

# University of Missouri-Rolla

## Strategic Action Plan

### FY2003

#### Introduction

The University of Missouri-Rolla (UMR) has been engaged in a strategic planning process since 1992. During this period, the plan has evolved into a working document that is reviewed, updated and revised annually. The first part of the plan contains the university's mission, vision, core values and an environmental scan, which outlines the internal and external opportunities and conditions that affect the future of the UMR campus. The second part of the plan contains specific goals, objectives, action steps, anticipated cost of implementation, and expected outcomes.

As in past years, this planning process solicited and received input from a broad cross section of campus constituencies. This open process has allowed the campus to sharpen its focus and to build a consensus of support for UMR's mission and the actions needed to achieve its vision.

#### Mission

The University of Missouri-Rolla, UMR, has a major responsibility for meeting Missouri's needs for engineering education. UMR offers residential programs with an emphasis on leadership development that includes a full range of engineering and science degrees and complementary liberal arts degrees and programs.

UMR conducts research to advance knowledge, to provide essential support for graduate education, and to enhance undergraduate education. There is special emphasis on research in materials, manufacturing, infrastructure, geotechnical, and environmental engineering and science.

UMR assists in the economic development of the state and nation with the transfer of the technology developed through its research programs.

(Approved by the Board of Curators, 07-24-97)

#### Vision

The University of Missouri-Rolla continuously strives to provide a superior education for its students. To accomplish this, the university must continue to encourage and reward excellence and creativity in teaching and continue to strengthen an environment conducive to learning. It must also encourage and reward faculty members for their effort to increase sponsored research in order to offer both more and greater opportunities for graduate students and wider prospects for solving society's problems. As these goals are achieved, UMR's reputation for the quality of its undergraduate and graduate education will continue to grow. The overall results of making good programs even better will be increased enrollments and research funding. The cumulative effect of achieving these goals will be the enhanced recognition of UMR, by both professional bodies and public entities (i.e., *U.S. News and World Report*), as one of the nation's top 50 undergraduate and engineering Ph.D. granting institutions.

UMR is widely recognized as a leading institution of higher education in the State of Missouri and is dedicated to enhancing its role as a nationally prominent technological university. It is

- ◆ A university that is a primary source of leaders in their disciplines who are able to:
  - Identify and solve technical and societal problems;
  - Create, synthesize, and communicate knowledge;
  - Work effectively as team members in diverse environments; and
  - Adapt to change through life-long learning.
- ◆ A university whose faculty and staff are committed to excellence in teaching and learning and to student success.
- ◆ A university where faculty, staff and students conduct nationally competitive research to meet societal needs.
- ◆ A university that anticipates change and is recognized as a premier source of readily available knowledge, creativity and education and whose faculty, staff and students serve the needs of the society of which they are a part.
- ◆ A university committed to providing an environment that fosters the development of all members of the university community to their full potential.

## **Core Values**

The University of Missouri-Rolla values people and is dedicated to allowing each member of the faculty, staff and student body to achieve his or her full potential. As the state's technological university it must maintain its primary focus on engineering and science. However, the education of leaders in engineering and science requires outstanding programs in management, humanities and the social sciences. UMR must continue to assist the state to promote economic development, and it must do all of these things in the most efficient, cost-effective way possible, while adhering to the highest level of integrity.

## **Environmental Scan**

The University of Missouri – Rolla, Missouri's technological university, is a nationally ranked institution with an international reputation for the education of engineers and scientists who are leaders of technology-based industries. UMR offers one of the broadest arrays of engineering programs in the nation. Its graduates manage some of America's largest companies and are relied upon as experts in all fields of technology. UMR is listed as a key partner university by some of the nation's largest corporations such as Boeing and General Motors, and UMR students are highly ranked in many national student competitions. Even with its many accomplishments, the university is faced with challenges, expectations and competitions in the areas of technology, resources, facilities, and the recruiting and retaining of quality faculty, staff, and students.

Technology is continually changing, and the pace of change is increasing. Advances in the biological sciences have created new challenges that require different preparation than the traditional fields of engineering. Even within the traditional engineering disciplines, the development of global trade has fundamentally changed the role of engineers in the economy. Further, UMR was slower than some institutions to build its programs in information technology. Finally, our educational processes in many areas have not adapted to a student body that has different expectations and needs. These factors have occurred for the university at a time when enrollment in traditional engineering programs has fallen nationally and when the State of Missouri, along with many other states in the nation, are faced with serious financial problems.

## Changing Technology

The challenge for today's universities is to anticipate the skills and knowledge graduates will need in five to ten years. For a technological university it is even more important to anticipate trends in technology and adapt its curricula to assure that its graduates are broadly educated and equipped with the knowledge and tools needed to function in technology-based organizations.

Perhaps the most reliable source of information about scientific and technological trends is the National Science Foundation. Each year NSF publishes **Science & Engineering Indicators**, which sets forth, among other things, the best-informed views of trends in science and engineering. The Fiftieth Anniversary edition contained the following:

The end of the Cold War has transformed international relationships and security needs. Highly competitive economies have emerged in Europe and Asia, putting new stresses on our private sector and on employment. The ongoing information revolution both enables and demands new ways of doing business. Our population diversity has increased, yielding new opportunities to build on a traditional American strength. Health and environmental responsibility present increasingly complex challenges, and the literacy standards for a productive and fulfilling role in twenty-first century society are expanding beyond the traditional "three R's" into science and technology.<sup>1</sup>

This paragraph highlights four programmatic themes UMR must address: Information and communication, health (i.e. biological sciences), the environment, and business/management. UMR entered these four areas rather late. UMR only created its computer-engineering program in 1998 and its business program in 2001. The baccalaureate in computer science was approved in 1966 and the Ph.D. degree in 1976. It was also in 1976 that the environmental engineering program awarded its first degree. While UMR began its biology program in 1978, it was largely a service program until recently. In fact, UMR still does not have a Ph.D. program in Biological Science. One manifestation of UMR's late creation of these programs is the fact that, unlike many other technological universities, enrollment in computer engineering and computer science combined is only approximately 12% of total enrollment. While enrollment in computer engineering and computer science is growing rapidly, enrollment in biological science remains low. Yet biology is critical to a robust environmental engineering program and to all biotechnology programs.

The role of engineers in the post-Cold War era has also changed. Dr. Joseph Bordogna has been one of the chief exponents for a need to change engineering education:

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<sup>1</sup> **Science and Engineering Indicators – 2000**; Chapter 1: *Science and Technology in Times of Transition: the 1940s and 1990s -- Current Visions/Key Policy Documents*. This passage is a quote from **Science in the National Interest**, published in August 1994

Next Generation engineers will have a number of iterations in their career paths over their working lifetimes and must gain the intellectual skills needed for lifelong learning. Expertise in a single discipline or technology may no longer be the Holy Grail for a rewarding engineering career. The modern engineer needs to be educated to thrive through change, else the engineer will become a commodity on the global market instead of the market's enabler of wealth creation.<sup>2</sup>

One manifestation of the need to change the education of engineers at UMR is the establishment of a School of Management and Information Systems. This new school will not only allow UMR to graduate business administration students who understand technology and its application in businesses, but it will also allow traditional engineering students to explore more fully the business side of engineering.

## Resources

There are four main sources of revenue that can assist UMR in achieving its goals for 2006: State appropriations, enrollment (with a focus on increased enrollment via improved retention and recruitment rather than through increased fees), private giving and sponsored programs, including research.

**State Appropriations:** The largest single element in UMR's revenue is state appropriations, and the economic recession experienced nationally is having repercussions on the financial condition of the State of Missouri. Consequently, annual appropriations have been reduced from approximately \$52 million to \$47 million during FY 2002. A further cut is expected during FY 2003. The impact on UMR could have been greater had it not been scheduled for a fourth year of Mission Enhancement funding during FY 2002. Given the demands for funds outside of the higher education sectors of the state budget, it is unlikely that increased state appropriations will be available to help the university achieve its five-year goals.

**Enrollment:** The second largest component of UMR's revenue comes from educational fees. Even after a near decade-long decline in enrollment, student fees represented approximately \$29 million of UMR's revenues in FY 2002. Total UMR enrollment declined steadily from 1993 through 1999, constituting a decline of 16% during the period. Since the winter semester of 2001, enrollment has increased each session, but it must continue to grow over the next five years to have a significant impact on increasing UMR's revenue. While UMR has been able to increase the number of students who engage in distance learning, the campus needs to continue to strengthen the number of on-campus students. Finally, for UMR to achieve the average graduation rate of comparable institutions, it will need to have a six-year graduation rate of approximately 70%, an increase of 13 percentage points over its current level. UMR has made enrollment and retention one of its main focus areas for FY03.

By 2006, UMR needs to be an institution with total enrollment of 6,000 (5,500 on campus and 500 distance learning students). Along with this growth of students, UMR needs to increase its net fee revenue. This means that UMR will need to increase enrollment with a proper control of fee discounts. UMR is currently developing a strategy to achieve simultaneous growth in enrollment, net fee revenue increases, while maintaining the quality of the student body.

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<sup>2</sup> Dr. Joseph Bordogna, Deputy Director and Chief Operating Officer, National Science Foundation, "Visions for Engineering Education", IEEE Interdisciplinary Conference on EE&CE Education in the Third Millennium, Davos, Switzerland, September 11, 2000

Diversity is another area in which UMR needs to address. The Bureau of Labor Statistics (BLS) projects the makeup of the labor workforce will change dramatically in the next decade. BLS states that "White non-Hispanics accounted for 73 percent of the labor force in 2000. Their share of the labor force in 2010 will decrease to 69 percent." BLS projects that "Asian and other, and the Hispanic labor force are projected to increase faster than other groups, 44 percent and 36 percent, respectively... The black labor force is expected to grow by 21 percent, more than twice as fast as the 9 percent growth rate for the white labor force." To meet the changing demands of society, UMR is partnering with public and charter schools to ensure everyone is presented with the opportunity to the benefits of higher education.

**Private Giving:** Private giving to UMR has increased significantly during the past decade, with the successful completion of its first capital campaign in 2000 which was a year earlier than planned and \$7 million over the target. Private giving now amounts to nearly nine million annually, and UMR now has a \$67 million endowment with approximately \$28 million of the total dedicated to scholarships. Yet, the size of the endowment is small compared to other technological universities. It should be noted that most technological universities are private; hence, it is currently unrealistic to compare the endowment of a public university to that of a private one even if the needs are as great. UMR is currently exploring a campaign to raise \$120 million later in the decade, but an endowment of \$240 million for scholarships alone would be needed to support UMR's current level of scholarship aid to students.

**Sponsored Programs & Research:** UMR's goal is to be a leading technological research university of national stature. Some of the institutions UMR aspires to be like are Georgia Tech, Rensselaer Polytechnic Institute and Carnegie Mellon. This will require strong growth in sponsored programs, including externally funded research. Our current plan is to achieve \$45-50 million dollars externally funded research per year within the next five years. This type of growth will require significant increase in the number and effectiveness of centers and institutes on the campus. Significant growth in federal research funding and the efficient use and leverage of campus contributions to research will be required to achieve this goal. Unlike the criteria for rankings of undergraduate programs published by *U.S. News & World Report*, the magazine does not publish criteria for its ranking of the top 50 engineering schools. Nevertheless, by inspection of the data published, it is clear that research plays a significant role in the rankings. Hence, it appears that for UMR to be ranked in the top 50 engineering schools, it must achieve a research expenditure level of \$160,000 per faculty member and should have at least one member of the National Academy of Engineering among its faculty. To attain this level of research expenditures per engineering faculty member will require a more than doubling of research expenditures over the next five years.

**Academic Year Release:** Research universities build a culture wherein instructional revenue and research revenue is properly integrated in the budgetary management of the institution. At UMR, the most important areas where this culture needs to be established are in faculty and staff salaries. UMR will need to establish the culture where a certain portion of the academic year salary for both faculty and staff are supported by sponsored research programs. This will allow more flexibility in the operating budget of the institution.

**Indirect Cost Recovery:** In FY 2001, UMR recovered approximately \$3.4 million in indirect costs. This represented an increase of nearly one-quarter over the previous year. The increase in indirect cost recovery was a result of more than a 10% increase in research expenditures for a total of \$28.8 million. At UMR, indirect cost recovery represents only about 12% of total annual research expenditures. Even so, a doubling

of UMR's research volume over the next five years will contribute significantly to this revenue source. Such an increase will also improve UMR's national rankings.

**Intellectual Property:** For institutions that emphasize applied research that addresses societal needs, traditional research is not the only source of revenue for the university. UMR faculty members are very innovative and perform significant amounts of company-sponsored contract research. Many schools receive substantial benefits from licenses and patent agreements for the intellectual properties their faculty members develop. However, many faculty members at UMR believe the current process for obtaining protection of intellectual property is lengthy and needs to be reexamined, especially in regard to the length of time to get decisions about the university's intent to seek patents or to return the patents to the campus or to the inventor(s).

## Facilities

The University of Missouri – Rolla has adequate, well-maintained buildings and grounds. Nevertheless, most of the buildings were constructed 40 or more years ago and some are approaching the end of their useful life. The university has updated its campus master plan and has developed a landscape plan and a plan for residence halls. Renovation and additions to the Electrical and Computer Engineering building are complete and the Civil Engineering building construction is nearly complete. Resources for the renovation and addition to the Mechanical Engineering building have been approved by the legislature and the Governor and should be released once the economy of the state recovers. Planning for the renewal of the Freshmen Engineering and Student Services building is well underway and it too should receive state support once the economy recovers.

There are three additional buildings needed in the near future, two of which will be funded through user fees and private fundraising. The University Center complex is over 40 years old and is completely inadequate for UMR. It was built when the university was two-thirds its current size and does not provide even a small fraction of the facilities needed by today's students. The average age of the university's residential life facilities is more than 40 years old. Further, they were designed as dormitories, with community showers and do not meet the current needs of students. In addition, the anticipated increase in enrollment will require an additional residential life facility within the next five years. Finally, planning must begin for facilities for Biological Sciences, Chemistry and Chemical Engineering. These three programs are housed in one of the oldest academic buildings on campus. Significant and potentially costly renovation of the current building complex and its air handling systems would need to be made to meet today's code requirements if the building is to continue to house these disciplines. A comprehensive cost analysis should be conducted to evaluate the options of constructing a new building to house instructional and/or research "wet laboratories" or to renovate the current structure to meet current code requirements.

Until this year, the UMR campus did not have a comprehensive landscape plan. If implemented, our newly completed landscape plan would unify the campus and make it much more attractive to prospective students and to the community as well as provide significantly improved areas for activities while adding natural beauty to the campus.

## **Administration**

Several of the senior academic and administrative staff members are new to UMR. In addition, several new administrative positions have been created and are currently staffed through "Interim" appointments and will need to be filled on a permanent basis over the next few years. An in-depth evaluation of the effectiveness of the current senior administrative team will probably require additional time.

As a technological university, UMR needs information access that is in line with current technology. The networking of the campus both internally and externally (for distance education as well as research) is very important for UMR's goals and image. UMR needs to appoint a chief information officer who will manage the appropriate integration of information and communication technology in both academic and administrative functions of the university. This function is vital to the technological and research image aspiration of UMR.

## **Faculty**

The heart of the university is its faculty. UMR's outstanding graduates and faculty have built a strong reputation for the campus. The average age of the faculty has remained fairly constant. Yet, in some departments faculty members who are approaching retirement or who have actually retired, perform a great deal of the research work of the department. In other, less mature departments there is a critical need to appoint faculty members at senior ranks as well as at the junior level to help guide the development of these programs. Clearly, the only long-term solution to these problems is to develop additional resources.

## **Strategic Planning**

This document represents an update to the strategic plan in light of changing conditions in the state and U.S. economy, the priorities at the University of Missouri System, the changing interests of students and the development of new faculty strengths since the establishment of the university's mission enhancement areas. Since the UMR Strategic Action Plan is an evolving process, this document has four primary purposes:

- ◆ To reinforce the dedication UMR has to its mission and vision;
- ◆ To establish core values for the campus;
- ◆ To reaffirm the five strategic goals and present a revised list of objectives; and
- ◆ To identify action steps and expected outcomes

Key indicators of progress toward implementation of the action steps of UMR's Strategic Action Plan are reviewed each year. In areas where insufficient progress has been made, the action steps will be reviewed and modified as necessary to achieve better the overall goals of the plan.

## Strategic Goals, Objectives, and Action Steps

*The reference(s) in italics after each UMR objective is the congruence between the UMR Strategic Action Plan and the six strategic themes outlined in the University of Missouri System Strategic Plan, A Design for the Future: Creating the Learner-Centered Research University, dated September 2001.*

### **Strategic Goal 1: Strengthen enrollment while enhancing the access and quality of UMR's programs in engineering, science, management and the liberal arts.**

#### **Objectives:**

- Enroll, retain and graduate a highly-qualified and diverse population of undergraduate, graduate and professional students. *(Access to Learning and Academic Achievement and Quality)*
- Continue to exceed accreditation agency requirements. *(Academic Achievement and Quality and Improving Core Processes)*
- Create mechanisms to meet the growing needs of adult and non-traditional learners. *(Access to Learning, Academic Achievement and Quality, and Community-University Engagement)*
- Review and revise program inventory to ensure appropriate program breadth and depth consistent with mission and current state needs. *(Access to Learning, Academic Achievement and Quality, and Community-University Engagement)*

#### **Action Step:**

- ? Implement a campus-wide recruiting, marketing and retention plan.
- ? Increase additional first-year, transfer and M.S. student enrollment.
- ? Increase the retention rate of first-time, full-time freshman to 88% within the next five years.
- ? Increase the graduation rate to 75% within this decade.
- ? Establish a School of Management and Information Systems.
- ? Prepare each department within the School of Engineering and the School of Mines and Metallurgy for the next round of EC2000, and ABET self-evaluation.
- ? Strengthen and expand off-campus and distance learning programs.
- ? Increase the number of underrepresented and international students.
- ? Re-examine the freshmen year curriculum to ensure a healthy study transition between high school and college.

### Anticipated Cost:

For the most part, the action steps for Strategic Goal 1 can be accomplished through the careful use of existing programs and resources. With the exception of establishing a School of Management and Information Systems, resources have been identified through reallocation of existing resources. The School of Management and Information Systems has been established and we are in the process of identifying the rate funding required to support the office of the Dean of Management, which will require about \$250,000. Additional resources will be necessary to build the faculty; these resources will be acquired as enrollment increases. During the early stages of the school's development, faculty will be drawn from existing programs and through the use of adjuncts that will be funded through the marginal additional revenue generated by the classes. At this early stage, we are also concentrating on courses that can attract a high proportion of "full-pay" students to minimize the impact on GO funds.

### Outcomes:

1. Improve student recruitment through increased numbers of first-year, transfer and M.S. students.

	Enrollment -- 2001(act.) to 2006(proj.)						Difference
	2001	2002	2003	2004	2005	2006	2001-2006
<b>Freshmen</b>	715	790	810	835	875	900	185
<b>Transfers</b>	231	270	330	360	400	440	209
<b>Graduate</b>	395	440	450	470	490	500	105
<b>Returning</b>	3648	3800	3910	4035	4135	4260	612
<b>Total Enrollment</b>	<b>4989</b>	<b>5300</b>	<b>5500</b>	<b>5700</b>	<b>5900</b>	<b>6100</b>	<b>1111</b>

2. Measure the number of students inquiring, applying and admitted in UMR programs.

#### Number of Students Inquiring, Applying and Admitted to UMR

		Fall 1998 (ADMs) 3/15/98	Fall 1999 (ADMs) 3/15/99	Fall 2000 (ADMs) 3/15/00	Fall 2001 (PS Conv) 3/15/01	Fall 2002 (PS) 3/15/02	Fall 2005 GOAL 3/15/05
<b>FRESHMEN</b>	<b>Inquiries</b>	15,681	17,988	19,644	27,694	17,207	20,000
	<b>Applications</b>	1,824	1,571	1,695	1,620	1,783	1,900
	<b>Admitted</b>	1,623	1,358	1,448	1,378	1,536	1,600
<b>TRANSFERS</b>	<b>Inquiries</b>	830	858	706	442	507	700
	<b>Applications</b>	276	241	230	200	223	245
	<b>Admitted</b>	206	180	141	95	145	180
<b>GRADUATES</b>	<b>Inquiries</b>	3,795	3,819	6,193	3,478	2,849	3,800
	<b>Applications</b>	1,472	1,283	1,513	1,523	2,595	1,800
	<b>Admitted</b>	325	291	401	634	1,004	800

\*Source: Enrollment Management Weekly Enrollment Report

3. Increase the retention rate of first-time, full-time freshman to 88%. Increase the graduation rate to 75% by the end of the decade.

### Projected Retention and Graduation Rates

Class Entering Fall	% Return After 1 Yr	% Return After 2 Yrs	% Graduated within 6 Yrs
90	78%	63%	52%
91	77%	65%	52%
92	80%	68%	55%
93	78%	68%	55%
94	78%	67%	52%
95	80%	68%	57%
96	79%	67%	
97	83%	71%	
98	84%	73%	
99	83%	73%	
00	83%		
<b>GOAL 2005</b>	<b>88%</b>		
<b>GOAL 2006</b>		<b>80%</b>	
<b>GOAL 2010</b>			<b>75%</b>

4. Enrolled students in new degree programs.

WS2002	
Architectural Engineering (BS)	13
Information Science and Technology (BS)	5
Information Science and Technology (MS)	4
Systems Engineering (MS)	105

5. Increase enrollment in existing off-campus and distance learning programs and implement additional programs.

### Off-Campus & Distance Learning Credit Programs

	Engineering Education Center	Distance Learning	Professional Development Program	Independent Study	TOTAL
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#### Annual Student Credit Hours

1996-97	1,697	4,350	1,030	339	7,416
1997-98	1,386	3,515	362	234	5,497
1998-99	1,218	3,647	383	309	5,557
1999-00	1,011	3,736	177	126	5,050
2000-01	732	4,383	423	15	5,553

#### Student FTE (Undergraduate SCH/30 + Graduate SCH/24)

1996-97	70	176	38	12	296
1997-98	57	143	14	9	223
1998-99	50	148	15	11	224
1999-00	41	152	7	5	205
2000-01	30	180	16	1	227

## **Strategic Goal 2:**

**Maintain a strong focus on student learning and achievement for undergraduate, graduate and professional students to strengthen the national reputation of UMR.**

### **Objectives:**

- Conduct a multi-dimensional evaluation of student performance that verifies the ability of students to perform as a professional in their discipline, including their ability to communicate their ideas both orally and in writing, and that contains elements that can be compared to national standards. *(Access to Learning, Academic Achievement and Quality, Improving Core Processes, and Community-University Engagement)*
- Develop a learner-centered environment that promotes the improvement of learning, team work and personal development of undergraduate, graduate and professional students. *(Access to Learning, Academic Achievement and Quality, and Improving Core Processes)*
- Create a sense of community among students, faculty and staff. *(Access to Learning, Academic Achievement and Quality, Improving Core Processes, and Community-University Engagement)*
- Strengthen the learning connection between students and faculty through collaborative learning experiences, increased/improved active interactions, improved academic advising and faculty-peer mentoring. *(Access to Learning, Academic Achievement and Quality, Improving Core Processes, and Community-University Engagement)*
- Implement the Seven Principles of Good Practice in Undergraduate Education.
  1. Encourages contacts between students and faculty.
  2. Develops reciprocity and cooperation among students.
  3. Uses active learning techniques.
  4. Gives prompt feedback.
  5. Emphasizes time on task.
  6. Communicates high expectations
  7. Respects diverse talents and ways of learning.*(Access to Learning, Academic Achievement and Quality, and Improving Core Processes)*

### **Action Steps:**

- ? Improve existing and create new learning communities where faculty, staff and students can collaborate to enhance learning and achievement.
- ? Evaluate the Learning Enhancement Across Disciplines (LEAD) Program.
- ? Create learning centers and/or trained tutoring assistance in core-required courses in as many disciplines as possible.
- ? Implement summer bridge programs to enhance the preparation for incoming freshman in chemistry, math and student success skills.
- ? Offer and promote information and workshops on the Seven Principles of Good Practice in Undergraduate Education.

### Anticipated Cost:

The action steps under Strategic Goal 2 have partially been put into place using faculty release and service time. Some of this effort also flowed from previously implemented Mission Enhancement efforts. We are hoping to go further in these efforts, which require minimal investments and have the potential to reap substantial payback through improved recruitment and retention. The most ambitious plan along these lines is the creation of a residential college. Such a college would require a new purpose-built complex of residential and commons facilities that we estimate will cost \$8-9 million. We are in the process of promoting this as a naming gift potential for a portion and the balance would require funding through residential income. As part of the gift opportunity, we would expect an endowment to support the programming. We also expect to achieve some additional resources for this goal by achieving our projected enrollments in Strategic Goal 1.

### Outcomes:

#### 1. Evaluate existing and new learning communities.

	Fall 2001							
	ACT	Chem1	Chem2	Math2	Math4	Math6	Math8	GPA
All Campus	26.6	2.632	2.986	2.075	2.837	2.517	2.983	2.967
Non-Voyager	26.56	2.542	2.952	2.078	2.82	2.505	2.913	2.936
Voyager	27.539	3.028	3.127		2.933	2.594	3.333	3.213

#### 2. Evaluate LEAD student academic assistance (Learning Centers & peer tutoring)

##### Physics Learning Center (LEAD LC prototype) FS 1999

Course	Num Faculty Participating	Students enrolled in class	% Students completing survey	% Students who regularly attended Learning Center	Average Hrs/Wk	Course GPA of LC-attending students*	Course GPA of other students*
Physics 23	4	268	78%	59±8%	4.4	2.9	2.3

\* Average admissions index numbers of the two groups were 83.5% & 81.3% respectively (no significant difference)

##### LEAD Peer Tutoring

Semester	Number of Courses Tutored	Number of different/unique students assisted	Total number hours of tutoring
FS 2000	16	279	Not available
WS 2001	16	237	194
FS 2001	24	228+?*	776+288*

\* Second number refers to tutoring in Computer Science 53/74/153

## 2. Evaluate LEAD student academic assistance - Continued

## LEAD Learning Centers (LCs)

FS 2000 Course	Num Faculty Participating	Students enrolled in class	% Students completing survey	% Students who regularly attended Learning Center	Average Hrs/Wk	Course GPA of LC-attending students	Course GPA of other students
Physics 23	5	252	79%	64±7%	4.1	Not available	Not available
Physics 24	4	256	Data Not Available				
Chemistry 1	1	469					
Math 8	5	360					

WS 2001 Course	Num Faculty Participating	Students enrolled in class	% Students completing survey	% Students who regularly attended Learning Center	Average Hrs/Wk	Course GPA of LC-attending students	Course GPA of other students
Physics 23	4	262	Data Not Available				
Physics 24	3	208					
Chemistry 1	2	131					
Elec Eng 151	2	65					
Elec Eng 153	2	103					

FS 2001 Course	Num Faculty Participating	Students enrolled in class	% Students completing survey	% Students who regularly attended Learning Center	Average Hrs/Wk	Course GPA of LC-attending students*	Course GPA of other students*
Physics 23	4	225	76	79±10%	4.3	Not Available	Not Available
Physics 24	4	241	Data Not Available				
Chemistry 1	2	467					
Chemistry 5	1	57					
Elec Eng 151	2	96					
Elec Eng 153	2	68					
Comp Sci 53/153	1	228	Data Not Available				
Basic Eng 50/51	6	217					

## 3. Assess the success of the summer bridge program to improve first-year student performance.

	Fall 2001							
	ACT	Chem1	Chem2	Math2	Math4	Math6	Math8	GPA
All Campus	26.6	2.632	2.986	2.075	2.837	2.517	2.983	2.967
Non-HGR	26.67	2.631	2.983	2.077	2.832	2.522	2.983	2.971
HGR 01	27.25	2.667	3.167	2	3	2.33	3	2.7

### **Strategic Goal 3:**

**Broaden research and scholarship for UMR's undergraduate and graduate students to improve UMR's stature among public AAU and research institutions.**

#### **Objectives:**

- Establish an appropriate level of investment of internal funds in research that result in increasing levels of external sponsored research. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, and Valuing People and Creating a Supportive Work Environment)*
- Continue to focus on mission enhancement areas: manufacturing, infrastructure, environmental, geotechnical and materials. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Add information science and technology and biotechnology to the list of mission enhancement areas. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Involve more undergraduate, graduate and professional students in research projects. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Develop the facilities, technology and administrative infrastructure necessary to promote quality and competitive research and scholarship. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Develop intellectual alliances within the University and with partners outside the institution to expand research capacity and productivity. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*

#### **Action Steps:**

- ? Increase external grant funding to \$160,000 (in 1998 dollars) per faculty member in the School of Engineering and the School of Mines and Metallurgy and \$40,000 per faculty member in the College of Arts and Sciences over the next 10 years.
- ? Work to enhance alliances with outside entities, including but not limited to, Fort Leonard Wood, Missouri Research Park, key industry, state agencies and other universities.

#### **Anticipated Cost:**

The major requirement for this goal's action steps is an infrastructure that supports and encourages these activities. We have consolidated our sponsored program administrative activities and placed them under the leadership of a new Vice Provost for Research. The new costs associated with this enhancement are approximately \$200,000 of rate funds. This was done within the current fiscal year and we have already seen a substantial increase in research overhead recovery that more than offsets these new costs. As we see further increases in revenues, we will be able to enhance the programs and facilities that support the achievement of this goal. We expect these activities to be fully funded by increased revenues.

**Outcomes:****1. Levels of research funding by funding agency.**

Research Expenditures							
	1996	1997	1998	1999	2000	2001	2006 Goal
<b>Federal</b>	7,542	8,080	7,934	8,731	9,804	11,929	<b>27,300</b>
<b>State &amp; Local</b>	486	795	182	446	322	481	<b>4,050</b>
<b>Industrial</b>	2,364	1,575	1,361	2,079	2,543	3,088	<b>7,100</b>
<b>Other</b>	1,243	600	1,425	1,641	2,407	1,771	<b>2,500</b>
<b>Institutional Funds</b>	8,600	9,845	10,838	12,996	10,892	11,530	<b>14,500</b>
<b>Total Expenditures</b>	<b>20,235</b>	<b>20,895</b>	<b>21,740</b>	<b>25,893</b>	<b>25,968</b>	<b>28,799</b>	<b>55,450</b>

Note: All figures in thousands of dollars. Includes Direct and Indirect.

**2. FY 2001 Grant and Contract Expenditures, excluding Student Financial Aid, University Advancement, and Student Affairs.**

	FS 2000 Tenured & Tenure Track Faculty*	FY 2000-01 Grant & Contract Expenditures by Investigator	G&C Exp/TT Faculty	Goal 2008**
College of Arts & Sciences	102	\$3,936,135	\$38,590	\$40,000
School of Engineering	108	\$8,646,205	\$80,057	\$160,000
School of Mines & Metallurgy	40	\$5,862,645	\$146,566	\$160,000
Extension*	1	\$1,428,519	\$1,428,519	
<b>Total</b>	<b>251</b>	<b>\$19,873,504</b>	<b>\$79,177</b>	

\*Excludes administrators but includes chairs

\*\*in 1998 dollars

## **Strategic Goal 4:**

**Attain national recognition for leadership and innovation in responding to high-priority state, national and international needs in education, research and service.**

### **Objectives:**

- Support activities that promote economic development and technology transfer and that meet the research and human resource development needs of the state and nation. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Enhance and expand relationships with K-12 and community colleges to foster a seamless educational system and promote life-long learning. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Develop a communication plan that promotes the University's programs and services and demonstrates the benefits, contributions and economic impact of the University on its constituencies. *(Developing and Managing Resources, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Increase international and underrepresented student enrollments. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Increase number of international linkages available to faculty. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*

### **Action Steps:**

- ? Advertise the availability of teacher certification through the College of Arts and Sciences.
- ? Initiate major activities throughout the year that incorporate K-12 student, teacher and parent involvement on the UMR campus.
- ? Develop additional master's degrees supportive of the goal, such as applied biological sciences, earth sciences and systems engineering.
- ? Develop a graduate certificate program that offers working professionals the opportunity to further their education.

### **Anticipated Cost:**

The major costs related to this goal is in the form of faculty release time required to develop new program offerings. Minimal additional promotional costs will be met through reallocation of funding that should subsequently generate off-setting marginal revenues. The development of new programs and the subsequent offering of the resulting courses may require the equivalent of 3-4 (\$150-200 K) faculty positions. Given the funding realities, this will have to be done initially by using existing faculty resources for the development of programs. The new faculty positions will be funded through enhanced enrollments and we will likely have to initially rely on adjunct positions to avoid long term rate obligations. Achieving our objectives in Strategic Goal 1 will help provide some additional resources needed to accomplish this goal.

**Outcomes:**

1. Measure the number of teachers enrolled in UMR's teacher certification and teacher training programs.

**Teacher Certification Program**

	FS2000	WS2001	FS 2002	GOAL 2005
<b>Students Enrolled</b>	126	108	120	175

2. Measure the number of international students applying and being admitted.

		Fall 2001		Fall 2002	
		As of 4/12/01		As of 3/15/02	
		<i>Applicants</i>	<i>Admits</i>	<i>Applicants</i>	<i>Admits</i>
International	Freshmen	100	38	37	15
	Transfer	48	10	15	4
	Graduate Students	1749	734	2266	921

3. Measure the number of underrepresented groups enrolling as first-time Freshmen at UMR.

	2001	2002	2003	2004	2005	2006
<b>Women</b>	178	205	230	255	285	315
<b>Minority</b>	36	45	55	65	80	90

4. Measure the number of international linkages available to faculty.

	1999	2000	2001	2002	Goal 2005
Institutions having faculty linkages with UMR	32	39	45	41	53

## **Strategic Goal 5:**

**Secure and manage public and private resources to ensure academic programs, personnel and facilities are of the highest quality.**

### **Objectives:**

- Maintain an infrastructure that evaluates core activities of the support functions of campus. *(Academic Achievement and Quality, Access to Learning, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, Community-University Engagement, and Developing and Managing Resources)*
- Manage administrative and academic processes and systems to achieve continual quality improvement. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Recruit and retain faculty and staff with demonstrated competencies for high productivity and outstanding performance. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Recruit and retain faculty and staff from underrepresented groups with demonstrated competencies for high productivity and outstanding performance. *(Developing and Managing Resources, Academic Achievement and Quality, Improving Core Processes, Valuing People and Creating a Supportive Work Environment, and Community-University Engagement)*
- Increase private giving through the various constituents of the campus. *(Developing and Managing Resources, Academic Achievement and Quality, and Valuing People and Creating a Supportive Work Environment)*

### **Action Steps:**

- ? Enhance the current reward system to encourage and recognize effective teaching and advising.
- ? Review and revise a "Campaign II" timeline.
- ? Develop a mechanism for providing startup funds to newly hired faculty to ensure their ability to establish a solid research foundation.
- ? Periodically review salaries/salary ranges and compare against appropriate market data to ensure that UMR hires and retains outstanding faculty and staff members.
- ? Revise business processes through participation in the UM implementation of PeopleSoft system according to the schedule.
- ? Increase UMR endowment account, especially in the area of scholarships.
- ? Enhance and coordinate new faculty orientation and development to help achieve strategic goals.

**Anticipated Cost:**

Most of the action steps for this goal should be accomplished with minimal new resources. For example, encouraging and recognizing effective teaching is primarily accomplished through appropriate use of existing promotion and tenure processes. New awards or other forms of recognition can be accomplished through donor funding as available. Startup funds for newly hired faculty will usually come through careful management of existing resources. In some cases, faculty who have the clear promise of bringing significant research activities require an investment up front before they can start generating new revenues. We will look to our increasing overhead recovery to fund such cases. The largest need for new resources to carry out these action steps will be for the staffing necessary to launch a new gift campaign to bring in the increased endowment we seek. This necessary investment will have to be made and we anticipate \$200,000 of rate funding will be needed soon to carry out this effort. We are currently working to identify those funds.

**Outcomes:****1. Faculty incentive dollars awarded for outstanding teaching and advising.****FY2002 Awards**

	<b>Number of Awards</b>	<b>Dollars</b>
Faculty Excellence Awards	17	\$42,500
Faculty Shares Program	30	\$80,000

**2. Faculty/student ratio by school or college.**

	Student FTE/Selected Faculty FTE		<b>Goal</b>
	<b>Fall 2000</b>	<b>Fall 2001</b>	<b>Fall 2006</b>
Arts and Sciences	15.1	15.2	
Engineering	11.6	11.3	
Mines and Metallurgy	6.9	7.9	
<b>Campus Total</b>	<b>12.4</b>	<b>12.5</b>	<b>15</b>

Student FTE = Undergraduate SCH /15 + Graduate SCH/12. Includes On & Off Schedule Fall Hours. Excludes Military Science SCH from calculation.

Selected Faculty excludes student titles, research titles, Librarians, Post Doctoral Fellows, Coaches, & Visiting Titles (Inclusion & exclusion based on primary title code)

### 3. UM PeopleSoft implementation schedule.

Student 2002						Student 2003	
1/1	2/1	3/1	4/1	7/1	10/1	1/1	3/1
					Go live (Tentative) UMR Req WS2003 Go live UMR Student Financials UMR Res Life interfaces		
Human Resources 2002						Human Resources 2003	
1/1	2/1	3/1	4/1	7/1	10/1	1/1	3/1
Go live Payroll, Base Benefits, Base HR	Start Pension Benefits Adm					Go live Pension	Go live Benefits Adm Release 8
Finance 2002						Finance 6/25	
1/1	2/1	3/1	4/1	7/1	10/1	1/1	3/1
		Go live Purchase Order, Accounts Payable		Grants, Accounts Receivable, Billing, Project Cost			

### 4. Turnover rates.

Nov. 1, 2000 - Oct. 31, 2001										
	# of Emp	Vol. Turn.	% of Category	Retired	% of Category	Invol. Turn.	% of Category	Total Attrition	% of Category	% of Total Emp
Executive	71	5	7.0%	1	1.4%	0	0.0%	6	8.5%	1.0%
Professional	131	11	8.4%	0	0.0%	0	0.0%	11	8.4%	1.8%
Technical	54	4	7.4%	0	0.0%	0	0.0%	4	7.4%	0.6%
Office	216	24	11.1%	1	0.5%	2	0.9%	27	12.5%	4.4%
Crafts & Trades	65	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0.0%
Service/Maintenance	79	7	8.9%	1	1.3%	1	1.3%	9	11.4%	1.5%
Totals	616	51	8.3%	3	0.5%	3	0.5%	Total Campus = 57		9.3%

## Expected Outcomes:

UMR will monitor and assess progress in each of these five goal areas. These five areas are very closely related and intertwined to ensure UMR meets its main mission of *educating leaders*.

There are five equally important categories of outcomes that will be assessed regularly to determine the results of UMR's planning process.

These five categories are:

- ◆ Enhance academic excellence
  - Increase retention and graduation rates for all students;
  - Enhance learning outcomes;
  - Increase student involvement in research; and
  - Ensure a high level of student satisfaction with their UMR educational experience.
  
- ◆ Educating Leaders
  - Monitor the numbers and fraction of UMR's graduates who become
    - \* Owners of their own business;
    - \* Chief executive officers of their companies;
    - \* Chief operating officers of their companies;
    - \* Achieve significant responsibility for the success of their company or organization; and
    - \* Become community leaders.
  
- ◆ Improve university support and productivity
  - Increase external funding for research and creative projects;
  - Increase number of graduate and professional programs recognized nationally and internationally for their excellence;
  - Increase reputation and national recognition of faculty; and
  - Continue to strengthen fund raising efforts and increase the percentage of alumni who contribute to annual and capital campaigns.
  
- ◆ Improve services to Missouri
  - Increase the number of applied research efforts that benefit the State of Missouri and the nation;
  - Increase the number and level of funding for industrially sponsored research and advanced development projects;
  - Increase enrollments through extension and other off-campus programs designed to enhance educational access; and
  - Increase partnerships with business, state agencies and other organizations to improve quality of life for the State of Missouri and the nation.
  
- ◆ Improve the working environment for faculty and staff
  - Increase the level of satisfaction of those working at UMR;
  - Enhance the productivity of faculty and staff; and
  - Provide additional opportunities for spouses and employees of UMR to work in their fields of interest.