sup>6</sup> *Report of the UMBC Enrollment Management Task Force, 1999*

<sup>7</sup> *Strategic Framework for 2016, November 2003.*

UMBC to carefully consider how it installs its third enrollment pillar: adult professional students.

While an institutionally conservative approach is recommended, recent research supports efforts which attract "tuition-paying MA students in non-thesis programs or non-degree certificate programs"<sup>6</sup>. Such students not only bring new revenue to UMBC, they provide an increased ability to support doctoral students and thereby preserve and enhance UMBC's classification as a Doctoral/Research University—Extensive.

DPET serves the university by matching UMBC's research and academic strengths with the economic needs and priority economic development sectors of the region and the state through the development of new and applied programs. We facilitate, lead, forecast and catalyze the development of programs built on a strong investment and reinvestment financial foundation.

#### **DPET Core purpose:**

DPET proposes to partner with departments and faculty to develop new and applied programs that match UMBC's academic strengths with key economic development sectors of the region and the state.

These new and reinvigorated programs will emphasize applied master's and certificate programs and also contribute to expanding the overall UMBC program mix at undergraduate and master's levels.

#### **DPET Values:**

- Partnership and collaboration
- Investment
- Learner-focused
- Flexibility and nimbleness
- Efficiency
- Customer / student service

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<sup>6</sup> Humphreys, B. 2003. *A Report on Incremental Costs and Benefits Associated with Increasing Enrollment at UMBC.*

## DPET Cluster Recommendation #1

### **1a. Proposed Focus, Theme or Identity: New, applied and professional program development**

DPET proposes to partner with departments and faculty to develop new, applied and professional programs that match UMBC's academic strengths with key economic development sectors of the region and the state.

These new and reinvigorated programs will emphasize applied master's and post-baccalaureate certificate programs and, at the same time, contribute to expanding the overall UMBC program mix at undergraduate and master's levels.

### **1b. Relationship of the Recommendation to Mission:**

UMBC is an institution with a mission that is at once "sensitive to the needs of non-traditional, evening, international, and part-time students" and also seeks to connect its "intellectual and research capacity to significant social, economic, and technological challenges in a search for understanding, applications, and solutions." Recognizing the necessity and potential for academic departments to connect with new adult audiences, UMBC's Planning Leadership Team (PLT) has specifically encouraged "departments to create applied professional programs with DPET." In addition, DPET can play a critical role in supporting departments in addressing the call for a greater program mix for undergraduates and the development of accelerated Bachelor's/Master's programs.

## **2. What has been done?**

Existing applied and professional studies programs and certificates include:

- ISD-Training Systems (Expansion to online certificates and online MA)
- Professional Education for Experienced Teachers (expanding to various school districts)
- Systems Engineering (Development dollars and new graduate enrollments from Northrop Grumman)
- Electronic Government (IS and Public Policy partnership)

New certificates include:

- ESOL/Bilingual certificate (on-line and traditional)

## **4. Recommendation:**

Develop strategic plans for the university to focus program development efforts, emphasizing applied master's degrees and certificates as well as new programs that contribute to the UMBC program mix.

Maintain DPET as a distinct entity with the core purpose of developing new programs based on market need that generate enrollments and contribute to program mix. These programs will be built on financial models that develop self-sufficiency and a capacity to reinvest in academic departments and future program development.

## **5. *Estimated resources required:***

- Program development investments will focus primarily on programs that can achieve self-sufficiency and eventually contribute to reinvestment in future program development and support for participating departments. While each program partnership is unique, DPET envisions a negotiated financial arrangement similar to that of Special Sessions--a model that provides financial return to participating academic departments based on income and enrollments.
- Staff to generate new external funding such as grants & contracts that bring new sources of revenue to the campus (i.e. Northrop Grumman, Anne Arundel County Public Schools, Johns Hopkins Health Systems, U.S. State Department, U.S. Directorate of Intelligence) and adequate staffing proportional to new program growth.

## **6. *Relationship to Strategic Framework goals and objectives***

- *Student body size and composition:* attracts self-paying graduate students.
- *Faculty size and composition:* adds part-time faculty at a fraction of the cost of hiring FT tenure track faculty.
- *Program and Curriculum Development:* applied and professional programs will be tied to the institution's core program goals and curricular niches, thus increasing the number of graduate students without stretching too far beyond current curricular capacity. DPET also recognizes the latent potential inherent in existing programs (i.e. Engineering Management, Electronic Commerce, Education Policy) and can direct attention and resources to rejuvenate these in partnership with academic departments.
- *External Relations with the Baltimore-Washington Region and Beyond:* New programs often benefit from the help of an industry or institutional partner and/or advisory body -- a crucial outreach function. New programs will focus on addressing the needs of key economic development sectors of the region and the state.

## DPET Recommendation #2

### **1a. Proposed Focus, Theme or Identity: Alternate Delivery Methods**

DPET can facilitate and support courses and programs which do not fit the traditional academic semester or traditional delivery models. This ability to handle the "special cases" through offsite, online, hybrid, weekend, and contractual/customized courses and programs will support new program development, address USM efficiency and effectiveness mandates, and contribute to retention, time to completion and enrollment management objectives.

### **1b. Relationship of the recommendation to Mission**

A focus on these alternative delivery methods provides increased flexibility in: instruction, outreach, academic support, and faculty opportunities.

### **2. What has been done**

- **Offsite:** Undergraduate programs at Shady Grove; Teacher Professional Education in Anne Arundel County; ISD contract training with Johns Hopkins Health System; English Language Center courses at UMB.
- **Online:** U.S. State Department E-Teacher TESOL program; ISD-Training Systems online master's and certificate options; Summer/Winter alternate delivery course development.

### **3. Recommendation**

Partner with academic and administrative departments to increase use of alternate delivery methods to meet campus goals of new program development, address USM efficiency and effectiveness mandates, and contribute to retention, time to completion and enrollment management objectives.

### **4. Estimated resources required**

- Funding models that provide a negotiated, proportional financial return to participating departments, cover costs and contribute to reinvestment to support alternate delivery.
- Staff to generate external funding such as grants to develop alternate delivery capacity and contracts which demand an alternate delivery method or mode (i.e. Johns Hopkins Health Systems; U.S. State Department).

### **5. Relationship to Strategic Framework goals and objectives**

- **Student body size and composition:** Increased access for more students, degree completion, cultural/class diversity.
- **Program and Curriculum Development:** Both new and existing programs can be enhanced and expanded by applying alternative delivery methods.
- **Management, Organization, and Staffing:** A broader approach to course and program delivery contributes to year-round education; requires less demand on physical plant and classroom space; addresses efficiency and effectiveness measures as spelled out by the Board of Regents.
- **External Relations with the Baltimore-Washington Region and Beyond:** Meeting the needs of individuals and groups in appropriately customized ways offers myriad outreach and extension opportunities to UMBC.

## **DPET Recommendation #3**

**1a. *Proposed focus, Theme or Identity:*** Strategically focus Summer, Winter and Special Sessions on retention, degree completion and enrollment management objectives.

**1b. *Relationship of the recommendation to Mission***

As Special Sessions houses instruction for 33% of the calendar year, it touches multiple facets of the institution in significant ways: undergraduate and graduate instruction; academic support, student retention and degree completion efforts; enrollment management (taking the pressure off of over-enrolled courses during fall and spring); faculty support and development; and as an outreach mechanism for the region. Special Sessions provides a supportive context to encourage alternate delivery methods.

**2. *What has been done***

Summer and Winter Programs include two six-week summer sessions and a four week January session. Students can earn 20.5 credits a year (or more with permission) by attending special sessions, thus decreasing time to graduation. Special Sessions offers 350 courses per year, generates nearly 21,000 a year in credit hour production and serves over 4700 students each year. Over 250 faculty members from 40 academic departments participate in Special Sessions.

**3. *Recommendation***

Strategically focus Summer, Winter and Special Sessions on increased enrollment, retention, degree completion and enrollment management objectives (taking the pressure off of over-enrolled courses during fall and spring).

**4. *Estimated resources required***

- Develop a funding model that fosters investment and reinvestment to meet program development and alternate delivery objectives.
- Expand on incentive models such as the 10% Tuition Disbursement Policy to academic departments to participate in SW sessions.
- Explore incentive programs for faculty to encourage more session two and winter session course offerings (such as salary bonuses or course development funding) and to develop online courses and participate in other alternate delivery approaches.

**5. *Relationship to Strategic Framework goals and objectives***

Summer / Winter Sessions enable students to attend year-round, thereby lessening the length of time to graduate and contributing to increased student retention rates. These sessions are ideal for testing new alternative delivery methods, including hybrid and online courses, which can lead to increased enrollments and more options for both students and faculty.



## DPET Campus-Wide Recommendation

**1a. *Proposed focus, Theme or Identity:* Implement PeopleSoft Campus Solution SA**

**1b. *Relationship of the recommendation to Mission***

Successfully fulfilling the UMBC mission statement is contingent upon adequate infrastructure; particularly administrative systems that directly support UMBC's students. PeopleSoft SA, already validated by an intensive technical and functional review, represents a significant prospect for positively impacting recruitment and enrollment management at UMBC. PeopleSoft SA provides powerful mechanisms for self-service (from recruitment through graduation), customer service, and academic advisement, which subsequently impact retention and student satisfaction. Further, it provides the needed administrative flexibility that DPET will require to implement many of its goals.

**2. *What has been done***

Over the last decade, the most extensive (and likely expensive) planning process in the history of the institution has focused on the identification, selection and implementation of appropriate enterprise system platforms at UMBC. With identification and selection finally complete, the remaining challenge is the design and implementation of a platform that will replace an outdated and technically unsupportable legacy system, will integrate all PeopleSoft modules, and will continue to meet UMBC's evolving needs well into the future.

**3. *Recommendation***

Implement PeopleSoft Campus Solution (SA) according to previously established planning, design and implementation timelines (beginning July 2005). This will accommodate the non-traditional student profiles, academic programs, and alternate delivery approaches that DPET regularly manages on behalf of UMBC.

**4. *Estimated resources required***

The PeopleSoft Campus Solution Planning Process has already identified the resources necessary to complete a successful design and implementation of the solution. DPET advocates for the prioritization and full allocation of resources previously requested to support this crucial initiative. DPET will need additional capacity to support the change of our unique and complex systems to link with campus-wide PeopleSoft systems.

**5. *Relationship to Strategic Framework goals and objectives***

PeopleSoft SA will support the institution's effectiveness in internal management and external relations. DPET's ability to contribute effectively to enrollment and program growth and development will be greatly enhanced by PS SA.

**Academic Plan  
Summary Charts  
April 2005**

**Proposed  
University-wide  
Priorities**

**Undergraduate Cluster  
Recommendations**

**Graduate Education  
Cluster  
Recommendations**

**Professional Education  
Cluster  
Recommendations**

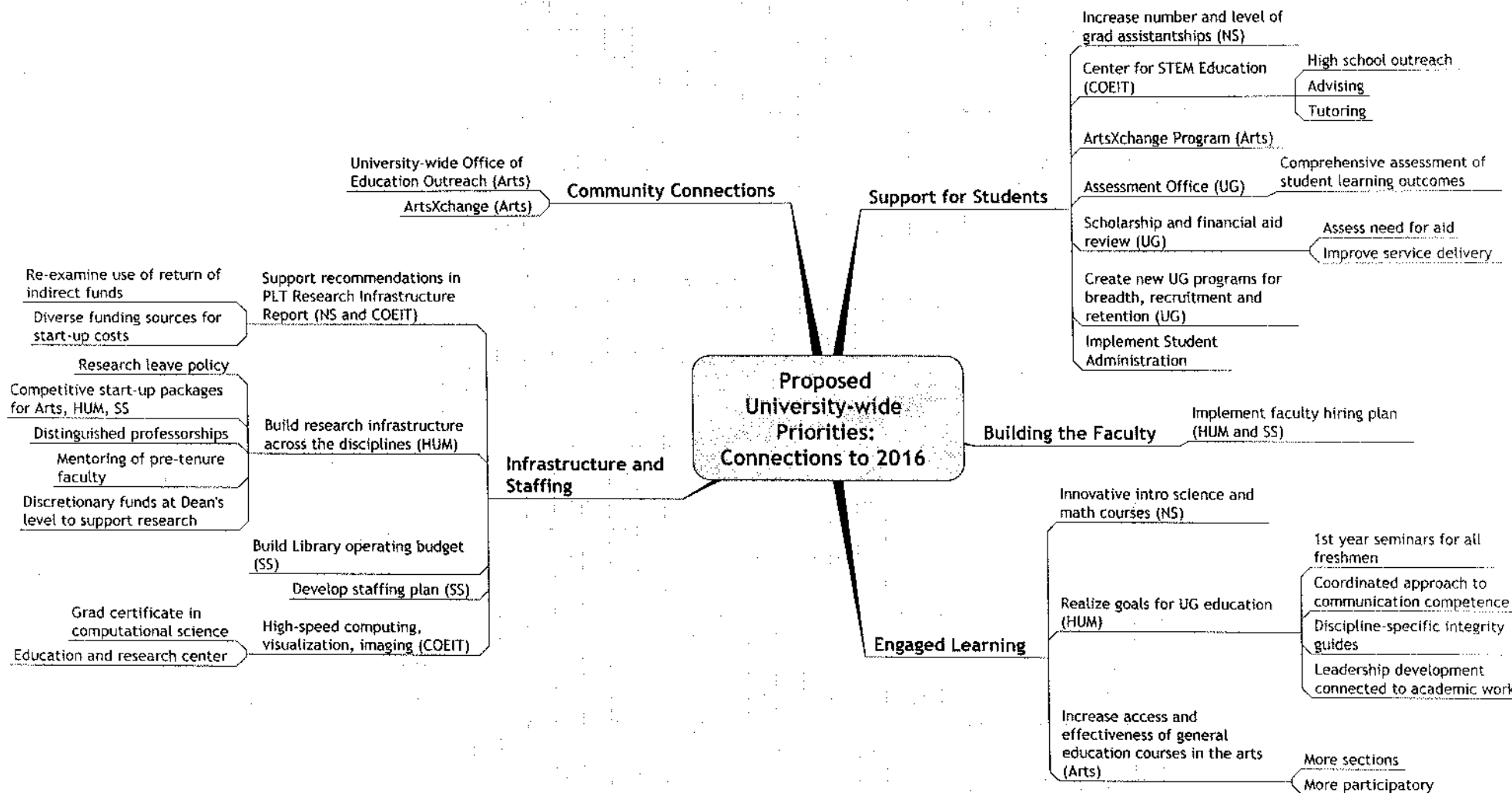
**Arts Cluster  
Recommendations**

**Humanities Cluster  
Recommendations**

**Natural Sciences Cluster  
Recommendations**

**Social Sciences Cluster  
Recommendations**

**Engineering & IT Cluster  
Recommendations**



**Undergraduate Cluster Recommendations**

**Investment Required**

- 4 new LLCs: \$100,000
- 78 sections Intro to Honors University: \$78,000
- 50 sections First Year Seminars: \$200,000
- Additional staff support: \$150,000
- Curriculum development: \$60,000
- Fully funding counseling center: \$120,000
- Fully funding registrar's office: \$70,000

**Approved University small group experience for all new students**

**Entry threshold**

- Substantial funding

**Funding Opps**

- Endowment
- Alumni giving

**Retention**

- ROI

**Timing**

- FY 2006-09?
- FY 2010-12?
- FY 2013-16?

**Investment Required**

- 6-8 advisors @ \$38,000 plus benefits
- 1 FTE to maintain online degree audit system
- 1 FTE to work with students leaving prior to graduation

**Comprehensive Advising Model**

**Entry Threshold**

- Substantial funding

**Funding Opps**

- Endowment

**Retention**

- ROI

**Timing**

- FY 2006-09?
- FY 2010-12?
- FY 2013-16?

**Investment Required**

- Academic program coordinators and admin. support per community: \$85,000
- Space renovations per residential community: \$50,000
- Director of Living Learning Communities: \$70,000
- Substantial funding but can be phased

**Expand residential and non-residential learning communities**

**Entry Threshold**

- Substantial funding but can be phased

**Funding Opps**

- Endowment

**Retention**

- ROI

**Timing**

- FY 2006-09?
- FY 2010-12?
- FY 2013-16?

**Graduate Education Cluster Recommendations**

**Graduate Assistantships**

Investment Required \$1.2M over four years

Entry Threshold Substantial funding over several years

Funding Opps Return on indirect Endowment

ROI Builds research infrastructure  
Ph.D. throughput  
Supports undergraduate teaching and labs  
Faculty recruitment and retention

Timing FY 2006-9?  
FY 2010-12?  
FY 2013-16?

**Interdisciplinary Programs**

Investment Required \$40,000 admin position for each of 3 interdisciplinary programs

Entry Threshold Modest; can be phased in

Funding Opps

ROI Build enrollment and retention

Timing FY 2006-09?  
FY 2010-12?  
FY 2013-16?

**Incentives to encourage professional & applied master's programs**

None Investment Required

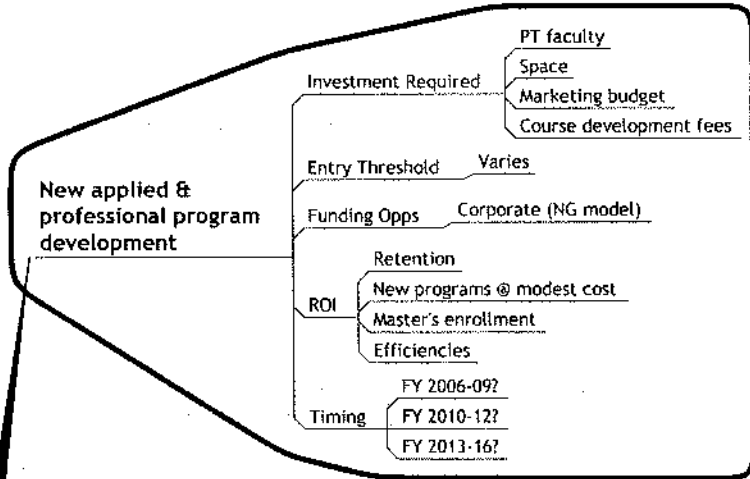
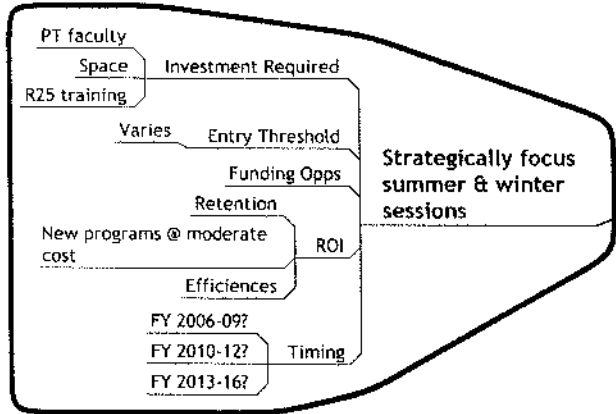
Low Entry Threshold

Funding Opps

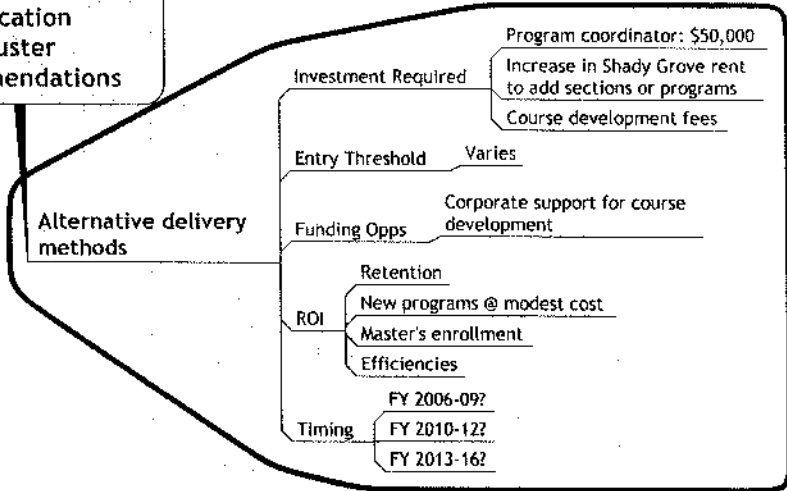
ROI Increased master's enrollment  
Revenues to support other priorities

Timing FY 2006-09?  
FY 2010-12?  
FY 2013-16?

**Professional Education Cluster Recommendations**



Proportional to increase in courses/sections



**Arts Cluster Recommendations**

**Center for Arts Research**

**Investment Required**  
 PT faculty: \$32,000  
 Grad/UG assts: \$8,000  
 1 staff  
 1 office  
 \$30,000 for equipment  
 \$30,000 other

**Entry Threshold** Modest funding

**Funding Opps**  
 Corporate/Foundation  
 Endowment  
 Alumni giving

**ROI**  
 Retention  
 Faculty recruitment and retention  
 Research infrastructure

**Timing**  
 FY 2006-09?  
 FY2010-2012?  
 FY 2013-16?

**InterArts series/artist educator residencies**

**Investment Required**  
 PT faculty \$50,000  
 \$50,000 for other

**Entry Threshold** Modest

**Funding Opps**  
 Corporate  
 Endowment  
 Alumni giving

**ROI**  
 Retention  
 Builds UMBC as a cultural destination

**Timing**  
 FY 2006-09?  
 FY2010-2012?  
 FY 2013-16?

**Entrepreneurship, career Dev. and the Arts course**

**Investment Required**  
 PT faculty: \$16,000  
 Grad/UG assts: \$5,000  
 \$4,000 other

**Entry Threshold** Modest

**Funding Opps**  
 Corporate/Fdn  
 Endowment  
 Alumni giving

**ROI**  
 Retention  
 Supports University outreach, K-16 efforts  
 Cultural connections with BW region

**Timing**  
 FY 2006-09?  
 FY2010-2012?  
 FY 2013-16?

**Humanities Cluster Recommendations**

**Strengthen & expand curriculum in diversity and culture**

- Investment Required
  - 17 FT faculty
  - 2 PT faculty
  - 5 grad assts
  - 2 staff
  - Faculty offices
  - Office equipment
- Entry Threshold: Substantial funding
- Funding Opps
  - Endowment
  - Alumni giving
- ROI
  - Retention
  - New program @ modest cost
  - Master's enrollment
- Timing: FY 2006-11

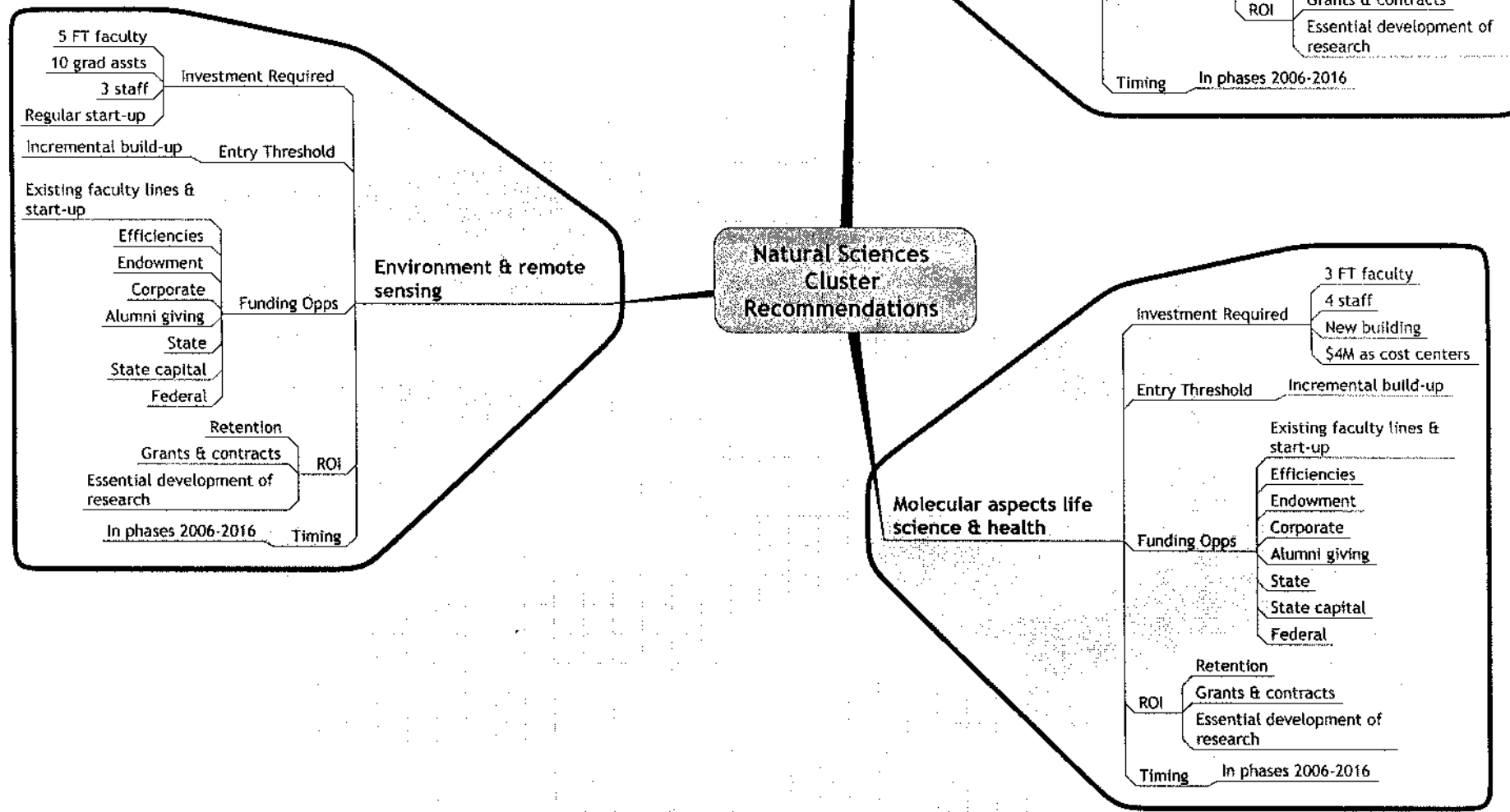
**Enhance opportunities in applied humanities**

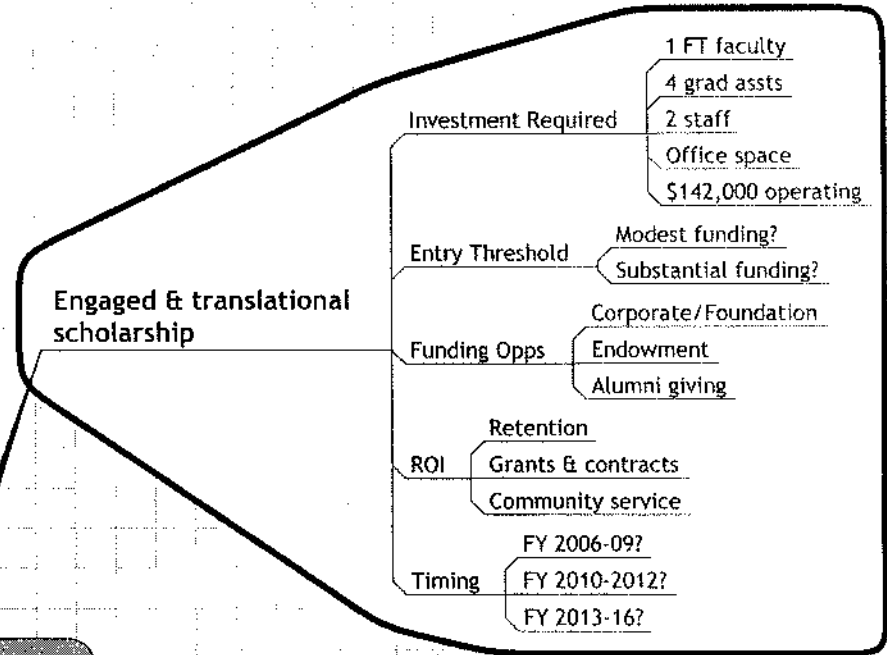
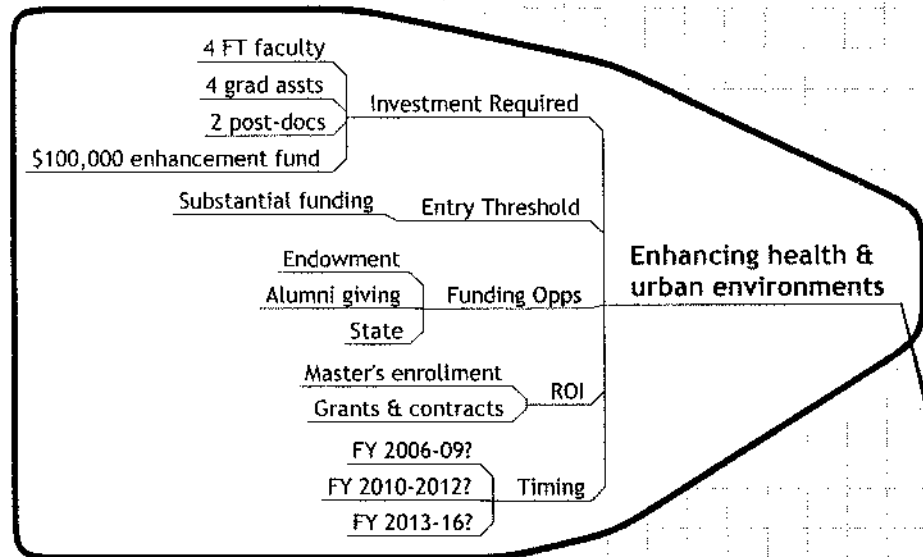
- Investment Required
  - 5 FT faculty
  - 4 PT faculty
  - 1 grad asst
  - \$20,000 for media studies activities
  - Funding for applied research & service collaborations
- Entry Threshold: Substantial funding
- Funding Opps
  - Corporate/Foundation
  - Endowment
  - Alumni giving
  - State & county
- ROI
  - New program @ modest cost
  - Master's enrollment
  - Community service
  - Relevance of Humanities
- Timing: FY 2006-11

**Promote critical inquiry, values & social responsibility**

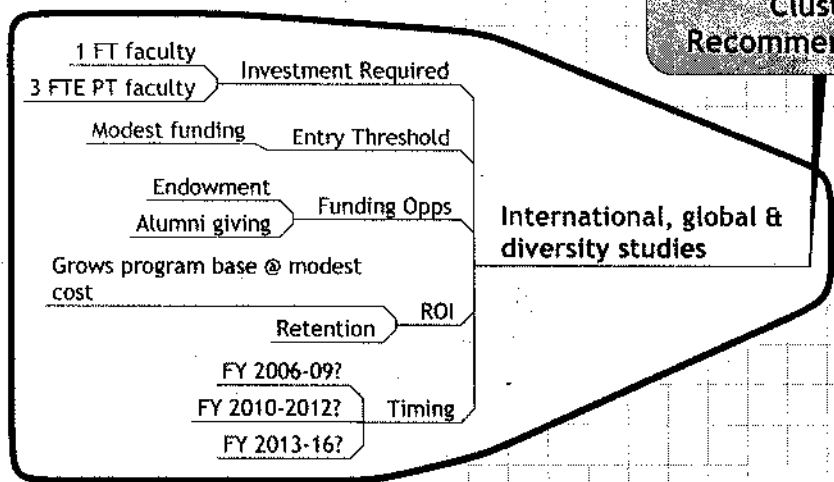
- Investment Required
  - 2 FT faculty
  - 3 staff
  - Faculty offices
  - Office equipment
  - Faculty fellowships: \$40,000-80,000
  - Start-up & operating: \$50,000-75,000
  - Travel/symposia: \$10,000
- Entry Threshold: Substantial
- Funding Opps
  - Corporate/Foundation
  - Endowment
  - Alumni giving
  - State capital
- ROI
  - Retention
  - New program @ modest cost
  - Grants & contracts
  - Builds research infrastructure
- Timing: FY 2006-11







**Social Sciences Cluster Recommendations**



**Engineering and IT Cluster Recommendations**

**IT, information assurance, intelligent systems**

- Investment Required: 4 FT faculty
- Entry Threshold: Substantial funding
- Funding Opps:
  - Corporate
  - Endowment
  - Alumni giving
  - State
  - State capital
  - Federal
- Retention:
  - New program @ modest cost
- ROI:
  - Master's enrollment
  - Grants & contracts
  - Efficiencies
- Timing:
  - FY 2006-09?
  - FY2010-2012?
  - FY 2013-16?

**Bioengineering/environmental**

- Investment Required: 5 FT faculty
- Entry Threshold: Substantial funding
- Funding Opps:
  - Corporate
  - Endowment
  - Alumni giving
  - State
  - State capital
  - Federal
- Retention:
  - New program @ modest cost
- ROI:
  - Master's enrollment
  - Grants & contracts
  - Efficiencies
- Timing:
  - FY 2006-09?
  - FY2010-2012?
  - FY 2013-16?

**Photonics, microelectronics, nano materials**

- Investment Required: 4 FT faculty
- Entry Threshold: Substantial funding
- Funding Opps:
  - Corporate
  - Endowment
  - Alumni giving
  - State
  - State capital
  - Federal
- Retention:
  - New program @ modest cost
- ROI:
  - Master's enrollment
  - Grants & contracts
  - Efficiencies
- Timing:
  - FY 2006-09?
  - FY2010-2012?
  - FY 2013-16?

**ACADEMIC PLAN STEERING COMMITTEE FEEDBACK TO CLUSTERS**  
**April 7, 2005**

**QUESTIONS AND SUGGESTIONS FOR ALL CLUSTERS**

Please address timing and phasing for each of the three cluster proposals.

What opportunities might there be to redirect some existing resources to these proposals?

Are there departmental priorities not represented in the cluster proposals? If so, what are the consequences of these omissions for the campus or for specific constituencies?

What opportunities does the cluster group see for increasing the number of 5-year bachelor's/master's programs?

**FEEDBACK TO ARTS CLUSTER**

*Strengths of Recommendations*

Emphasize distinctive undergraduate education

Address K-16 mission

Relatively inexpensive; could be implemented quickly

Suggestions quite thoughtful and cost effective

Forward-looking (curriculum and career planning)

Builds connections within the University and with the community

Entrepreneurial

Co-curricular

Strategic in use of resources

Center for Arts Research

*Questions*

Have you asked for enough to address both immediate and long-term goals?

Do the recommendations address the opportunities and needs associated with the new Fine Arts and Humanities building?

Is there faculty support for the arts entrepreneurship course?

Is it a bit of a stretch to call a course in career development “entrepreneurship?”

### *Suggestions*

Explore programmatic connections to Administrative Sciences.

Consider an internship component for the entrepreneurship course.

The Center for Arts Research may be able to draw some funds from ArtsXchange for collaborations with Student Life and Student Events Board.

Work with Student Events Board to bring in guest artists/lecturers to enrich the entrepreneurship course.

## **FEEDBACK TO ENGINEERING & IT CLUSTER**

### *Strengths of Recommendations*

Areas selected are important nationally and build on existing strengths.

Joint ventures

Cutting-edge research with potential for funding and interdisciplinary collaboration.

Strong advisory board

ABET focus on student learning outcomes

### *Questions*

Please clarify priorities. The focus/theme/identity titles are quite broad. Is the plan to have targeted focus within these areas where we are already developing a niche or are there plans to build these areas broadly?

What are the niche areas for which UMBC will be known? What are the priority areas within these areas?

How will COEIT generate revenue: applied master's programs, revenue centers, reallocation, other?

What is the minimum amount of seed money needed to get these proposals off the ground?

What are ways to fund these proposals within the College?

*Suggestions*

Develop a budget that would challenge faculty to be entrepreneurial about raising funds to support these initiatives.

Increase research productivity via individual faculty PIs and ERCs connected to clusters. Generate overhead return.

Collaborate with Natural Sciences cluster and UMB/NIH for new facility.

Develop more applied master's programs to assist in generating revenue for other initiatives.

There are opportunities to develop additional industry-focused MS programs within themes identified by clusters.

**FEEDBACK TO HUMANITIES CLUSTER**

*Strengths of Recommendations*

Strong emphasis on providing distinctive undergraduate education—retention and engagement.

Provides the beginning of a focused plan for filling vacant lines and replacing retiring faculty.

Potential for cluster and between-cluster hires.

Development of the Center for Research in the Humanities

Gives prominence to research in an often-neglected area.

Global and diversity studies program is overdue.

Can accomplish relatively inexpensively and soon.

*Questions*

What is the actual new funding needed to achieve these faculty positions?

Can some faculty resources be reallocated to focus areas over time?

Would departments devote current vacant lines or vacancies resulting from retirements to supporting these priorities?

Are departments willing, or able, to shift resources internally?  
Is it possible to get stronger commitments from departments for cluster lines?

Which cluster proposals would draw the greatest number of faculty in?

Could the grant-writing needs in the Humanities Center be part of a central office serving the Arts and Humanities?

Should larger units (interdisciplinary structures, departments, programs or institutes) be created to consolidate units to achieve any of these goals?

Is it possible to get more explicit connection to the Social Sciences?

### *Suggestions*

Need to prioritize more. Find one or two foci that will give applied Humanities an identity.

Explore new organizational models, such as a Department of Global Studies.

Shift from part-time faculty to full-time faculty an important issue for Humanities—lecturers as ranked positions, especially.

Consider collaboration with The Shriver Center for applied experiences.

There are many possibilities for collaboration among the Humanities clusters and Student Affairs for applied learning. Encourage clusters to explore ways to tap this expertise.

The recommendations to strengthen LLC must be given careful consideration.

## **FEEDBACK TO NATURAL SCIENCES CLUSTER**

### *Strengths of Recommendations*

A bold, new step

Focused

Interdisciplinary

Opportunities for funding

Potential for joint ventures

Builds on existing strengths

Nicely focused into niche areas that make sense.

Makes strategic use of existing faculty lines and start-up funds.

### *Questions*

What is the return on investment from what we are doing now and what is an appropriate rate of return for new investments in these high-cost areas?

Which one or two of these proposals would have the largest impact? Which would bring the largest number of faculty research interests together?

Will departments have the buy-in and resolve to focus hiring in these three areas?

How do these proposals correspond to changes in the life sciences—for example the emerging interest and investment in nanosciences?

Please elaborate on how these initiatives support undergraduate student retention.

What opportunities do these initiatives create in the K-16 area?

What partnerships should be pursued for development of a life sciences building?

Might rent in core facilities be partly supported by grants?

Might the core facilities in visualization/imaging be open to departments outside the sciences?

### *Suggestions*

More thought needs to be given to sources of funding for these suggestions.

Sciences need to find ways to generate revenues such as creating cost centers, training programs, post-baccalaureate and applied master's programs, workshops and purchase of time on machines by outside entities.

Need to resolve high-end computer (super computer) issues amongst departments.



Need to articulate relationship and synergy with the College of Engineering and IT.

Further articulate the possibilities for connection with UMB.

## **FEEDBACK TO SOCIAL SCIENCES CLUSTER**

### *Strengths of Recommendations*

Interdisciplinary, action-oriented

Builds on strengths

New programs at modest cost with potentials to build enrollment

Some could be implemented quickly

Capstone opportunities

Focus on retention and engagement

Good development of structure to facilitate external connections

Draws on themes that connect with the region and with other divisions at UMBC.

Urban environment and health focus is excellent. It is truly interdisciplinary and builds on strengths.

### *Questions*

How do these initiatives enhance undergraduate student retention?

How would the health/urban initiative prepare undergraduates for employment in the healthcare sector?

Center for Applied and Translational Research: Are there opportunities for synergies/efficiencies with MIPAR or The Shriver Center?

Might the Humanities and Social Sciences research centers be one?

Should larger units (interdisciplinary structures, departments or institutes) consolidate some existing units to achieve these goals?

Are these departments willing to think broadly to include Humanities proposals?

Is diversity studies a niche that is already well-filled by other institutions?

What is the meaning of the omission of Education and K-16? Where does Education see itself?

Translational opportunities are of varying quality—some internships have little academic content. How will quality control be established and monitored?

How can we predict the success for the investment in these proposals if all these ideas are new concepts?

### *Suggestions*

Meet with representatives from the Humanities to discuss ways to integrate the Global/International/Diversity priority and the Culture Studies & Diversity priority.

Explore collaborative opportunities with Student Life, especially Health Center and Counseling Center.

Center for Applied and Translation Research: Consider offering summer session internships for credit supported by tuition.

Future status of MIPAR must be addressed.

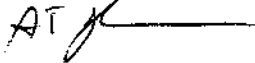
Sondheim Scholars Program can be source of strength for translational activities.

October 8, 2004

**Office of the Provost**

University of Maryland, Baltimore County  
1000 Hilltop Circle  
Baltimore, Maryland 21250

To: Academic Chairs and Program Directors

From: Arthur T. Johnson, Provost 

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WEB: [www.umbc.edu/](http://www.umbc.edu/)

Re: Charge to Academic Planning Groups

The planning process that we have engaged in during the past several years has produced the *Strategic Framework for 2016*. The process has helped focus our activities and given us clearly defined goals for the University. We have developed a campus vision to be known for integrating research, teaching and learning, and civic engagement; we are committed to excellence in undergraduate education, graduate education, and research; and we continue efforts to more closely match resource allocation with strategic priorities. In addition, in recent years, we have identified, through our planning, specific initiatives (e.g., scholars programs and centers) and priorities (e.g., retention and Ph.D. completions) that we continue to support and pursue.

Much of the planning has been carried out at the level of the Planning Leadership Team (PLT), with faculty and chair representation. We are now moving to the next stage of the planning process. It is most important that we develop a specific academic plan that will serve us well into the future. The plan should identify our strengths and describe how we may enhance existing programs. It should detail how we will continue our initiatives as well as identify a selected few new areas to pursue that will be critical to our long-term growth and success. Such a plan will flesh out the *Strategic Framework*, serve as a guide for future resource allocation, be a basis for our Middle States self-study and re-accreditation visit, and make the case for support for our next capital campaign.

The academic departments were asked in the academic year 2001-02 to examine curriculum, pedagogy, and faculty workload assignments as they relate to student learning and engagement. It was obvious from the submitted documents that many departments have a clear understanding of their mission, strengths, and resource needs related to their role in instruction, especially at the undergraduate level. Department contributions to such student learning and engagement activities as writing, general education, and first-year seminars should be recognized in UMBC's planning efforts and be accordingly considered for additional resource allocation. However, in addition to undergraduate education, the academic plan must address graduate instruction, research, and other aspects of the University's mission and should relate our academic units and programs to appropriate support services. In essence, as a picture that begins to translate our *Strategic Framework* into specific academic goals and ambitions, it should clarify existing strengths, foci, and themes and provide us with a comprehensive vision of where our academic program will be at our 50<sup>th</sup> anniversary in 2016.

In so far as we agree that basic operating budgets and staffing may be inadequate, this process does not need to focus on those issues, unless it is relevant to the enhancement or

continuation of an existing effort or to a new initiative being put forward. It is understood, and has been reasserted in PLT documents, that we must address basic resource and infrastructure needs. The purpose of the academic plan will be to give greater specificity and meaning to the *Strategic Framework for 2016*, to allow UMBC to better organize around and pursue its academic strengths, foci, and themes, and to more quickly achieve academic excellence in instruction and research. In doing so, we will identify general areas to be prioritized as well as more specific activities that may advance those priorities.

We assume that State support is not likely to increase significantly in the near future and that we are reaching the upper limits of tuition increases. It is likely that UMBC and other USM institutions will be challenged by limited resources well into the future. Thus, we have to invest selectively, and we must look increasingly to external sources for support. Therefore, as we think of any new initiatives, it is critical that we do so in terms of making efficient use of existing resources to deliver our academic program and advance scholarship goals.

Our *Strategic Framework* calls for us to work beyond department boundaries, reflecting UMBC's tradition of interdisciplinary work and the direction in which modern scholarship is moving. Consequently, we will develop the academic plan primarily in multi-department clusters to encourage interdisciplinarity. These clusters will reflect our academic divisions (i.e., arts, humanities, natural sciences, social sciences, and engineering). This does not preclude departments from working with others beyond their cluster and college, departments working in more than one cluster, or departments offering recommendations that are department specific. Those departments and programs that are interdisciplinary will want to work with multiple clusters and will be kept in the communications loop of each cluster if so desired.

The process for developing the academic plan will be facilitated by our deans. Each dean (Carmi, Welch and Bass) will take responsibility for working with specific clusters of departments. Three types of proposals (sets of recommendations) are expected: proposals that focus on multi-department cluster activities, department efforts, and University-wide initiatives. Each type of proposal must be submitted to a PLT steering committee via the clusters and the appropriate dean(s). The submittals will consist of rank ordered recommendations within cluster and university-wide proposal types. Department-specific submittals will be reviewed by the relevant cluster for consistency with the cluster's priorities and with the *Strategic Framework*. Department recommendations that cut across departments will be subject to rank ordering by the relevant clusters.

I remind you that recommendations do not have to address new ideas; they may seek to strengthen what is currently being done by enhancing support for those activities and emphasizing existing foci and themes. Indeed, we have made progress in identifying our academic priorities and the academic plan should affirm that fact. Also, there may be opportunities to repackage existing courses or programs into programs that will be more attractive to students, the community, or funding sources.

Specifically, each cluster-based recommendation must involve several faculty and multiple departments and each cluster must rank order its initiatives. For initiatives coming from individual departments, each initiative needs to relate to a core direction of the department, be viewed as a priority, and involve several faculty members. The departments must rank order their initiatives for review by the cluster. As noted previously, department-specific submittals will be reviewed for consistency with the relevant cluster's priorities and with the *Strategic Framework*. If submitting more than three recommendations, at least one needs to cut across two departments or a cluster of departments. Department recommendations should follow the format as described below and outlined in the attached template.

Each recommendation will (1a) identify a current or proposed focus, theme or identity (e.g., contemporary arts/diversity/life sciences/health policy) and (1b) relate to one or more of the following categories found in the *Strategic Framework*: mission area/undergraduate/graduate/instruction/research/academic support/outreach/faculty/staff; (2) briefly identify what is currently being done to support the focus, theme or identity; and (3) identify what needs to be done to achieve or strengthen the focus, theme or identity and (4) estimate the cost and identify the resources likely required to carry out 3, and identify revenue sources and reallocation opportunities to cover the estimated cost; and (5) relate the recommendation to the *Strategic Framework* in terms of the *Framework's* goals and objectives. Each recommendation is to be summarized on one page, and must address the questions on the attached template. Recommendations will be evaluated in terms of how well they relate to and support the University's mission and goals as presented in the *Strategic Framework*.

The academic plan will be created by selecting among the submitted proposals, blending them with existing initiatives and proposals from other areas of the University, and prioritizing the ideas. The vice presidents will be asked to identify strategies and initiatives for their divisions that relate to and support selected academic initiatives and needs of the academic departments and programs as presented in the academic plan. The plan will inform future requests for state funding and internal investment decisions. Those working on the capital campaign will use the academic plan to identify initiatives for the capital campaign. Traditional targets for private support are scholarships/fellowships, endowed chairs and professorships, faculty, staff, and student retention, and research support.

As previously stated, the deans will facilitate the process and report to a PLT steering committee. Members of the steering committee will be the deans, including Vice Provost Lee and Associate Dean Rutledge, Faculty Senate President, coordinator of chairs, APB chair, and the vice presidents. The steering committee, chaired by the Provost, will meet monthly to monitor and report progress. Based on the cluster submissions by the deans in January, a report from the steering committee to the campus, PLT, and President Hrabowski will be given in February. Campus response and feedback will be solicited. The PLT will develop a set of final recommendations establishing academic priorities for UMBC and the capital campaign by July 1.

One of the deans will contact you soon to invite your participation in this process. I look forward to the results of your collective efforts.

**UMBC: AN HONORS UNIVERSITY IN MARYLAND**  
**STRATEGIC FRAMEWORK FOR 2016**

**ABOUT THE *STRATEGIC FRAMEWORK FOR 2016***

During the past five years, the Planning Leadership Team (PLT) has guided the campus through an evolving strategic planning process. This has resulted in 1) development of a campus vision to be known for integrating research, teaching and learning, and civic engagement; 2) commitment to pursue excellence in undergraduate education, graduate education, and research and 3) ongoing efforts to more closely match resource allocation and strategic priorities.

We have made progress in implementing the recommendations of planning task forces focused on six strategic issues: enrollment management, advising, continuing education, UMBC's development as an honors university, the research environment and culture, and student life. However, it is clear that both internal and external developments require us to engage in a new stage of planning. The need for additional planning is driven, in large measure, by the success we have had in moving toward our strategic goals. Our enrollments, Ph.D. production, and research funding have developed more rapidly than our faculty, staff, and physical infrastructure, and this has triggered appropriate concerns about the relationship between growth and resources. While we have made substantive steps to address strategic priorities in the past five years, we know that even in years when the campus received relatively large increases in State appropriations our budget did not adequately support our vision and goals. Now, in an environment of declining State funding for higher education, it is clear that public universities must develop new management and funding models to support future progress and that UMBC must be even more intentional in its planning and decision-making.

The achievements UMBC will celebrate at its 50<sup>th</sup> anniversary in 2016 will be built on the goals established in this plan. This planning effort will lead us to the Middle States review, guide the fundraising case for support for the next capital campaign, and provide direction to the campus well

into the future. The *Strategic Framework for 2016* is intended to guide the campus' short-term and long-term decision-making. It is not an implementation plan. As a campus community, we must still identify the steps we will take to implement the framework's goals and objectives. Over the next several months, the PLT will identify the initial tasks necessary to move toward each of the major and supporting goals in this document. Processes for pursuing each objective will be spelled out in cooperation with the appropriate campus constituencies and governance organizations, and measures will be identified so that we can monitor progress toward achieving the goals of 2016. Clearly, the engagement of the entire campus community will be necessary to realize the achievements that will distinguish UMBC at its 50<sup>th</sup> anniversary in 2016.

## **OUR MISSION**

UMBC is a dynamic public research university integrating teaching, research, and service to benefit the citizens of Maryland. As an Honors University, the campus offers academically talented undergraduates a strong liberal arts foundation that prepares them for leadership and community service, graduate and professional study, and entry into the workforce, as well as a continuing engagement with learning and with the world. At the graduate level, UMBC emphasizes science, engineering, information technology, human services, and public policy. UMBC supports the social and economic development of the State by contributing to an educated, informed, and creative citizenry; by the public service of our students, faculty, and staff; and through initiatives in K-16 education, workforce development, entrepreneurship, and technology commercialization in collaboration with public agencies and the corporate community. UMBC is dedicated to cultural and ethnic diversity, social responsibility, and lifelong learning.

## **OUR VISION**

*UMBC: An Honors University in Maryland* seeks to become the best public research university of our size by combining the traditions of the liberal arts academy, the creative intensity of the research university, and the social responsibility of the public university. We will be known for integrating research, teaching and learning, and civic engagement so that each advances the others for the benefit of society.

## **STRATEGIC POSITIONING**

We are a distinguished research university with a deep commitment to undergraduate education.

## **MAJOR GOALS**

### ***PROVIDE A DISTINCTIVE UNDERGRADUATE EXPERIENCE***

Strengthen UMBC's performance as a research university that integrates a high-quality undergraduate education with faculty scholarship and research through a distinctive curriculum and set of experiences promoting student engagement, such as seminars, study groups, research opportunities, mentoring, advising, co-curricular learning experiences, and exposure to diversity.

### ***CONTINUE TO BUILD RESEARCH AND GRADUATE EDUCATION***

Pursue growth in Ph.D.s granted, faculty awards, publications, scholarly activities, creative achievements, and research grants and contracts in order to strengthen the culture of UMBC as a research university and continue to rank in a prestigious cohort of research universities.



## **SUPPORTING GOALS AND OBJECTIVES**

### **1. Student Body Size and Composition**

**Tie future growth in enrollment to available resources through explicit measures to be defined. These might include revenue per student, student-to-faculty ratios, and staff metrics, and be adjusted to reflect program or unit mission, department capacity, and curriculum.**

1a. Achieve undergraduate enrollment goals through increased retention of enrolled students, giving priority for admission to first-time freshmen, and more selective admission of transfer students.

1b. Increase graduate student enrollment to 25 to 30 percent of the total student enrollment (headcount) and the number of graduate degrees awarded by increasing the enrollment of talented and diverse domestic Ph.D. students, the retention rate of Ph.D.s, the funding available to support Ph.D. students, and the number and attractiveness of applied master's degree and certificate programs.

1c. Develop differential tuition for graduate programs either in response to the market or to recoup expenses in high-cost programs.

1d. Within the context of a high-cost mission, increasing tuition, and intense competition for high-quality students, assess UMBC's scholarship and financial aid policies in terms of their budgetary implications and impact on increasing the quality of students and their diversity (especially socio-economic).

### **2. Faculty Size and Composition**

**Develop a multi-year faculty hiring plan that specifies the number and mix of faculty needed to reduce vacancies, prepare for retirements, meet enrollment pressures, and advance UMBC's teaching and research missions.**

2a. Develop a faculty hiring plan that recognizes the need to hire faculty to support a research mission and the quality of instruction. Such a plan would, for example, address the specific increase in the number of faculty (especially tenured/tenure-track faculty) and the amount of start-up support necessary.

2b. Be proactive in retaining productive faculty members and enhancing faculty development efforts.

2c. As faculty vacancies do occur at UMBC, authorize an equal number of searches within a year in the same department or in others, so that the total faculty count does not decrease due to faculty attrition.

2d. Set aside up to 20 percent of the positions in annual hiring pools for opportunistic hiring and cross-disciplinary or interdisciplinary hiring to promote program development, excellence, and diversity.

2e. Encourage plans to hire multiple faculty in “clusters” to support cross-disciplinary or interdisciplinary work in related subject areas. This would involve the commitment to hire multiple faculty members in a multidisciplinary field that crosses department lines.

2f. Assess opportunities to broaden the fund sources for faculty start-up costs beyond DRIF.

2g. Acknowledge that part-time and full-time non-tenure-track faculty and graduate teaching assistants are important to UMBC’s teaching mission and develop proper orientation, expectations, rewards, and evaluation for these persons.

2h. Develop a faculty salary plan with appropriate benchmarks to ensure competitive salaries.

### **3. Program and Curriculum Development**

**Building from strengths, provide incentives when funding permits and engage multiple disciplines as appropriate to develop new general education requirements, create an array of applied experience opportunities for students, selectively add Ph.D. programs in areas of cutting-edge scholarship within UMBC’s mission, create applied master’s and certificate programs that meet market and career development needs, and add bachelor’s programs that increase programmatic options and retention of undergraduates.**

3a. Building from the Honors Task Force Report, develop by the end of the 2003–04 academic year a new general education proposal that is contemporary and will prepare students for success at UMBC and beyond. The general education requirements should be academically sound, easy to comprehend, and cost-effective.

3b. Complement UMBC's general education requirements with an enhanced array of "applied experience" opportunities inside and outside the classroom emphasizing undergraduate research, engagement with the arts, career development, and opportunities for learning outside the classroom offered by all University divisions (e.g., student life, living-learning communities, leadership roles, athletics, study abroad).

3c. In the short term, given the fiscal climate, take a conservative approach to new program approval, giving priority to investment in existing programs before starting new programs.

3d. Propose opportunities to create new undergraduate programs with modest start-up costs and the potential to achieve significant enrollments (areas related to communications, management, and global/international/area studies should be considered), and the ability to broaden UMBC's array of undergraduate programs. Curricula may also be developed by repackaging existing courses.

3e. Encourage the development of cross-disciplinary or interdisciplinary clusters and programs, especially at the graduate level and in research activities that strengthen and support selected programs.

3f. Encourage departments to create applied professional programs utilizing administrative and marketing support from the Division of Professional Education and Training.

3g. Fund the library in keeping with its priority status and at a level sufficient to support the research and teaching missions of UMBC. The necessary level of support can be determined with the selection of appropriate benchmarks.

#### **4. Management, Organization, and Staffing**

**Review with appropriate constituencies UMBC's staffing and management and organization structures and processes, examining efficiency, effectiveness, accountability, and alignment with the goal of supporting a maturing research university that is also committed to providing a distinctive undergraduate experience.**

4a. Evaluate the appropriateness of the campus organization and staffing for this period of the campus' development with regard to issues of centralization/decentralization, resource allocation, accountability, reporting lines, and decision-making across academic and administrative divisions and departments.

4b. Ensure that business processes become more efficient and service-oriented with the implementation of PeopleSoft and other technology initiatives.

4c. Review and strengthen UMBC's approach to academic and student support services to ensure student success and increase retention and graduation rates.

4d. Review and strengthen existing infrastructure to support growing research activity and to meet federal and State reporting requirements.

4e. Develop a hiring plan that addresses the staff size and composition necessary to support all aspects of the University's mission. Be proactive in retaining productive staff members and enhance staff development efforts.

4f. Develop a salary plan for eligible staff with appropriate benchmarks to ensure competitive salaries.

4g. Reassess the formula for the distribution of indirect funds to assure resources and incentives to support and grow research, scholarship, and creative activities.

4h. Ensure that the annual budget is accessible in a comprehensible and comprehensive form to the UMBC community to broaden the understanding of University priorities and resource allocation.

4i. Anticipate the University's need for increased space to support its mission by continuing to refine the campus master plan. Make more efficient use of classroom space.

4j. Examine the role of athletics at UMBC, especially in enhancing student life and connecting UMBC to the community.

**5. External Relations with the Baltimore–Washington Region and Beyond**  
**Strengthen the relationship between UMBC and external partners, especially in the Baltimore-Washington region, with the campus serving as a destination for cultural and intellectual activity and a center for workforce and economic development while the region serves as an experiential learning, student life, and research resource for students and faculty.**

5a. Position and market UMBC as an important artistic, cultural, and intellectual destination in the region by developing programming for the campus that will also be attractive to the broader community. Continue to refine the campus master plan to support this objective.

5b. Increase collaboration of academic and administrative departments with The Shriver Center and the Career Development Center to increase career exploration and advisement opportunities on- and off-campus and expand internships, service, and applied experiences.

5c. Increase the collaboration of faculty, staff, and students across the disciplines with national and regional companies and non-profit and government organizations to address economic development, quality of life, and civic engagement issues and opportunities.

5d. Play a proactive role in the State's economic development initiatives through sponsored research activities, technology transfer and commercialization, professional workforce development, and development of bwtech@umbc as a center for new business incubation and University–industry–government collaboration.

5e. Aggressively cultivate connections with and support from alumni, corporations, and foundations in order to build our endowment to \$100 million.

5f. Develop joint programming and frequent, convenient transit access linking the campus with Baltimore-Washington artistic, cultural, and recreational attractions.

**Planning Leadership Team Members  
2002-03**

Arthur Johnson  
Provost

Lisa Akchin  
Associate Vice President  
Marketing and Public Relations

Scott Bass  
Dean, Graduate School  
Vice Provost, Research and Planning

Mark Behm  
Vice President  
Administration and Finance

Shirley Bigley  
General Counsel

Sheldon Caplis  
Vice President  
Institutional Advancement

Shlomo Carmi  
Dean  
College of Engineering and Information  
Technology

James Citro  
President, PASS  
2003-04

Diane Crump  
President, PASS  
2002-03

Linda Dusman  
Chair, Music

Charlie Fey  
Vice President  
Student Affairs

Diane Lee  
Vice Provost, Undergraduate  
and Professional Education

Kriste Lindenmeyer  
President, Faculty Senate  
2003-04

Marvin Mandell  
Middle States Co-chair

Virginia McConnell  
Professor, Economics

Cheryl Miller  
President, Faculty Senate  
2002-03

Barbara Morris  
President, NEESS  
2002-04

Nancy Ochsner  
Middle States Co-chair

Ralph Pollack  
Chair, Chemistry

Jack Sues  
Chief Information Officer

Geoffrey Summers  
Chair, Academic Planning  
and Budget Committee

Tom Taylor  
Assistant Provost  
Enrollment Management

Rick Welch  
Dean  
College of Arts and Sciences