

# Missouri University of Science and Technology

Founded 1870 | Rolla, Missouri

## Findings of the 2009-10 Task Force on Student Educational Capacity



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## EXECUTIVE SUMMARY

Most Missouri S&T constituents recognize the university's resources have been significantly stretched over the past decade by large growth in student enrollments (45% increase since 1999) and the mission-driven need to increase research levels (195% in expenditures since 1999). These accomplishments were purposeful and a key focus of the university's strategic plan. They have established new institutional records for faculty scholarship, the transfer of new knowledge to industry, and the quality, success and diversity of the student body. During this same period, the state has reduced institutional funding and implemented tuition restraints. In October 2009, Chancellor Carney and Provost Wray charged a university Task Force to examine the impacts these changes have had on the university and its ability to meet its teaching and research missions.

Following its charge to collect and review all pertinent data, the Task Force was to *assess whether the fall 2009 student population was at, below, or above the university's capacity to provide each student with a quality education*. The Task Force used twelve weeks to gather and discuss over 160 data sets, benchmarks and department leader assessments to evaluate the university's educational capacity management. The educational capacity was studied in relation to the university's institutional aspirations (Meeting I), resources (Meeting II), and key business intelligence factors and external forces (Meeting III).

Additional research and initial conclusions were developed by four sub-committees reviewing the essential capacity issues of (1) faculty teaching levels and instructional space, (2) student financial aid and scholarships, (3) campus and student support services, and (4) campus housing, parking and dining.

**CONCLUSION: It is the considered opinion of the Task Force that the university was very close to exceeding its overall capacity to provide all enrolled students with a quality education in the fall 2009 semester.**

The Task Force recognizes that quality instruction and course access issues are developing because of the lack of funding available specifically for replacing departed faculty, expanding and maintaining academic facilities, meeting growing compliance and need-based financial aid requirements, and developing alternative instructional delivery methods.

With 15 of 19 academic departments now teaching at decade-high student credit hour levels, department chairs have concluded most lower-division service courses and half of the undergraduate degree programs (13 of 26) are at or above the capacity for quality instruction and student learning. Four of the largest degree programs (mechanical engineering, aerospace engineering, civil engineering, and architectural engineering) and the Freshman Engineering Program now have high course waitlist counts and student-to-faculty ratios significantly above the levels of the other U.S. technological research universities. Further, assessments of on-campus housing capacities, need-based financial aid, and student support services indicate that only a modest increase in the student body could be supported with the current infrastructure. The collected data, assessments and reports have been organized and posted on the Capacity Task Force homepage (<http://enrollment.mst.edu/capacity>) to serve as a strategic planning resource for the university community.

## RECOMMENDATIONS

To best maintain Missouri S&T's quality education standards and the university's position as a top-five technological research university, the Task Force offers the below set of recommendations for the Chancellor, Provost, and Strategic Planning Committee to consider. During this study, multiple assessments indicate a need for additional resources to be allocated if the quality learning levels are to be maintained beyond the fall 2009 enrollment levels. Recognizing the institution's growing dependence on academic fees to balance operational budgets and the serious state funding reductions forecast for FY2010-11 and FY2011-12, the recommendations assume significant increases in resources for additional faculty, staff, facilities, and programs will not be available.

### PRIMARY RECOMMENDATIONS

1. Consider establishing an overall on-campus enrollment level until additional faculty, staff and classroom/lab facilities can be added. This could be accomplished by limiting the size of the entering new student classes (similar to AY2003-05) and raising academic fee levels to appropriately cover the existing operational costs.
2. Establish a maximum student-to-faculty ratio and student credit hour average per faculty member for departments to maintain quality instruction and the university's position as a top-five technological research university. Use these metrics to prioritize future faculty hiring.
3. Eliminate the Academic Free Hour (12:00-1:00 MWF). This change would add classroom and lab periods to the traditional course periods and decrease the lunch dining delays at the Havener Center on Mondays and Wednesdays.
4. Develop plans for a general classroom building that includes at least four 65-seat CLC distance education classrooms and two +150-seat auditoriums.
5. Provide appropriate staffing in the Student Financial Assistance office. Large increases in student aid requests along with significantly more complex compliance standards appear to be beyond the current staff's workload capacity.
6. Develop specific fundraising goals and execution plans for need-based student financial aid and graduate assistantships.
7. Review the current student quality profiles to assess the strategic value achieved in relation to the institutional scholarship expense. The graduate/undergraduate ratio should also be considered.
8. Support and encourage the replacement of the Quadrangle Complex and Rayl cafeteria facilities with as much expediency as the Office of Residential Life's financial performance allows.
9. Revisit the quality benchmarking and operational capacity of other student support units on a regular basis.
10. Continue with efforts to establish more online and blended e-learning options at the undergraduate level. This effort needs to include both lower level service and upper level major courses. Greater use of virtual classrooms should alleviate some classroom overcrowding and provide opportunities for transfer students to remain at their initial institutions for a longer period of time.
11. University Police should establish a parking space and permit availability/use tracking system.

The Task Force hopes this analysis and recommendations are useful to the Chancellor, Provost, and university community as we seek to extend the awareness and active discussions of the means to best manage our enrollments while maintaining the top quality standards expected of the university.

## TASK FORCE CHARGE & BACKGROUND

In September 2009, Chancellor John F. Carney III and Provost Warren Kent Wray recognized that most of the University's 2010-11 strategic enrollment goals would be exceeded. They appointed Jay Goff, Vice Provost and Dean for Enrollment Management to convene a new Task Force to study Missouri S&T's current student service capacity. The Task Force was charged to collect and review all pertinent data to assess whether the fall 2009 student population was at, below, or above the university's capacity to provide each student with a quality education. It was the desire of the Chancellor and Provost that the Task Force use the exercise to provide the Strategic Planning Committee with relevant and reliable indicators for the university's capacity issues and to provide reasonable benchmarks to assess the institution's ongoing capacity position.

The Task Force was composed of 26 faculty, staff, administrators, and student representatives. The group started meeting on a bi-weekly basis on November 16, 2009. After requesting data and information sets related to capacity issues, the Task Force spent four meeting periods reviewing and discussing the many aspects of service capacity and the potential impact points on campus (see meeting reports 1-3 ). The first discussion reviewed the initial capacity study and student profile targets completed in 2004 that assisted with the Strategic Plan goals 2005-2010.

The Task Force later divided into four sub-committees to provide a more focused assessment of the fall 2009 service capacity limits in terms of (1) faculty and academic instructional space, (2) student financial aid and scholarships, (3) campus and student support services, and (4) campus housing, dining and parking.

## TASK FORCE MEMBERS

Venkat Allada – Vice Provost for Graduate Studies

SN Balakrishnan – Professor of Aerospace Engineering

Margaret Cline – Chief Information Officer

Caroline Fisher – Professor and Department Chair of Business and Information Technology

Samuel Frimpong – Robert H. Quenon Chair of Mining Engineering

Jay Goff – Vice Provost and Dean for Enrollment Management, Task Force Chair

Larry Gragg – Curators Teaching Professor of History and Department Chair

Leon Hall – Professor and Department Chair of Math and Director of Institute for Applied Mathematics

Carol Heddinghaus – Director of Budget Office

Thulasi Kumar – Director of Institutional Research

Rance Larsen – Director of Admission

F. Scott Miller – Associate Teaching Professor and Director of Advanced Materials Character

Rachel Morris – Enrollment Management Data and Technology Coordinator

Steve Raper – Associate Professor of Engineering Management

Stephanie Rostad – President of Student Council

Ted Ruth – Assistant Director of Physical Facilities

Debra Schatz – Assistant Director of Admissions for Transfer Students

Robert Schwartz – Vice Provost for Academic Affairs

Tina Sheppard – Director of Residential Life

Brad Starbuck – Enrollment Management Communications Specialist

Shannon Stites – Enrollment Management Administrative Assistant, Task Force Secretary

Laura Stoll – Registrar

Jennifer Thorpe – Assistant Registrar

Philip Whitefield – Professor and Department Chair of Chemistry

Henry Wiebe – Vice Provost for Global Learning

W. Kent Wray – Provost, Ex-Officio Member

## DEFINING & DETERMINING CAPACITY

Educational capacity is a complex management issue and incorporates many variables when applying it to a residential research university. Capacity ultimately is a planning and quality assurance concept. Generally defined, educational capacity is the university's ability to receive, enroll, house, feed, and properly educate students in an appropriate time period.

In 2001, the Indiana University's Task Force on the Capacity of the IU-Bloomington Campus report determined the concept of educational capacity involves predications about the near future.

*"In the long-term, anything is possible. But in the near-term (five to ten years), we can specify a set of parameters (e.g., the teaching mission: the character of the campus) and then ascertain an optimal level or range for student enrollments that minimizes average costs. Below that range, fixed costs are relatively high, and we do not efficiently deploy public resources entrusted to us. Above that range, quality deteriorates; marginal instructional costs are inflated by scarcity costs and these offset the net revenue generated by increasing student enrollments. Capacity thus refers to an intermediate or optimal level at which we provide quality education and have the largest financial margins to invest in our future. This last point shows there is no necessary contradiction between qualitative and economic issues" (IUB Capacity Report, September 15, 2001, pg. 3).*

S&T used its 2004 capacity assessment to establish a set of short-term strategic enrollment goals and quality student profiles with the objective of achieving optimum enrollments and top quality learning outcomes while minimizing the average costs per student. This approach was appropriate because the university's enrollment levels had fallen to a two-decade low of 4,626 in 2000 and because of 2002-2004 state funding reductions. At that time, recent upward gains in new student recruitment and current student retention levels were justifying a need to set capacity enrollment goals for appropriate facility and personnel investments.

The 2010 Task Force had a much different task at hand. Due to enrollment goals being exceeded in fall 2009 (6,814 student - a 45% increase over fall 1999) and some departments now struggling to meet the instructional needs of larger enrollments and increased research levels, the Task Force needed a means of determining whether a department or program is below, at, or above its educational capacity. The 2010 Task Force concluded that capacity cannot be based exclusively upon a simple count of how many seats in classrooms, and residence hall beds or campus parking spaces are occupied. Capacity must be assessed in terms of the sum of many other crucial factors as well.

In determining educational capacity, the 2010 Task Force had to employ a myriad of definitions to determine capacity: instructor's teaching load, pedagogical style, class sizes conducive for active discussions, time needed for all students to make presentations, having qualified GTAs, having quality adjunct faculty, grading responsibilities, student interaction with instructors, number of majors, and availability of adequate lab equipment. Due to the complexity of the issue, each department chair was asked to assess the educational capacity of their individual departments. Student support services likewise had to be assessed by developing appropriate institutional benchmarks and unit directors determining student demand with the available staff workload. The unit directors were also asked to assess their capacity and to provide appropriate benchmarks for their evaluations.

The following summaries serve as the collective findings and observations of the four subcommittees and the data reviewed by the entire task force. The overview scorecard was developed as a summarizing tool to assist the Task Force, the Strategic Planning Committee, and external parties with understanding the capacity pressure points of the campus in the fall 2009 semester. It is important to note that a scorecard assessment of *below capacity* should be interpreted as an area where additional student enrollments could be added if student demand exists, rather than quality assessment of the unit's performance. For additional details, data sets and benchmarks, see the four sub-committee reports and the PowerPoint reports of Task Force meetings one, two and three.

## FINDINGS & OBSERVATIONS

It is the desire of the Task Force that this report’s findings and observations facilitate continued discussion on quality university operations and smart strategic planning.

Although the campus appears to have some slight capacity in physical resources to accommodate possibly 40 to 80 additional students (residence halls, parking, dining), the resources available for lower-level service courses, freshman engineering courses, upper level major courses in six of the largest degree programs, and need-based financial aid were the identified areas most likely to be at or over capacity in the fall 2009 semester. The current student recruitment and retention levels are expected to raise the total university enrollment to almost 7,000 students by fall 2011 and will likely fill most of the campus’s remaining capacity.

The following scorecard was developed as a summarizing vehicle for the Task Force’s various assessments. Without access to new resources or restraint on future enrollment growth, the Task Force concluded that initial lapses in quality learning and access are likely to first develop in the areas at or above capacity.

*Table 1: Overview of Capacity by Service Area*

Fall 2009 Capacity Assessments by Unit Leaders	# OF UNIT FUNCTIONS REPORTED AT EACH CAPACITY LEVEL		
	BELOW CAPACITY	AT CAPACITY	ABOVE CAPACITY
<b>ACADEMIC UNITS</b>			
Undergraduate Lower-Level Service Courses (determined by academic department chairs)	1	6	14
Undergraduate Upper-Division Major Courses (determined by academic department chairs)	13	3	10
Graduate Courses Taught On-Campus (determined by academic department chairs)	11	9	2
Adequate Classrooms with 20 to 59 seats (determined by sub-committee)	X		
Adequate Classrooms with 60 to +120 seats (determined by sub-committee)		X	
Adequate Classrooms with distance capabilities (determined by sub-committee)		X	
Adequate Number of Laboratories (determined by sub-committee)			X
<b>STUDENT &amp; CAMPUS SUPPORT UNITS</b>			
Total Institutional Budget Supporting Merit Scholarships (determined by sub-committee)		X	
Total Institutional Budget Supporting Need-based Aid (determined by sub-committee)			X
Financial Aid Available to Attract Desired Graduate Students (determined by sub-committee)		X	
Student Service & Campus Support Staffing (by function as determined by department leaders responding to a Task Force survey – not all units responded)	9	32	31
<b>AUXILIARY UNITS</b>			
Campus Housing (fall 2009 housing contracts compared to post-renovation capacity of 1710 beds)		X	
Campus Dining (M-W lunch periods at Havener Center were Above Capacity)		X	
On-Campus Parking (based on 2007 parking permits compared to total on-campus spaces available)	**		

**\*\*NOTE:** fall 2009 On-campus parking data was unavailable to the Task Force

ACADEMIC UNITS: See pages 8-11 and the sub-committee report for benchmarks and descriptions of the assessments.

STUDENT & CAMPUS SUPPORT UNITS: See Table 13, page 13 and the sub-committee report for unit service assessments. Units leaders were asked to evaluate each service function performed by their unit, thus some units provide multiple capacity assessments.

AUXILIARY UNITS: See page 14 and the sub-committee report for benchmarks and descriptions of the assessments.

## STANDARDS FOR QUALITY TEACHING AND LEARNING

To ensure quality learning—and due to the complexity and highly specialized nature of degree programs at technological research universities—class sizes and student-to-teacher ratios are historically maintained at lower levels than liberal arts and comprehensive institutions. When compared to the 16 U.S. technological research universities, Missouri S&T’s total student-faculty ratio has fallen from the middle position of 12:1 in fall 2000 to second-to-last at 15:1 in 2007 (see Table 2). The fall 2009 student-to-faculty ratio at Missouri S&T was 16:1.

Because of state funding reductions, S&T faculty have been forced to increase their teaching loads. Since 1999, the total student credit hours (SCH) taught has increased by 41% (see table 5) and the average undergraduate class size has risen from 23 to 27.5 students per section. The departments currently have student-to-faculty ratios ranging from 9:1 to 24:1, with many courses not having the benefit of a GTA to assist the tenured/tenure-track faculty member in delivering high-enrollment courses.

*Table 2: Student-to-Faculty Ratio of Technological Research Universities*

U.S. TECHNOLOGICAL RESEARCH UNIVERSITIES FALL 2007	STUDENT-TO-FACULTY RATIO
California Institute of Technology	3
Massachusetts Institute of Technology	7
Illinois Institute of Technology	9
New Mexico Institute of Mining & Technology	11
South Dakota School of Mining & Technology	12
Clarkson University	13
Florida Institute of Technology	13
Colorado School of Mines	14
Georgia Institute of Technology	14
New Jersey Institute of Technology	14
Rensselaer Polytechnic Institute	14
Stevens Institute of Technology	14
Worcester Polytechnic Institute	14
Michigan Technological University	15
<b>Missouri University of Science &amp; Technology</b>	<b>15</b>
University of Alabama in Huntsville	16

*SOURCE: Institutional Common Data Set*

*NOTE: Missouri S&T’s Fall 2009 Student-to-Faculty Ratio: 15.5:1*

\* The formula for department faculty-to-student ratio uses the Institutional Common Data Set definition of FTE faculty plus one-third part-time faculty. It excludes administrators, GTAs and post-doc instructors from the faculty counts. It also excludes freshman engineering and undeclared students from the student count.



## ENROLLMENT AND RESEARCH GROWTH

Since 1999, Missouri S&T has experienced a 45% increase in student enrollment (see Table 3). Since fall 1999, on-campus enrollment has increased by 1,637 students (36%) and distance/on-line enrollments have increased by 463 students (234%) for a total enrollment increase of 2,100 students. During the same period, new student academic quality increased (26.8 average ACT in 2001, 27.7 average ACT in 2009 – upper 10% in nation) and historic records for student access and success at the university, in terms of graduation rates, diversity, non-Missouri residents and low-income student enrollments, have been achieved.

*Table 3: Total Enrollment by Academic Grouping*

	FALL 1999			FALL 2009			CHANGE			PERCENT CHANGE		
	UG	GRAD	TOTAL	UG	GRAD	TOTAL	UG	GRAD	TOTAL	UG	GRAD	TOTAL
Engineering	2,913	588	3,501	4,005	1,232	5,237	1,092	644	1,736	37%	110%	50%
Math & Science	535	162	697	588	228	816	53	67	120	10%	41%	17%
Business & Soc Sci	158	0	158	290	122	412	132	122	254	84%	100%	161%
Humanities	85	0	85	115	11	126	30	11	41	35%	100%	48%
Undec & Non Deg	191	83	274	207	16	223	16	-67	-51	8%	-81%	-19%
<b>TOTAL</b>	<b>3,882</b>	<b>833</b>	<b>4,715</b>	<b>5,205</b>	<b>1,609</b>	<b>6,814</b>	<b>1,323</b>	<b>777</b>	<b>2,100</b>	<b>34%</b>	<b>93%</b>	<b>45%</b>

During the same decade, externally sponsored research at Missouri S&T has increased by 195%. In FY09 S&T faculty set the historic high record for expenditures from externally sponsored grants and contracts, beating the record set in FY08 (see Table 4). Based on the leading indicators of proposals submitted and awarded, and performance through January 2010, FY10 is expected to be another record year with research expenditures significantly higher than in FY09.

*Table 4: Externally Sponsored Grants and Contracts*

		FY06	FY07	FY08	FY09	FY09 THRU JANUARY	FY10 THRU JANUARY	FY09-FY10 THRU JAN COMPARISON
<b>PROPOSALS SUBMITTED</b>	(\$M)	\$116.22	\$110.12	\$151.14	\$180.09	\$90.16	\$97.37	Up 8%
	#	485	400	549	567	321	294	Down 8.4%
<b>PROPOSALS AWARDED</b>	(\$M)	\$32.03	\$37.23	\$38.36	\$42.57	\$31.61	\$35.51	Up 12.3%
	#	326	348	369	364	232	198	Down 14.7%
<b>RESEARCH EXPENDITURES</b>	(\$M)	\$36.26	\$32.27	\$37.70	\$38.08	\$22.75	\$27.69	Up 21.7%

## TENURED/TENURE-TRACK (T/TT) FACULTY AND INCREASED TEACHING LOADS

The fall 1999 and fall 2003 early retirement programs depleted the T/TT faculty ranks at Missouri S&T by 42 full-time equivalent (FTE) faculty members. Due to continued funding shortfalls, regaining the original faculty positions has not been achieved and Graduate Teaching Assistantships (GTAs) have not been proportionately increased. By fall 2009, the number of T/TT faculty was 4 FTE less than fall 1999 (see Table 5) and 34 FTE less than the number required to fill the tenure-track positions assigned to fully staff each academic department. The most recent national benchmark comparison of instructional staff distribution among public research/doctoral institutions illustrates S&T's heavy reliance on T/TT faculty to meet its increase teaching demands (see Table 6). 45% of the courses taught at Missouri S&T are lead by T/TT faculty, the national average is 29%.

In terms of total faculty FTE (T/TT and NTT), a recent faculty-to-enrollment analysis using the State of South Carolina's model for a public research university projected that Missouri S&T should have 427 FTE faculty to properly support the current enrollment. We currently have 364 FTE, leaving us 63 FTE short. The larger student enrollments have increased total student credit hours (SCH) taught by 41%—or 24,738 additional SCH—in the fall semester alone (see Table 5).

Table 5: Tenured/Tenure-Track Faculty, Student Headcount, and Student Credit Hours

	FALL SEMESTER						
	1999		2005	2006	2007	2008	2009
Full-Time enured/Tenure-Track Faculty	292		280	278	274	293	288
Student Headcount	4,715		5,602	5,858	6,167	6,371	6,815
Student Credit Hours	60,241		69,598	72,387	77,324	79,309	84,979

Table 6: Percentage Distribution of Instructional Staff by Instructor Type

INSTRUCTIONAL FACULTY	S&T FALL 2007	PUBLIC RESEARCH/DOCTORAL INSTITUTIONS FALL 2007
Full-Time Tenured/Tenure-Track Faculty	45%	29%
Full-Time Non-Tenured Faculty	17%	14%
Part-Time Faculty	16%	16%
Graduate Assistants	22%	41%

Source: U.S. Department of Education and S&T IRA1

## INSTRUCTIONAL SPACE

Campus instructional capacity has been further challenged by shrinking instructional space and the practical need to align the scheduling of corresponding lectures and laboratories. Since 2003, the expanded research activities, laboratories, on-line capable classrooms and student services have absorbed classroom spaces on campus. The total available general classrooms has decreased from 84 (1982) to 75 (2009) with a corresponding loss of 263 seats (see Table 7). While new buildings (such as Toomey Hall, Butler-Carlton Hall, and Emerson Electric Hall) came on-line during this time, they were designed in the late 1990's when enrollment was low and number/size of classrooms was not an issue. The Task Force recognizes a growing need for a general classroom building offering a number of +65 seat distance education enabled classrooms and at least two lecture halls with +150 seating capacity.

Table 7: Building Comparison of Rooms and Seats Net Gain/Loss (1982-2009)

	1982	2003	GAIN/LOSS 1982-2003	2009	GAIN/LOSS 2003-2009
Campus Total Classrooms Available	84	82	-2	75	-7
Campus Total Seats Available	3,805	4,356	551	4,093	-263

Table 8: Classroom Utilization by Hour for Fall 2009 - MWF

CLASS TIME	TOTAL ROOMS USED MON - WED - FRI				PERCENTAGE USED MON - WED - FRI			
	SEATS	SEATS	SEATS	SEATS	SEATS	SEATS	SEATS	SEATS
	0 - 40	41 - 60	61 - 80	81+	0 - 40	41 - 60	61 - 80	81+
8:00 AM - 9:00 AM	14	19	4	5	41%	66%	100%	63%
9:00 AM - 10:00 AM	26	24	4	8	76%	83%	100%	100%
10:00 AM - 11:00 AM	27	25	4	7	79%	86%	100%	88%
11:00 AM - 12:00 PM	30	26	3	8	88%	90%	75%	100%
12:00 PM - 1:00 PM	13	1	2	3	38%	3%	50%	38%
1:00 PM - 2:00 PM	26	24	3	8	76%	83%	75%	100%
2:00 PM - 3:00 PM	19	24	1	7	56%	83%	25%	88%
3:00 PM - 4:00 PM	14	16	1	4	41%	55%	25%	50%
4:00 PM - 5:00 PM	15	12	3	2	44%	41%	75%	25%
5:00 PM - 6:00 PM	8	8	4	7	24%	28%	100%	88%
6:00 PM - 7:00 PM	7	8	3	2	21%	28%	75%	25%
7:00 PM - 8:00 PM	9	7	2	2	26%	24%	50%	25%
8:00 PM - 9:00 PM	5	3	2	2	15%	10%	50%	25%

Functional capacity for instructional space was determined to be the ability to schedule classrooms and labs based on anticipated size, technology, preferred teaching methods with minimal time conflicts between required courses, while also providing additional space to adjust assignments when actual space needs do not correspond to the anticipated. Successfully operating within our functional capacity requires an initial acceptable classroom/lab assignment for all sections with an alternate assignment available should sections require a larger room, a differently equipped room or change of instructor that would require a different classroom set -up.

Table 9: Classroom Utilization by Hour for Fall 2009 – Functional Capacity of Instructional Space

CLASS TIME	FUNCTIONAL CAPACITY * MON - WED - FRI				FUNCTIONAL CAPACITY * TUES - THURS			
	SEATS	SEATS	SEATS	SEATS	SEATS	SEATS	SEATS	SEATS
	0 - 40	41 - 60	61 - 80	81+	0 - 40	41 - 60	61 - 80	81+
8:00 AM - 9:00 AM			X					
9:00 AM - 10:00 AM	X	X	X	X	X	X	X	X
10:00 AM - 11:00 AM	X	X	X	X	X	X	X	X
11:00 AM - 12:00 PM	X	X	X	X	X	X	X	X
12:00 PM - 1:00 PM					X	X	X	X
1:00 PM - 2:00 PM	X	X	X	X	X		X	X
2:00 PM - 3:00 PM		X		X		X		X
3:00 PM - 4:00 PM								X
4:00 PM - 5:00 PM			X					X
5:00 PM - 6:00 PM			X	X				X
6:00 PM - 7:00 PM			X					X
7:00 PM - 8:00 PM								X
8:00 PM - 9:00 PM								X

\* X = At functional capacity, defined as greater than 75% occupancy

## FINANCIAL AID AND SCHOLARSHIPS

S&T's active leveraging of its financial aid resources has helped increase the quality and quantity of students enrolling and succeeding at the university. At the same time these efforts significantly lowered the overall discount rate (36% in 2000 to 27% in 2009) and increased the net academic revenues by over \$24 million annually, enabling the university to avoid additional deficits and balance the operational budget.

Over the past three years, the Office of Student Financial Assistance has been disproportionately impacted due to the significant increases in requests for student aid, dramatic changes in the federal and state aid programs, and compliance requirements. In AY08-09, 3,889 students applied for financial aid and over \$10.05 million in financial need (average: \$4,431/undergraduate, \$7,011/graduate student) was unmet by the university. Most of these students were forced to find external sources to meet their university expenses.

*Table 10: Undergraduate Requests for Financial Assistance (FAFSA Submissions) by March 1 Deadline*

	2007	2008	2009	2010
FAFSA Submissions To S&T	2,551	2,647	2,817	3,192

NOTE: 25% increase 2007-2010

The sharp increases in the number of students requesting financial aid and scholarships—combined with extensive new federal compliance reporting regulations (new lending laws and Title IV reporting regulations) and additional endowed scholarships from the capital campaign—have stretched the ability of the current Student Financial Assistance staff (6 professional FTE, 2 support/secretarial FTE) to meet the expected service and performance demands. A recent audit of the unit confirmed this finding. Near future projections indicate even greater student and compliance demands. Additional staffing is needed immediately for this fundamental student service and business operation. See the scholarship and financial aid sub-committee report for additional details on the staffing needs.

*Table 11: Student Financial Assistance (SFA) Office Staffing Levels*

UM CAMPUS	# OF SFA STAFF	# OF ENROLLED STUDENTS F'09 (UNDERGRAD + GRADUATE)	UNDUPLICATED UNDERGRAD STUDENT HEADCOUNT F'09	# OF UNDERGRADS SUBMITTING FAFSA AY08-09*	% OF UNDERGRADS REQUESTING FINANCIAL ASSISTANCE	% OF UNDERGRADS RECEIVING NEED-BASED PELL GRANTS F'09	UNDERGRAD STUDENTS REQUESTING AID / SFA STAFF RATIO
S&T	8 FTE	6,815	5,167	4,369	85%	21%	546 students: 1 staff
UMC	38 FTE	30,831	24,869	16,200	65%	15%	426 students: 1 staff
UMSL	19 FTE	16,555	15,681	6,595	42%	20%	347 students: 1 staff
UMKC	23 FTE	14,818	12,571	5,701	45%	19%	248 students: 1 staff

\* Common Data Set data for 2008-2009

*Table 12: Student Financial Assistance Office Work Volume*

# OF SFA STAFF	ESTIMATED ANNUAL TRANSACTIONS	AVERAGE ANNUAL TRANSACTIONS PER STAFF MEMBER	AVERAGE TRANSACTIONS PER WEEK	AVERAGE TRANSACTIONS PER DAY	AVERAGE TRANSACTIONS PER STAFF PER DAY
8 FTE	117,000	14,625	2,250	450	56

NOTE: Composition of 8 SFA FTE: 1 unit supervisor, 1 data program analyst, 4 administrative staff and 2 secretarial staff.

## STAFFING FOR CAMPUS AND STUDENT SUPPORT SERVICES

Assessing the staffing and support resources based on agreed upon benchmarks proved to be difficult. Each unit's self-assessments indicated that most service areas are lightly staffed and many are struggling to balance the resources allocated with the service demands.

*Table 13: Condensed Staffing Survey Scorecard*

ADMINISTRATIVE UNIT	# OF UNIT FUNCTIONS REPORTED AT EACH CAPACITY LEVEL		
	BELOW CAPACITY	AT CAPACITY	ABOVE CAPACITY
Admissions	1	2	2
Athletics			3
Career Opportunities Center		2	
Counseling			X
Disability Support Services		X	
Community Standards and Student Conduct		X	
Leadership and Cultural Programs	1	1	
Residential Life		3	1
Student Health Services			X
Student Life		6	
Testing Center		1	1
Student Diversity Programs			2
Registrar		5	3
Student Financial Assistance	1	1	6
Writing Center		4	4
Office of Graduate Studies	2	4	6
Freshman Engineering Program			2
News Student Programs/Orientation		X	
Pre-College Programs		1	1
Information Technology		1	1
Undergraduate Advising	4		

*NOTE: An "X" instead of a number means the Director of that unit chose to respond to the survey using their personal opinion of over-all support services provided by their office, instead of evaluating the primary student service functions performed by that office and assigning a capacity level to those individual functions.*

*NOTE: Not all unit directors chose to respond to the Task Force's survey.*

## HOUSING CAPACITY

S&T has experienced a 57% (597 additional residents) increase in the number of students requesting to live in campus housing. Since fall 2004, various off-campus facilities have been rented to meet the increased housing demand. In the fall 2009, about 1,670 university-managed beds were needed to accommodate opening week student demand.

The total campus housing capacity will be increased to 1,773 beds when the Thomas Jefferson Residence Hall renovations are completed in fall 2011 (see Table 14). Although this increase will allow for 40 to 60 additional new students to live in university housing, the aging Quadrangle complex and Rayl Cafeteria are in desperate need of replacement. Due to age and outdated systems, the facilities need to be built in the next five to seven years. This construction project could potentially lower the campus housing capacity by 350 to 400 beds, depending on the management of the project.

Table 14: Available Residence Hall Beds

Fall Semester:	2000	2004	2009	2011
Total Beds Available	1,229	1,229	1,449	1,773
Fall Semester Housing Contracts – 4 <sup>th</sup> week	1,046	1,409	1,643	N/A

NOTE: Total housing capacity will fall to 1,373 when the Quadrangle complex is closed in or before AY2015

## DINING CAPACITY

The campus's overall dining capacity is approximately 1,130 seats between the Thomas Jefferson, Rayl and Havener Center cafeterias (see Table 15). In October 2009, between 1180 and 1340 patrons were served during each dining session. Tracking data indicates most students were provided with reasonable on-campus dining experiences, except the Monday and Wednesday lunch periods at the Havener Food Court. During these lunch periods, students, staff and faculty were inconvenienced by long waiting periods and a lack of available dining space from 11:30 am to 12:30 pm. Overall dining capacity will be reduced by 307 seats if the Rayl Cafeteria is taken off-line during the construction of a new facility.

Table 15: Campus Cafeteria Dining Capacity

S&T CAFETERIA DINING CENTERS	THOMAS-JEFFERSON	RAYL (QUAD)	HAVENER CENTER
Seating and Design Capacity	366	307	456
October 2009 Total Meals Served per Week	15,741	9,697	37,459*

\*includes all meals served at the Havener Food Court, Coyote Jacks Grill and Einstein's Bagels

## PARKING CAPACITY

In the fall 2009 about 2,330 campus parking spaces were available. The Task Force and subcommittee were unable to collect fall 2009 data on available parking permit requests and permits issued by parking area. The staff member responsible for the parking records indicated she could not collect the data. The Task Force was forced to draw conclusions from the parking data collected in fall 2007 for the Strategic Planning Committee. At that time 2,107 campus parking spaces were available and 2,322 permits were issued. Assuming equal growth in parking demand to the enrollment increases, it is likely the only available campus parking remaining is next to the football stadium, approximately two to four blocks from the academic buildings. The Task Force urges the new University Police Chief to develop a parking data collection and monitoring plan.

APPENDICES B-F and REFERENCES: <http://enrollment.mst/capacity>

# Missouri University of Science and Technology

## 2010 Task Force on Student Educational Capacity

### TASK FORCE KICK-OFF – NOVEMBER 16, 2009

**Charge:** To collect and review all pertinent data to assess whether the current student population is at, below, or above the university's capacity to provide each student with a quality education.

**Objective:** To use this planning exercise to determine the relevant and reliable indicators for the university's capacity issues and to provide reasonable benchmarks to assess the institution's ongoing capacity position.

Hopefully, this work will result in a number of recommendations for Missouri S&T to develop the appropriate service capacity, in terms of faculty, staff, facilities, infrastructure, policies, services, etc. In addition, this task force will provide the university with information to re-evaluate the enrollment goals of the strategic plan and provide benchmarks for maintaining the university's high academic quality levels, while providing the access demanded by our land-grant mission.

The recommendations should consider the acceptable size of future enrollments by location, student and degree type. To this end, the Task Force is not limited to, but should consider issues such as:

- Ability to provide a quality educational experience while embracing our land-grant mission of emphasizing accessibility for students of all backgrounds
- Faculty composition, instructional effort and ability to provide quality instruction and mentoring
- Efficient use of classroom and laboratory space
- Revenue needs of the university
- Campus housing and the proportion of the student body, undergraduate and graduate, that should be housed in the residence life/campus housing system
- Campus dining resources
- Parking availability

**Outcomes:** Findings and recommendations by the task force should be summarized and presented to the Provost and Strategic Planning Committee no later than Monday, March 15, 2010.

***Mission of the University of Missouri System:*** *serve as a land-grant university and Missouri's only public research and doctoral-level institution-- is to discover, disseminate, preserve and apply knowledge. The university facilitates lifelong-learning by its students and Missouri's citizens; fosters innovation to support economic development; and advances the health, cultural and social interests of the people of Missouri, the nation and the world.*

***Mission of Missouri University of Science and Technology:*** *to integrate education and research to create and convey knowledge to solve problems for our State and the technological world.*

*(Mission Statement Approved January 2008 Board of Curators' Meeting)*