

# Mission, Vision, Strategic Goals, Objectives, Action Steps, and Outcomes FY2002

## Introduction

The University of Missouri-Rolla (UMR) has been engaged in a strategic planning process since 1992. This planning process is an open process in which all campus constituencies have been involved. This open process allows the campus to sharpen its focus and to build a consensus of support for UMR's mission and the actions needed to achieve its objectives. Several years ago, the campus agreed to several areas of mission enhancement: infrastructure engineering, materials engineering and science, geotechnical engineering and science, environmental engineering and science and manufacturing engineering and science.

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

## 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 include 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 at Rolla, already among the top 100 national universities, envisions itself being among the best of the “second tier” universities and, over time, becoming one of the “best” 50 undergraduate programs in the nation and one of the top 50 universities offering Ph.D. engineering programs as ranked by the *U.S. News and World Report*. To achieve this recognition, UMR must address a few fundamental issues. Among these are its retention of undergraduate students, the size of its graduate programs and its level of sponsored research.

UMR is a leading member of the higher education system 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

University of Missouri-Rolla values people and is dedicated to allowing each member of the faculty, staff and student body achieve his or her full potential. As the state's technological university it must focus on

- ◆ Engineering and science and provide
  - Superior preparation for professionals in engineering and science while providing them with a broad education; and
  - Strong supportive programs in the liberal arts that offer appropriate degree programs.
  
- ◆ Student success while fostering
  - High academic standards;
  - High performance, success-oriented students; and
  - Leadership development opportunities.
  
- ◆ Supportive learning environment through
  - Residential campus with well equipped facilities;
  - Caring faculty and staff;
  - Excellent teaching; and
  - Safe, well-maintained campus.
  
- ◆ Research addressing societal needs that includes
  - Undergraduate involvement in research;
  - Research concentrated in areas critical to the nation's economy; and
  - Research involvement expected of faculty.
  
- ◆ Efficient, effective resource management through a
  - Lean administrative organization;
  - Well trained, productive, professional, staff; and
  - Efficient management processes.

## 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 UM System Strategic Plan.*

### 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. *(Program Access and Quality 1:1.1, 1:1.2 and 1:1.3)*
- Continue to exceed accreditation agency requirements. *(Program Access and Quality 3:3.1)*
- Create mechanisms to meet the growing needs of adult and non-traditional learners. *(Program Access and Quality 1:1.3)*
- Review and revise program inventory to ensure appropriate program breadth and depth consistent with mission and current state needs. *(Program Access and Quality 2:2.1, 2:2.2 and 3:3.2)*

#### 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.
- ? 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 in the undergraduate program.

**Outcomes:**

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

**Enrollment**

	Fall					
	2000	2001	2002	2003	2004	2005
<b>ON CAMPUS</b>						
Additional New On Campus						
First Time Freshmen		75	30	30	30	25
Transfers		40	40	40	40	40
M.S.		45	45	45	35	35
	Actual			Projected		
<b>Total On Campus</b>	4393	4486	4723	4997	5283	5553
Other Programs	355	390	425	460	505	550
<b>Total Enrollment</b>	<b>4748</b>	<b>4876</b>	<b>5148</b>	<b>5457</b>	<b>5788</b>	<b>6103</b>

2. 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	% Graduated within 6 Yrs
90	78%	52%
91	77%	52%
92	80%	55%
93	78%	55%
94	78%	52%
95	80%	
96	79%	
97	83%	
98	84%	
99	83%	
<b>GOAL for 2006</b>	<b>88%</b>	<b>75%</b>

**3. Admit students to new degree programs.**

*Baseline data is not available.*

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

**Off-Campus and Distance Learning Programs**

	<b>Engineering Education Center</b>	<b>Extension</b>	<b>Professional Development Program</b>	<b>Independent Study</b>
1996-97	1,697	4,350	1,030	309
1997-98	1,386	3,515	362	228
1998-99	1,218	3,647	383	309
1999-00	1,011	3,738	177	126

**Annual Student FTE (Undergraduate SCH/30 + Graduate SCH/24)**

1996-97	70	176	38	12
1997-98	57	143	14	9
1998-99	50	148	15	11
1999-00	41	152	7	5

**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. (*Student Learning and Achievement 2:2.1, 2:2.2 and 2:3.3*)
- Develop a learner-centered environment that promotes the improvement of learning, team work and personal development of undergraduate, graduate and professional students. (*Student Learning and Achievement 1:1.3 and 1:1.5*)
- Create a sense of community among students, faculty and staff. (*Student Learning and Achievement 1:1.3 and 3:3.2*)
- Strengthen the learning connection between students and faculty through collaborative learning experiences, improved academic advising and faculty-peer mentoring. (*Student Learning and Achievement 1:1.3*)
- Adopt the Seven Principles of Good Practice in Undergraduate Education. (*Student Learning and Achievement 1:1.1*)

**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 the Discipline (LEAD) Centers.
- ? Create learning centers 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.

**Outcomes:****1. Evaluate existing and new learning communities.****Learning Communities**

	Fall 2000	
	Chem 1	Math 8
Non-Voyager*	2.9	2.8
Voyager*	3.7	3.2
All Freshmen not in Voyager	2.7	2.4
All Freshmen Cum GPA**	2.8	2.5

\*same section/same instructor

\*\*includes Voyager students

**2. Evaluate the new and existing LEAD Centers.****LEAD Centers FS 2000**

Course	Participation	Average Hrs/Week	Usefulness Rating (0-4, 0=not useful)	Students Enrolled in Class	% Students Completing Survey	Faculty Participation
Physics 23	71% (125 respondents)	4.1	3.4	225	79% (177)	5
Physics 24	Data Not Currently Available					5
Math 8						5
Chemistry 1						1

**LEAD Centers WS2001**

Course	Participation	Average Hrs/Week	Usefulness Rating (0-4, 0=not useful)	Students Enrolled in Class	% Students Completing Survey	Faculty Participation
Physics 23	Data Not Currently Available					5
Physics 24						5
EE 151 & 153						
Chemistry 1						1

**3. Assess the success of the summer bridge program to improve first-year student performance.****Performance of Summer Bridge Programs Students****Fall 2000**

Grade	A	B	C	D	F	WD	N/A
Chemistry	3	6	1	0	1	0	2
Math	2	9	1	1	0	0	0

**Overall GPA for HGR students, Fall 2000**

>3.5	3.0-3.5	2.5-3.0	2.0-2.5	<2.0
3	4	4	1	1

**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. (*Research and Service 1:1.1*)
- Continue to focus on mission enhancement areas: manufacturing, infrastructure, environmental, geotechnical and materials. (*Program Access and Quality 2:2.1 and State, National and International Needs 1:1.3*)
- Add information science and technology and biotechnology to the list of mission enhancement areas. (*Program Access and Quality 2:2.1*)
- Involve more undergraduate, graduate and professional students in research projects. (*Research and Service 1:1.2*)
- Develop the facilities, technology and administrative infrastructure necessary to promote quality and competitive research and scholarship. (*Research and Service 1:1.1 and 1:1.5*)
- Develop intellectual alliances within the University and with partners outside the institution to expand research capacity and productivity. (*Research and Service 1:1.5 and 1:1.6*)

**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.
- ? Prepare a faculty load document that recognizes and balances the work load of each faculty member.
- ? 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.

**Outcomes:****1. Measure the number of archival journal publications by department.****Archival Publications for 1999**

(Count is duplicated if authorship is shared by more than one UMR faculty member)

	<i>Calendar Year</i>				
	<b><u>1995</u></b>	<b><u>1996</u></b>	<b><u>1997</u></b>	<b><u>1998</u></b>	<b><u>1999</u></b>
<b><u>MINES &amp; METALLURGY:</u></b>					
CERAMIC ENGINEERING	31	30	31	21	28
GEOL & PET ENGINEERING	16	7	21	11	12
GEOLOGY & GEOPHYSICS	23	12	20	27	16
METALLURGICAL ENGR	21	17	31	30	11
MINING ENGINEERING	5	18	7	8	12
NUCLEAR ENGINEERING	6	2	9	5	7
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TOTAL PUBLICATIONS	102	86	119	102	86
TENURE/TENURE TRACK FACULTY	48	49	49	47	50
PUBLICATIONS PER FACULTY MEMBER	2.1	1.8	2.4	2.2	1.7
<b><u>SCHOOL OF ENGINEERING:</u></b>					
BASIC ENGINEERING	0	4	4	10	3
CHEMICAL ENGINEERING	15	5	15	44	5
CIVIL ENGINEERING	22	43	17	32	46
ELECTRICAL & COMPUTER ENGR	59	52	57	47	53
ENGINEERING MANAGEMENT	30	18	27	37	26
MECH & AERO ENG & ENG MECH	85	51	68	83	26
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TOTAL PUBLICATIONS	211	173	188	253	159
TENURE/TENURE TRACK FACULTY	116	118	120	118	121
PUBLICATIONS PER FACULTY MEMBER	1.8	1.5	1.6	2.1	1.3
<b><u>COLLEGE OF ARTS &amp; SCIENCES:</u></b>					
CHEMISTRY	56	78	63	84	58
COMPUTER SCIENCE	29	19	20	22	14
ECONOMICS	5	8	2	10	9
ENGLISH	26	23	20	14	30
HISTORY/POLITICAL SCIENCE	5	7	7	15	13
LIFE SCIENCES/BIOLOGICAL SCIENCES	3	9	1	2	17
MATHEMATICS	19	16	21	23	16
PHILOSOPHY/LIB ARTS	2	6	7	9	6
PHYSICS	41	49	48	67	85
PSYCHOLOGY	3	7	3	7	6
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TOTAL PUBLICATIONS	189	222	192	253	254
TENURE/TENURE TRACK FACULTY	116	115	117	117	119
PUBLICATIONS PER FACULTY MEMBER	1.6	1.9	1.6	2.2	2.1
<b>TOTAL PUBLICATIONS</b>	<b>502</b>	<b>481</b>	<b>499</b>	<b>608</b>	<b>499</b>
<b>Tenure/Tenure Track Faculty</b>	<b>280</b>	<b>282</b>	<b>286</b>	<b>282</b>	<b>290</b>
<b>Publications per Faculty member</b>	<b>1.8</b>	<b>1.7</b>	<b>1.7</b>	<b>2.2</b>	<b>1.7</b>

2. Monitor the number of alliances made with outside entities to assure UMR's external funding improves.

*Baseline data is not available.*

3. Monitor research funding to determine if it is increasing toward the ten-year goal.

### Research Funding

	1996	1997	1998	1999	2000
Federal	7,542	8,080	7,934	8,731	9,804
State and Local	486	795	182	446	322
Industry	2,364	1,575	1,361	2,079	2,543
Institutional Funds	8,600	9,845	10,838	12,996	10,892
All Others	1,243	600	1,425	1,641	2,407
<b>Total</b>	<b>20,235</b>	<b>20,895</b>	<b>21,740</b>	<b>25,893</b>	<b>25,968</b>

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

**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. *(State, National, and International Needs 1:1.3)*
- Enhance and expand relationships with K-12 and community colleges to foster a seamless educational system and promote life-long learning. *(State, National, and International Needs 1:1.2)*
- 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. *(State, National, and International Needs 1:1.4 and 3:3.1)*
- Increase international and underrepresented student enrollments. *(State, National, and International Needs 4:4.1 and 4:4.2)*
- Increase number of international linkages available to faculty. *(State, National, and International Needs 4:4.1)*

**Action Steps:**

- ? Ensure that UMR communicates to all constituencies the availability of programs offered and the exciting things happening at UMR.
- ? 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.

**Outcomes:**

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

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

As of 03/04/01

	<b>Inquiries</b>	<b>Applicants</b>	<b>Admits</b>
<b>Freshmen</b>	29,806	1,617	1,310
<b>Transfers</b>	374	190	96
<b>Graduate Students</b>	1,901	1,568	551

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

**Teacher Certification Program**

	<b>FS2000</b>	<b>WS2001</b>
<b>Students Enrolled</b>	126	108
<b>Students Graduating/ Completing Certification</b>	7	2

3. Measure the number of new, approved M.S. programs, including those with new delivery methods and evaluate their effectiveness.

*Baseline data is not available.*

4. Measure the number of individuals working with international, national and regional boards, conferences, editorships and standards organizations.

*Baseline data is not available.*

5. Measure the number of international students inquiring, applying and being admitted.

**FS2001 Count**

As of 04/12/01

	<i>Inquiries</i>	<i>Applicants</i>	<i>Admits</i>
<b>International</b>			
Freshmen	174	100	38
Transfer	23	48	10
Graduate Students	2046	1749	734

6. Measure the number of underrepresented groups inquiring, applying, and being admitted.

**FS2001 Count**

As of 04/12/01

	<i>Inquiries</i>	<i>Applicants</i>	<i>Admits</i>
<b>FT Freshmen</b>			
Female	13100	354	280
African American	1382	101	73
Hispanic	983	26	19
Asian	1415	127	74
American Indian	132	4	3
<b>Transfer</b>			
Female	120	91	43
African American	22	19	6
Hispanic	8	1	0
Asian	14	62	18
American Indian	4	2	1
<b>Graduate Students</b>			
Female	124	392	180
African American	3	4	2
Hispanic	4	3	0
Asian	469	1574	653
American Indian	0	2	0

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

	<u>1999</u>	<u>2000</u>	<u>2001</u>
Institutions having faculty linkages with UMR	32	39	45

8. Measure the number of students enrolled in the graduate certificate program.

*New program, baseline data is not available.*

## **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 and Administrative Processes, Systems, and Structures 1:1.5*)
- Manage administrative and academic processes and systems to achieve continual quality improvement. (*Academic and Administrative Processes, Systems, and Structures 2:2.1, 2:2.2 and 2:2.4*)
- Recruit and retain faculty and staff with demonstrated competencies for high productivity and outstanding performance. (*Academic and Administrative Processes, Systems, and Structures 1:1.1*)
- Recruit and retain faculty and staff from underrepresented groups with demonstrated competencies for high productivity and outstanding performance. (*Academic and Administrative Processes, Systems, and Structures 1:1.1*)
- Increase private giving through the various constituents of the campus. (*Academic and Administrative Processes, Systems, and Structures 4:4.2*)

### **Action Steps:**

- ? Enhance the current reward system to encourage and recognize effective teaching and advising.
- ? Review and revise a "Campaign II" timeline.
- ? Update existing draft department/program business plans.
- ? Periodically review salaries/salary ranges and compare against appropriate market data to ensure that UMR hires and retains outstanding staff members.
- ? Revise business processes through participation in the UM implementation of PeopleSoft system according to the schedule.

**Outcomes:**

**1. Faculty incentive dollars awarded for outstanding teaching and advising.**

*Baseline data is not available.*

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

**Faculty/Student Ratio, Fall 2000**

	Student FTE/ Sel Faculty FTE
Arts and Science	15:1
Engineering	11:6
Mines and Metallurgy	6:9
<b>Campus Total</b>	<b>12:4</b>
<b>Fall 2006 Target</b>	<b>15:1</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			
2001	5/1	9/1	10/1	10/22	1/1	2/1	5/1
1/1	Begin UMR Parallel testing	Final conv of UMR history for current students	Conversion of UMR current enrollment for FS2001	Go live UMR reg. WS2002 Go live UMR student financials		Go live UMR UMKC UMSL Finacial Aid (aid yr 2003)	Go live UMR UMKC UMSL F. A. loan processing

Human Resources						
2001	2/1	2/15	7/1	10/1	1/1	2/1
1/1	Start Pension	Begin parallel testing	Go live Payroll, Base Benefits, Base HR	Recruit Rolla	Pension	Recruit KC SL

Finance			
2001	2/1	7/1	1/1
1/1	Budget Develop. Interim Solution	Go live General Ledger, Asset Mgmt.	Go live Purchase Order, Accounts Payable, e-Procurement

#### 4. Turnover rates.

#### Turnover rates

Nov. 1, 1999 - Oct. 31, 2000

	# of	Vol.	% of		% of	Invol.	% of	Total	% of	% of
	Emp	Turn.	Category	Retired	Category	Turn.	Category	Attrition	Category	Total Emp
Executive	92	7	7.6%	13	14.1%	2	2.2%	22	23.9%	3.3%
Professional	128	19	14.8%	5	3.9%	2	1.6%	26	20.3%	3.9%
Technical	53	2	3.8%	5	9.4%	2	3.8%	9	17.0%	1.3%
Office	222	24	10.8%	11	5.0%	1	0.5%	36	16.2%	5.4%
Crafts & Trades	71	0	0.0%	10	14.1%	0	0.0%	10	14.1%	1.5%
Service/Maintenance	106	7	6.6%	1	0.9%	3	2.8%	11	10.4%	1.6%

Totals

672

59

8.8%

45

6.7%

10

1.5%

Total Campus =

114

17.0%

## 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 students 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.