

THE UNIVERSITY OF ARIZONA[®]
COMPREHENSIVE CAMPUS PLAN

II. COLLEGE LEVEL
SPACE NEEDS
AND FORECAST

SPACE NEEDS AND FORECAST

II



Paulien & Associates, Inc. was contracted to examine the building space needs for the University of Arizona. This study was conducted as part of a campus facility master planning effort headed by Ayers/Saint/Gross Architects & Planners. The major responsibility of Paulien & Associates, Inc. was to:

- Apply appropriate space guidelines to determine current and future space needs
- Compare projected space needs to the existing and near-future facilities

The study was conducted on a college-by-college and major administrative unit basis. The base year is Fall 2000 (31,000 FTE students) and the target year is Fall 2010 (37,000 FTE students). For planning purposes, the 2010 target year subsequently evolved into an enrollment threshold of 37,000 FTES, which is labeled as a future Phase 2 of campus development.

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The University of Arizona provided Paulien & Associates, Inc. with facilities, enrollment, course, staffing, and research data. Meetings were held with the deans and vice presidents to become familiar with the unique needs of the colleges and administrative units. In addition, visits were made to various spaces throughout the campus to gain familiarity with facilities.

The University of Arizona has made a commitment to interdisciplinary focus centered on several themes. These themes create relationships among the colleges and are the focus of centers and initiatives for partnerships among law, public health, medicine, and social behavioral sciences; science, medicine and engineering; science and education; science and agriculture and life sciences; social and behavioral sciences, humanities, and business; and business, fine arts, computer science, and engineering.

The University determined that the target year should assume growth of approximately 7,000 FTE students, from about 31,300 to about 37,000, a 20 percent increase. College-by-college assumptions for undergraduate and graduate enrollments are included in the complete report. (Available at www.cfp.arizona.edu.) The plan also accommodates significant research growth, taking expenditures from about \$287 million to \$520 million, an 81 percent increase. College-by-college assumptions are included.

EXECUTIVE SUMMARY

According to the space needs analysis, the University has an overall space deficit of 1,549,000 assignable square feet (ASF) when comparing guidelines to actual space. When buildings in planning, design, or construction are added to the facilities inventory and the revised square footage is compared to target year guidelines, the deficit is projected to increase to 2,989,000 ASF.

The University operates with less space in certain categories than normative space guidelines would recommend. The consultants lowered the guidelines in those categories to reflect numbers closer to the actual need as communicated by the University. These areas include physical plant space and physical education and recreation space. In the case of physical plant space, the campus uses economies and efficiencies

such as just-in-time delivery and e-commerce to reduce the need for space. The University is fortunate to be located in a climate that allows many of the physical education and recreation and athletic facilities to be outdoors, reducing the need for indoor facilities.

TABLE 1: SPACE NEEDS ANALYSIS

| SPACE CATEGORY | Fall 2000 Base Year <i>Student FTE = 30,960</i> <i>Staffing FTE = 9,278</i> | | | | Target Year (Phase 2) <i>Student FTE = 37,230</i> <i>Staffing FTE = 10,609</i> | | | |
|--|---|------------------|--------------------|----------------------------|--|------------------|--------------------|----------------------------|
| | Existing ASF | Guideline ASF | Surplus/ (Deficit) | Percent Surplus/ (Deficit) | Existing ASF | Guideline ASF | Surplus/ (Deficit) | Percent Surplus/ (Deficit) |
| Academic Space | | | | | | | | |
| Classroom & Service | 300,794 | 297,496 | 3,298 | 1% | 322,545 | 350,866 | (28,321) | (9%) |
| Teaching Laboratories & Service | 280,807 | 300,154 | (19,347) | (7%) | 295,119 | 349,563 | (54,444) | (18%) |
| Open Laboratories & Service | 91,728 | 123,840 | (32,112) | (35%) | 108,336 | 148,920 | (40,584) | (37%) |
| Research Laboratories & Service | 914,194 | 1,309,506 | (395,312) | (43%) | 971,540 | 2,015,400 | (1,043,860) | (107%) |
| Academic Offices & Service | 1,221,006 | 1,501,415 | (280,409) | (23%) | 1,274,749 | 1,736,708 | (461,959) | (36%) |
| Physical Education & Recreation | 127,639 | 169,800 | (42,161) | (33%) | 127,639 | 201,150 | (73,511) | (58%) |
| Other Academic Space | <u>212,704</u> | <u>247,680</u> | <u>(34,976)</u> | <u>(16%)</u> | <u>258,117</u> | <u>297,840</u> | <u>(39,723)</u> | <u>(15%)</u> |
| <i>Academic Space Subtotal</i> | <i>3,148,872</i> | <i>3,949,891</i> | <i>(801,019)</i> | <i>(25%)</i> | <i>3,358,045</i> | <i>5,100,448</i> | <i>(1,742,403)</i> | <i>(52%)</i> |
| Academic Support Space | | | | | | | | |
| Administrative Offices & Service | 238,061 | 239,185 | (1,124) | (0%) | 295,808 | 263,677 | 32,132 | 11% |
| Library | 479,470 | 643,995 | (164,525) | (34%) | 498,844 | 761,479 | (262,635) | (53%) |
| Athletics | 196,786 | 300,000 | (103,214) | (52%) | 243,691 | 300,000 | (56,309) | (23%) |
| Assembly & Exhibit | 176,525 | 313,838 | (137,313) | (78%) | 191,896 | 451,458 | (259,562) | (135%) |
| Physical Plant | 91,627 | 95,757 | (4,130) | (5%) | 56,316 | 147,221 | (90,905) | (161%) |
| Other Administrative Space | <u>36,967</u> | <u>61,920</u> | <u>(24,953)</u> | <u>(68%)</u> | <u>53,107</u> | <u>74,460</u> | <u>(21,353)</u> | <u>(40%)</u> |
| <i>Academic Support Space Subtotal</i> | <i>1,219,436</i> | <i>1,654,695</i> | <i>(435,259)</i> | <i>(36%)</i> | <i>1,339,662</i> | <i>1,998,295</i> | <i>(658,633)</i> | <i>(49%)</i> |
| Auxiliary Space | | | | | | | | |
| Student Union | 190,512 | 278,640 | (88,128) | (46%) | 287,203 | 335,070 | (47,867) | (17%) |
| Residence Life | 745,804 | 965,800 | (219,996) | (29%) | 1,000,904 | 1,537,900 | (536,996) | (54%) |
| Health Care Facilities | <u>57,733</u> | <u>61,920</u> | <u>(4,187)</u> | <u>(7%)</u> | <u>71,330</u> | <u>74,460</u> | <u>(3,130)</u> | <u>(4%)</u> |
| <i>Auxiliary Space Subtotal</i> | <i>994,049</i> | <i>1,306,360</i> | <i>(312,311)</i> | <i>(31%)</i> | <i>1,359,437</i> | <i>1,947,430</i> | <i>(587,993)</i> | <i>(43%)</i> |
| INSTITUTION TOTAL | 5,362,357 | 6,910,946 | (1,548,589) | (29%) | 6,057,144 | 9,046,173 | (2,989,029) | (49%) |
| <i>Parking Garages</i> | <i>1,136,078</i> | | | | <i>1,136,078</i> | | | |
| <i>Inactive/Conversion Space</i> | <i>69,380</i> | | | | <i>44,704</i> | | | |
| <i>Temporary Buildings</i> | <i>154,633</i> | | | | <i>153,410</i> | | | |
| <i>Outside Organizations</i> | <i>38,890</i> | | | | <i>38,890</i> | | | |

ASF = Assignable Square Feet



Student Support Space (Photo Courtesy of Ayers/Saint/Gross)

At the base year enrollment and staffing levels, the University shows an overall need for an additional 1,549,000 ASF of space. This is a 29 percent deficit in square footage when comparing guideline assignable square feet to existing assignable square feet on campus. Assignable square footage is defined as the usable space inside classrooms, laboratories, offices, etc. It does not include circulation and building service space or the thickness of walls. For most types of space, gross square footage is 30 percent to 40 percent more than assignable square feet.

- The academic space categories show a deficit of 801,000 ASF over existing space. Academic support space categories show a deficit of 435,000 ASF. Auxiliary space shows a deficit of 312,000 ASF. The space categories with the greatest space needs at the base year (Fall 2000) include:

Research laboratories with a deficit of 395,000 ASF

Academic offices with a deficit of 280,000 ASF

Residence Life with a deficit of 220,000 ASF

Library space with a deficit of 165,000 ASF

Assembly and exhibit space with a deficit of 137,000 ASF

- The colleges and units with the greatest needs, excluding classroom space, at the base year include:

Vice President for Campus Life with a deficit of 386,000 ASF

College of Medicine with a deficit of 366,000 ASF

College of Fine Arts and University Libraries each with a deficit of 160,000 ASF

College of Science with a deficit of 103,000 ASF

Office of the President (which includes athletics) with a deficit of 97,000 ASF

Vice President for Research and Graduate Studies with a deficit of 75,000 ASF

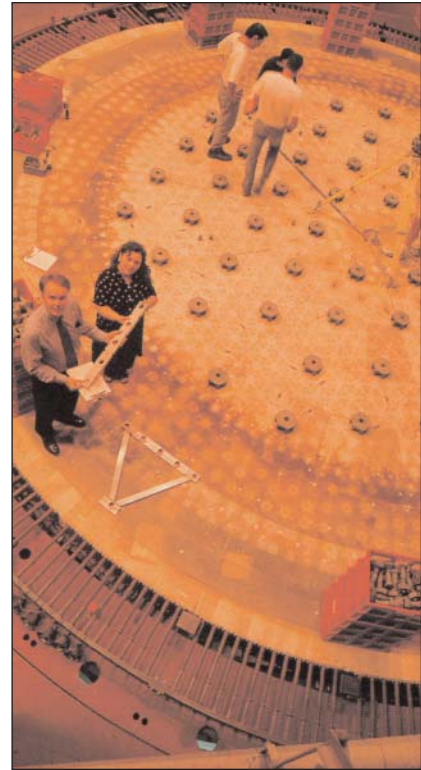
College of Agriculture and the Optical Sciences Center each with a deficit of 43,000 ASF

College of Pharmacy with a deficit of 40,000 ASF

TARGET YEAR (PHASE 2)

- At projected target year enrollment and staffing levels, the University shows a campus-wide need for 2,989,000 ASF. This is a 49 percent increase over the amount of projected existing space at the target year.

- The space categories with the greatest needs at the target year include:
 - Research Laboratories with a deficit of more than 1,044,000 ASF
 - Academic Offices with a deficit of 462,000 ASF
 - Residence Life with a deficit of 537,000 ASF
 - Library space (main library, its branches, health, and law libraries) with a deficit of 263,000 ASF
 - Assembly and exhibit space with a deficit of 260,000 ASF
- The colleges and units with the greatest needs, excluding classroom space, at the target year include:
 - College of Medicine with a deficit of 737,000 ASF
 - Vice President for Campus Life with a deficit of 686,000 ASF
 - University Libraries (main library and its branches) with a deficit of 223,000 ASF
 - Vice President for Research and Graduate Studies with a deficit of 210,000 ASF
 - College of Fine Arts with a deficit of 205,000 ASF
 - College of Science with a deficit of 187,000 ASF
 - College of Agriculture with a deficit of 143,000 ASF
 - College of Pharmacy with a deficit of 98,000 ASF
 - Optical Sciences Center with a deficit of 94,000 ASF
 - Vice President for Business Affairs with a deficit of 59,000 ASF



Research space



State-of-the-art classroom (Photo Courtesy of Ayers/Saint/Gross)

CLOSING COMMENTS: SPACE NEEDS ANALYSIS

The primary goal of the study was achieved by applying the Arizona Board of Regents Space Guidelines to identify base and target year space requirements. Applying space guidelines as the sole criteria to determine space needs is a recognized methodology that uses standard measures to quantify space needs. Results provide a means for the University to review the distribution of existing space in relationship to identified needs and provide another variable to evaluate proposed major capital projects.



Student Union construction

The success of a quantitative study is related to using a consistent methodology and standard data sources. Only official University sources were used, and subsequent review of questionable areas verified the reliability of the data. It also is important to recognize that the quantitative analysis did not consider the quality or age of the existing facilities while determining overall space needs and has resulted in a more conservative space deficit figure. If these factors were

incorporated into the analysis, overall space needs would be higher.

A college-level space analysis has a number of limitations due to the global nature of the study. Areas of concern revealed after the report was completed include:

1. Campus recreation space needs are incorporated into the Physical Education and Recreation space category listed under Academic Space. Although this is the correct space category placement, it does not reflect the nature of the non-academic program. Campus Recreation provides programs, facilities and educational opportunities, that seek to meet the diverse recreational, fitness, and wellness needs of the students and community.

2. The College of Engineering shows a space surplus in the base year and a deficit in the target year. Refer to Table as mentioned above, the analysis did not consider the age or condition of the existing facility. Earlier University space studies using a different methodology have shown that the College has a research laboratory deficit. The college level space study did not allow for a more detailed review to explain the differences between the two methods. Subsequent University analysis concluded that the College's research laboratory space needs are greater than the figures presented in this report.



McKale Addition

3. University Libraries space computations assumed the use of compact shelving, which is one of many options that can be implemented to accommodate the growing print collection. As noted in the report, overall space needs for the library will increase by 75,000 NASF if compact shelving is not installed.

Target year space needs are based on projected growth in enrollment and research expenditures. As these variables evolve, overall space needs will change. The report was completed during challenging times and regional economic considerations may have influenced direction given to the consultants during the data collection and interview process. Prospects of diminished financial resources were a factor and may have influenced direction on future programmatic growth provided by the deans. Based upon the selected methodology and the information provided, the space needs analysis furnishes a reasonable projection of current and future University space requirements and is an important part of the overall comprehensive campus planning process.

TABLE 2: SPACE NEEDS ANALYSIS BY COLLEGE/ADMINISTRATION

| COLLEGE/UNIT | Fall 2000 Base Year <i>Student FTE = 30,960</i> <i>Staffing FTE = 9,278</i> | | | | Target Year (Phase 2) <i>Student FTE = 37,230</i> <i>Staffing FTE = 10,609</i> | | | |
|--|---|------------------|--------------------|--------------|--|------------------|--------------------|--------------|
| | Existing | Guideline | Surplus/ | Percent | Existing | Guideline | Surplus/ | Percent |
| | ASF | ASF | (Deficit) | (Deficit) | ASF | ASF | (Deficit) | (Deficit) |
| College of Agriculture & Life Sciences | 281,317 | 324,275 | (42,958) | (15%) | 285,385 | 428,827 | (143,442) | (50%) |
| College of Architecture, Planning & Landscape | 23,611 | 53,113 | (29,502) | (125%) | 44,091 | 57,053 | (12,962) | (29%) |
| Eller College of Business & Public Admn | 98,385 | 91,191 | 7,194 | 7% | 96,802 | 102,032 | (5,230) | (5%) |
| College of Education | 54,872 | 56,042 | (1,170) | (2%) | 54,872 | 65,098 | (10,226) | (19%) |
| College of Engineering & Mines | 307,072 | 269,201 | 37,871 | 12% | 307,072 | 330,868 | (23,796) | (8%) |
| College of Fine Arts | 182,712 | 343,109 | (160,397) | (88%) | 199,172 | 404,108 | (204,936) | (103%) |
| College of Humanities | 65,219 | 81,768 | (16,549) | (25%) | 81,469 | 91,745 | (10,276) | (13%) |
| James E. Rogers College of Law | 77,458 | 78,329 | (871) | (1%) | 77,458 | 93,683 | (16,225) | (21%) |
| College of Medicine | 471,517 | 837,853 | (366,336) | (78%) | 471,517 | 1,208,136 | (736,619) | (156%) |
| College of Nursing | 29,579 | 36,781 | (7,202) | (24%) | 29,579 | 58,431 | (28,852) | (98%) |
| College of Pharmacy | 44,167 | 83,656 | (39,489) | (89%) | 44,167 | 141,654 | (97,487) | (221%) |
| College of Public Health | 15,173 | 40,884 | (25,711) | (169%) | 15,173 | 66,878 | (51,705) | (341%) |
| College of Science | 665,504 | 768,131 | (102,627) | (15%) | 722,825 | 910,247 | (187,422) | (26%) |
| College of Social & Behavioral Sciences | 122,407 | 140,118 | (17,711) | (14%) | 122,407 | 164,806 | (42,399) | (35%) |
| Graduate College | 15,013 | 17,950 | (2,937) | (20%) | 15,013 | 22,116 | (7,103) | (47%) |
| Optical Sciences Center | 61,001 | 103,532 | (42,531) | (70%) | 89,381 | 183,315 | (93,934) | (105%) |
| School of Health Professions | 16,270 | 7,016 | 9,254 | 57% | 16,270 | 7,709 | 8,561 | 53% |
| University Libraries | 363,768 | 523,604 | (159,836) | (44%) | 383,142 | 605,736 | (222,594) | (58%) |
| Vice President for Academic Affairs & Provost | 63,792 | 69,719 | (5,927) | (9%) | 63,792 | 74,827 | (11,035) | (17%) |
| Vice President for Research & Graduate Studies | 275,191 | 349,836 | (74,645) | (27%) | 291,898 | 501,855 | (209,957) | (72%) |
| Vice President for the Health Sciences Center | 86,370 | 87,851 | (1,481) | (2%) | 86,370 | 111,928 | (25,558) | (30%) |
| Vice President for Undergraduate Education | 74,055 | 91,154 | (17,099) | (23%) | 117,565 | 143,410 | (25,845) | (22%) |
| Office of the President | 265,406 | 361,974 | (96,568) | (36%) | 315,036 | 367,786 | (52,750) | (17%) |
| Vice President for Advancement | 8,989 | 11,745 | (2,756) | (31%) | 8,989 | 12,431 | (3,442) | (38%) |
| Vice President for Business Affairs | 174,490 | 180,593 | (6,103) | (3%) | 173,504 | 232,679 | (59,175) | (34%) |
| Vice President for Campus Life | 1,218,225 | 1,604,025 | (385,800) | (32%) | 1,621,650 | 2,307,951 | (686,301) | (42%) |
| TOTAL | 5,061,563 | 6,613,450 | (1,551,887) | (31%) | 5,734,599 | 8,695,307 | (2,960,708) | (52%) |

ASF = Assignable Square Feet

NOTE: Does not include classrooms, parking garages, inactive/conversion space, temporary buildings or outside organization space

The consultants recently compiled benchmark studies at major public universities comparing ASF per student FTE or ASF per headcount for business, engineering, and law schools. These schools may not be the University's peers, yet the results are worth noting. In all three cases, the ASF per student at the University of Arizona was at the lower end of the benchmark range. Although the planning process did not imply that

space should be equivalent to other institutions, the benchmark data suggest that other factors may need to be considered when evaluating space needs at a finer level.

For the full Space Needs Analysis, go to the Web site of the University of Arizona Campus and Facility Planning Department at www.cfp.arizona.edu