APPENDIX A

SPACE UTILIZATION & SPACE NEEDS REPORT

Report by JMZ Architects and Planners, P.C.
Introduction
The process for the WCU space needs analysis for the Cullowhee Campus included two main tasks: data collection and analysis, and future space recommendations.

Interviews and Workshops
In March and April of 2013, meetings and workshops were held with the Master Plan Steering Committee, Space Utilization Task Force, student groups, and faculty. In addition, the planning team interviewed department heads, University staff, and administration to gather information. The interviews and workshops were valuable parts of the process.

Data Collection and Analysis
During the same time period, the team gathered data from the University relating to students, buildings, and employees. The data were compared to WCU’s peers, North Carolina standards and national higher education planning rules of thumb.

WCU provided the master planning team with a road map: its Strategic Plan, called 2020 Vision. While every strategic direction does not relate specifically to space planning, the six strategic directions outlined in 2020 Vision provide criteria for the success of planning concepts:

1. Fulfill the educational needs of our state and region.
2. Enrich the total student experience.
3. Enhance our external partnerships.
4. Invest in our people.
5. Invest in our core resources.
6. Garner support for the vision.

The Space Needs Analysis is composed of six sections.
1. Summary of current space use
   - Existing space on the Western Carolina University Cullowhee Campus
   - Comparison of WCU to its North Carolina peer universities

2. Reported space needs
   - Interview process and questions
   - Interview summaries

3. Instructional Space Utilization Study
   - Instruction space capacity
   - Space planning target criteria
   - Comparison of WCU space factor to peer universities
   - Hourly utilization of instruction space
   - Seat fill of instruction space
   - Need for larger classrooms
   - Practical application of data, an examination of Forsyth 329
   - Scheduling practices

4. Enrollment Projections 2012-2023

5. Space Projections 2012-2023
   - HEGIS space use codes
   - Space needs by space use code
   - Summary of Space Projections
   - Space needs by College

6. Reshuffling the deck
Data Sources

Information collected from WCU:
- WCU 2020 Vision
- Space Utilization Task Force Report
- Space Management and Assignment Policy (2010 draft)
- Previous Reports/Studies
- Physical Space Inventory 2013
- Faculty and Staff lists – Spring 2013
- Existing Floor Plans
- Fall 2012 Course Schedule
- Enrollment Data – Fall 2007 - Fall 2012
- Program Prioritization Task Force Final Report (June 2013)

Insights were also gained through:
- Space Needs Interviews
- Student Workshops
- Faculty Workshops
- Building Walk-throughs
- Peer Data

Space calculations were based on:
- University of North Carolina Facilities Inventory and Utilization Study, 2011 (used as the basis for determining space factors for WCU)
- University of North Carolina Facilities Inventory and Utilization Study, 2012 (released in September 2013 and used for comparison of WCU to peer universities)
- CEFPI space planning guidelines for Higher Education1
- Consultants’ professional experience

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1. SUMMARY OF CURRENT SPACE USE

The data received from the University, specifically the course schedule and the Physical Space Inventory (PSI), are the basis of the space analysis process. The portion of Western Carolina University’s Cullowhee Campus considered to be “net assignable square footage” (NASF) for this study equals 1,928,344 NASF (Figure 1). This space excludes the Highland Biological Station, athletic outbuildings, inactive space, miscellaneous storage buildings, and guest housing.

Figure 2 illustrates the credit hours generated by each college at WCU and the net assignable square feet (NASF) of non-instructional space dedicated to each College. Instructional space is not included, since general classrooms are not dedicated to departments. Conversely, class labs must be dedicated to departments – regardless of efficiency – in order to offer specialized programs. The College of Arts and Sciences is both the largest generator of credit hours and has the largest amount of dedicated space.

The State of North Carolina Higher Education Comprehensive Planning Program issues an annual Facilities Inventory and Utilization Study. The following comparisons of WCU to its peers are derived from data in the 2012 report (issued in September 2013). The State of North Carolina Facilities Inventory and Utilization Study accounted for the entire Cullowhee campus (without excluding any buildings), so the NASF used for comparison to peers was 2,025,181. These graphs only represent on-campus space and face-to-face enrollment.

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2 NSF excludes offline buildings, athletic outbuildings associated with fields, and guest housing.

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Figure 3 illustrates WCU’s capacity compared to its enrollment. Capacity is the quantity of NASF of instructional and library space, and enrollment is weekly student clock hours. The lower the ratio, the more efficient the institution is with its space. WCU’s ratio is near the average of its peer North Carolina comprehensive universities; the ratio for WCU has gone down since 2008 when it was close to five.

The Health Sciences Building opened in academic year 2012-2013, and the Capacity/Enrollment ratio at WCU went up to 4.5 from 4.43 in 2011-2012. With any new building, there is an expected gap in time until the space is fully utilized.

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3 Weekly student clock hours = (Number of class meetings per week) x (duration of class meeting) x (class enrollment)
Figure 4 displays the percentage of total instruction space on the WCU campus compared to its peers. At WCU, instructional space made up 23.6 percent of the campus in 2012.

WCU has about the same percentage of instructional space as UNC Wilmington, but Wilmington’s capacity to enrollment ratio is much lower. In fact, Wilmington had about 13,500 NASF less instruction space in 2012 than WCU did, but they offered 56,679 more student clock hours. Wilmington offered more instruction in less space—or used its space more efficiently—than WCU.

As displayed in Figure 5, WCU dedicated 1.5 percent of its total space, about 30,400 NASF, to research in 2012. That is below the average of 2.1 percent. Recognizing that WCU has a strategic goal to increase its funded research by 50 percent by 2023, this could suggest that more space be dedicated to research in the future.
Figure 6 shows space assigned to public service for the specific purpose of responding to a community need or solving a community problem. UNC Wilmington assigned over 29,500 SF to public service where WCU was just over 4,000. This could be attributed in part to space categorizing, but in terms of percentage of overall space, WCU assigned only 0.2 percent of its space to public service in 2012. Increasing community outreach is a goal set out in 2020 Vision and ranked very high in the faculty workshop prioritization exercise; this suggests that more space should be dedicated to this purpose.

Academic Support is any activity in direct support of instruction, research or public service. Figure 7 shows that WCU has a higher percentage of space dedicated to academic support than the average of its peers in the North Carolina system. This might suggest that, if existing academic support space is used effectively, it is possible to achieve the 2020 Vision goals related to student success and retention without dedicating more academic support space to these functions.
Student Services refers to space dedicated to programs that contribute to students’ emotional and physical well-being and their intellectual, cultural, and social development outside of formal instruction. Figure 8 shows WCU to be on par with its North Carolina peers in terms of the percentage of space dedicated to student services. Since student housing falls into this category, student services makes up about half of the total NASF on many campuses.

In the Institutional Administration category, WCU was slightly above average among its peers. In general, administration space becomes more efficient as an institution grows because there is an economy of scale; a university can add more academic space without adding an equal percentage of administration space. However, as shown in Figure 9, Fayetteville (which is the smallest institution in the group by NASF) had the smallest percentage of administration space, which is counterintuitive. If Fayetteville was excluded from the set, the average would be 6.82 percent, which is very comparable to WCU’s 7.1 percent.
Figure 10 shows where each College at WCU has its office space and where its programs were taught in the fall 2012 semester. The Colleges are listed along the left, with the departments below the College. The 17 primary buildings that were used for instruction in fall 2012 are along the top of the chart. The shaded bars (brown rectangles) show the location of each College’s office storage and support space. The number inside each circle represents the total number of course meetings taught by each department during a typical fall week. Following the department line from left to right shows all the places courses were taught. Following a building from top to bottom shows what was taught.

Efficient use of instructional space often dictates that departments teach in several different buildings where appropriate space is available. However, widely scattered teaching locations for departments can affect scheduling. For example, it may take more time to transfer between classes if buildings are far apart. It also can hinder collaboration among students within the same department. Interview responses indicated that historical allocation of WCU space has not been policy-driven, and therefore may have resulted in less efficient space use. The University created a draft space policy, “Space Management and Assignment Policy,” in 1977, with updates in 1998 and 2010. WCU has never enacted the policy. If updated, enacted, and enforced, the Space Management and Assignment Policy could help WCU regulate space use on campus.
2. REPORTED SPACE NEEDS

Interviews and Workshops

The team conducted meetings with administrators, deans and department heads to learn about university-wide, college, and department space needs. Below is a list of preliminary questions to trigger discussion and facilitate conversation. The interviews were not limited to these topics.

1. How are enrollments in existing programs and courses anticipated to change over the next five to 10 years?

2. Describe any innovative institutional or departmental changes that will affect space usage or needs in your area. Include course revisions that change mode of instruction, such as the addition of labs or specialized instructional/study space, or the migration to on-line or hybrid course delivery.

3. How could current program and/or department adjacencies be improved to support interdisciplinary collaboration? What departments or divisions do you currently collaborate with or wish to collaborate with in the future?

4. What is the ideal class size for your area and why?

5. Are there current technological challenges that limit your ability to teach the way you would prefer (e.g., collaborative or experiential modes of teaching)? If so, where? How will technology impact your future instructional space needs?

6. What percent of your undergraduate and graduate students participate in research? Will that change in the future?

7. What is your division’s policy for providing office space for full-time, part-time and adjunct faculty? Are there facilities issues associated with your office and support space? Identify any full- and part-time individuals in your area who do not have adequate or appropriate office space. Identify any surplus space that could be put to better use.

8. Identify, in your estimation, college-wide space needs and issues. From your perspective, what are the most pressing facilities issues?

From the team’s initial RFP response:

The process will start to build constituent ownership in the plan by giving the campus community an opportunity for input. Through these meetings, themes will start to develop as planning drivers which will then inform the analysis.

Across all interviews, surveys, and workshops, the following key points were repeated by nearly every group:

- Many Schools and Colleges felt their space lacks identity and that students and faculty do not have appropriate space to interact and collaborate.
- Research space (quality and quantity) must be improved if WCU intends to increase funded research.
- Full-time faculty office space is generally adequate but disparate locations do not contribute positively to collaboration and collegiality. There is not a sufficient amount of office space for adjunct faculty in many programs.
- Interdisciplinary project-based learning would be more common if space was available.
- The University needs a centralized testing center for proctored exams, especially for Blackboard tests. It could be used for GMAT and other tests, and could be a source of revenue.
- The physical conditions within many older buildings detract from the quality of a WCU education. These conditions include poorly functioning building systems, outdated or worn finishes, and inappropriate furnishings.
- There is wide recognition (by non-science disciplines) that additional/ upgraded science labs are needed.
- There is great affection for Moore Hall, Breese Gymnasium, and the
historic Upper Campus. People want to retain this important part of WCU’s heritage.

- Some programs and colleges already feel “maxed out;” there is concern for how WCU will accommodate additional enrollment growth without more physical and financial resources.

- The Faculty Commons would get better utilization if it were more centrally located.

- The Admissions office does not deliver a positive first impression of WCU due to its location, look, and lack of amenities.

- Classrooms (and some labs) are generally too small for section sizes and flexible teaching/learning, especially with need to accommodate larger course section sizes as enrollment increases. Eleven department heads responded that they would offer larger course sections if larger classrooms were available.

- Faculty members asked specifically for modern instruction and communication technology, updated lighting, and acoustical upgrades. A pedagogy and technology survey conducted by the Sextant Group revealed that 80 percent of WCU faculty respondents said that the design of learning spaces informs their pedagogical choices.

- One of the most valued qualities in teaching space is its proximity to departmental offices and shared resources.

- Instructors appreciate windows in the classrooms, but daylight control is necessary.

- The Millennial Campus is an opportunity for public/private investment, but there are challenges such as funding, regulations, and limitations on how revenue from Millennial Campus can be spent. In addition, it will be a challenge to integrate it with the rest of the campus.

In addition to the general points above, each group expressed its own unique needs.
Master Plan Steering Committee
The successful space plan will:

- Be mission-driven, focused on the strategic plan
- Inform how the University makes space planning decisions in the future
- Foster engagement from students, faculty, alumni, and community
- Be transparent (process) and easily understood
- Promote investment in existing infrastructure and enhance the heritage and character of the campus

Key perceived space needs:
- New and updated science labs
- Multimodal learning spaces (traditional, online, experiential, peer-to-peer, etc.)
- Instructional technology updates
- Better departmental connection and collaboration
- Efficient scheduling
- Sustainability, investing in existing infrastructure and improving efficiency
- Community connection
- Logical management of space assignment and use

Space Management Committee
- General classrooms need to be right-sized and flexible.
- Larger classrooms (45-60 seats) are needed.
- There is heavy Tuesday/Thursday scheduling due to lack of funding for adjunct faculty.
- Scheduling standards are not enforced.
- WCU is ready for some pedagogical change to embrace new technology, but the Committee warned the planning team not to be “too trendy.”
- When a classroom gets special features, such as enhancements due to a grant award, the department wants to “own” that room.
- Sections are getting larger because of limited funding for faculty.

Building Needs and Space Task Force
- Space quality and location – not quantity – should be the focus.
- Science labs are needed, space use is unstructured, and scheduling needs improvement.
- The Admissions office is too remote.
- Outreach is hindered by existing spaces. For example, local high school classes cannot visit science labs because there is not an appropriate space to accommodate groups.
- Most previous investment has focused on academics, at the expense of infrastructure and site.

Student Forum
The best statement to summarize the Forum was, “Grow, but don’t lose the uniqueness of this place.”

Students’ favorite places on campus:
- Fountain
- Intramural fields (Frisbee)
- Grassy knoll behind Norton
- University Center Starbucks
- Pool
- Buchanan residence hall
- Cat’s Den in Brown

Students listed the following space needs:
- Study areas (quiet study and group work) distributed throughout buildings
- Food service at Cullowhee West Campus and upper campus
- Places for social interaction and fun (not Greek)

Chancellor’s Meeting
The Chancellor reiterated common themes such as campus heritage, sustainability, instructional technology, infrastructure needs, and
community access.
In addition:
• Some existing instructional space (like Belk) is poorly suited for modern pedagogy.
• Instructional space is designed for small class sizes, but that needs to change.
• Challenges to growth include accommodating increased demand for housing, recreation, dining, and additional faculty.
• An “innovation center” could help with engagement and collaboration, but these activities also need space throughout campus.

Provost’s Meeting
The Provost reiterated common themes such as pedagogical mismatch with instruction space, need for science labs, and need for flexible and varied instructional spaces. The Provost’s office is trying to make strategic decisions about which class types need to stay small to maintain WCU’s unique liberal arts culture.
In addition:
• Faculty need better informal space for their own social events.
• R2S scheduling software lets favorite classrooms get booked selectively, leading to imbalance in scheduling.
• There should be more (and better) research space for undergraduates and graduates.
• Collaborative research space is needed for STEM disciplines.
• Study spaces need to be updated.
• International engaged learning is a priority; educators worldwide collaborate on teaching and learning.

Graduate School and Research
• The Graduate School is trying to promote a culture of research at WCU.
• The current location in Cordelia Camp is not ideal. It is too remote and does not attract faculty.
• The School would prefer a higher traffic area for their office so that they could build interest from undergraduates.
• The School needs professional-looking, up-to-date offices and meeting spaces.

Honors College
• Space constraints inhibit growth and programs.
• Honors students need project space for activities after hours (when Honors College office space is closed).

Hunter Library
• Students need a variety of types and locations of study space, both in the library and throughout campus.
• Students need easy access to technology and enhanced connectivity.
• The library building needs better staff space and back-of-house work areas.
• The library could reduce shelving space by culling its collection and using compact shelving.
• Library staff suggest creating a separate print shop “outlet” in the library.

College of Education and Allied Professions
The College uses space in four campus buildings. The faculty reiterated the need for larger classrooms and flexible furnishings. In addition, they mentioned need for data and power access for students’ mobile devices.
Building specific challenges:
• Killian has poor thermal controls, and mechanical equipment noise is disruptive.
• Student and faculty access to Killian before and after regular hours is difficult but necessary.
• Reid is used heavily by the College, but the spaces are not coded for
Reid is in poor condition overall. In addition, it is not accessible (no elevator, needs hardware updates, etc.).

**College of Fine and Performing Arts**

- The College is spread out all over campus, making it difficult to coordinate productions and events.
- Stage and Screen is most scattered, using spaces in the Fine and Performing Arts Center (FPAC), Hoey Auditorium, Breese, and Niggli Theater.
- Music instruction takes place primarily in Coulter. The space is outdated and has poor acoustical properties. Thermal and moisture controls are also poor in Coulter.
- Art and Design space is in Belk and FPAC. FPAC has HVAC issues in studios. Outdoor covered space is needed for projects.

**College of Arts and Sciences**

**Natural Science Department**

- The department expressed a need for more labs and large lecture space, since Niggli Theater is not always available.
- Science programs are expected to grow, but lab space is already at capacity.
- The department finds it difficult to attract sponsored research with current space and equipment.
- Mechanical vibration from HVAC equipment is disruptive in both the Natural Sciences Building and Stillwell.

**Math and Computer Science Department**

- Currently, the department has no space to call home.
- The Department would like an “Emporium” for lower level math courses (75-90 seats) and a dedicated computer lab.

**English Department**

- The department has no identity, no home.

**Modern Foreign Languages Department**

- This department prefers smaller classes; it is part of their culture.
- The department requested more seminar-style class arrangements.
- Acoustics in Coulter are poor. Noise from HVAC equipment and from the School of Music is disruptive.

**Philosophy and Religion Department**

- This department prefers smaller classes; it is part of their culture.
- This department has concerns similar to others: HVAC noise, inability to control acoustics and lighting, need for flexible classrooms, and a need for better instructional technology.
- The department wants bigger classrooms to respond to preferred pedagogies, not increased enrollment. Classes are capped at 35.
- Students need a place to informally interact with each other.

**Communications Department**

- The department would like a permanent lab for publications, journalism, and broadcasting.
- They like the space they use in the Center for Applied Technology (CAT).

**Political Science and Public Affairs Department**

- This department has concerns similar to others: HVAC noise, inability to control acoustics and lighting, need for flexible classrooms, and a need for better instructional technology.
- They like the space they use in Stillwell 360, the Public Policy Institute.

**History Department**

- This department has concerns similar to others: HVAC noise, inability to control acoustics and lighting, need for flexible classrooms, and a need for better instructional technology.
- This department uses Niggli and Bardo for instruction; they would make use of a space dedicated to lecture instruction.
Anthropology and Sociology Department
- This department has concerns similar to others: HVAC noise, inability to control acoustics and lighting, need for flexible classrooms, and a need for better instructional technology.
- This department requested space (indoors and outdoors) on the Millennial Campus for its Forensic Anthropology decomposition facility.
- Cherokee Studies requested a unified space with its own identity. Tsalagi Institute needs classroom space and offices for researchers.

College of Health and Human Sciences
New HHS Building
- The College suggests that some graduate programs and adult learner programs could move entirely to the Asheville Campus.
- The College reports that the new building is already at capacity.
- Because of course meeting sizes, some classes cannot be offered in the new building.
- Allied Health programs (Psychology, Counseling, and Special Education) would have good synergies if located on the Millennial Campus.
- Enrollment in Nursing is constrained by clinical slots, not physical space on campus.

Criminology Department (recently moved to College of Health and Human Sciences from College of Arts and Sciences)
- The department has class sizes that are bigger than other departments, generally over 50 students with some over 100 students.
- The department has no identity, no home. The students need a place to informally interact with each other.
- Department offices are spread out on three floors of Belk, which inhibits productivity and collaboration.
- Lab space needs to be updated.

College of Business
- Video conferencing space is needed for faculty.
- The College uses round tables that seat five students for many class types.
- The College needs a place for students to informally interact. The current space has no identity.
- The College reports a need for more large classrooms (50-70 students).
- Faculty and students need collaboration space, such as small group study rooms or small conference rooms.
- This College is very active in Distance Learning and needs up-to-date facilities.

Kimmel School
- The School reports that it doubled enrollment in the last few years and is growing faster than the University.
- They engage in 15 to 20 projects per year that promote project-based learning, such as applied research and product development.
- The School would like to expand research offerings to attract graduate students.
- They need flexible research space for confidential projects.
- Lower-level courses need larger class labs.

Athletics and Recreation (only space-use concerns are listed here)
- Reid Gym, Reid Pool (used by the community), and intramural fields are not accessible. Intramural fields do not have toilet facilities.
- Reid has some areas in poor condition. Its schedule is governed by academics so recreation scheduling is challenging.
- Ramsey is both an athletic facility and a regional activity center, so space is well utilized.
- Athletics facilities at Camp Lab are in poor condition.

Residence Hall and Food Services
- Central storage and office space is needed for residence hall service.
- Scott Hall needs renovation.
- Upper campus residence halls need food service.
- The University would like to add 400 to 600 beds, for an overall target around 4,500 beds.
3. INSTRUCTIONAL SPACE UTILIZATION STUDY

The efficient and effective use of instructional space is critical for any institution. As funding for capital expenditures is reduced, space shortages evolve. When the need for new types of space develops, it becomes even more important for universities to focus on the efficient use of their current resources. Therefore, a utilization study of classrooms and teaching labs was conducted as a part of the Master Plan process.

Classroom and teaching lab designations were provided by WCU. In general, a classroom is defined as a room used for classes that is not limited to a specific subject or discipline by equipment in the room or the configuration of the space. Such rooms include classrooms equipped with computer workstations, as long as the computer software is not dedicated to a single academic discipline.

A teaching lab is a room primarily used for scheduled classes for which special purpose equipment or a specific room configuration is required for student participation, experimentation, observation, or practice in an academic discipline. Included in this category are science laboratories, group studios, band rooms, instructional health laboratories, nursing laboratories, and research laboratories. Computer rooms used primarily to instruct students in the use of computers are classified as teaching labs if that instruction is conducted primarily in formally or regularly scheduled classes.

Resident courses on the Cullowhee and Cullowhee West Campus from the fall 2012 semester were included in the analysis. These courses took place during the study week in 161 classrooms and 185 teaching labs.

The course scheduling and space data provided by the College contained information on the name of the course, course location, meeting days and times, number of students enrolled in the course, number of available student seats in each room, area of the room, and space type classification, i.e., classroom or teaching lab. Courses that ran for the entire fall 2012 semester were included. Eleven courses took place for only a portion of the semester. Because they represent such a small percentage of the 2,343 total courses offered, they were not included in the analysis.

Changing space needs

Past: Chalk-and talk Lecture: Tablet arm chairs and lecture format only required station sizes of 15-18 ASF per student station.

Present: Multimedia/Multifunction: Light, mobile tables reconfigure for all kinds of classwork and instruction. Students need table space for both textbooks and mobile devices. In addition, students’ bodies are larger than they were in the 1960s when most space standards were developed. Current recommended station sizes are 20-24 ASF per student station in classrooms.

Future: Flexibility (in size, arrangement, and furnishings) and increased capacity for technology. With collaborative teaching and inventive methods, more space is required.
**Instructional Space Capacity and Use**

The following summary provides an overview of the distribution, capacity, and use patterns for instruction spaces.

Figures 11 and 12 group the 161 classrooms and 185 teaching labs by room capacity in the primary academic buildings. The number of rooms in 10-station seat increments is listed along the top; buildings along the side. The average net square footage per station is displayed for each size category.

Cordelia Camp, H.F. Robinson Administration (HFRA), and residence halls were not included in this list since very few course meetings occurred in these buildings.

The table shows that Belk had three classrooms that have 21 to 30 stations in use, but the average net square feet (NSF) per station was 17. This amount of square footage is well below the recommended amount of space per station for engaged, interactive learning. Generally, 22 to 24 square feet per station is needed for today’s teaching and learning environment. In larger capacity classrooms, such as lecture halls with fixed seating, the average NSF/station is typically smaller.

Below the “grand total” line, the gray bar lists the percentage of course meetings that take place in rooms of a listed seating capacity. 24.4 percent of course meetings in classrooms occur in spaces with 21 to 30 stations. Small course meetings are important – both pedagogically and culturally – in many of WCU’s colleges. However, 66.3 percent of course meetings take place in classrooms with 31 to 50 stations.

More than half of the course meetings that occurred in labs were in rooms sized for 21 to 30 students. This is typical of most instructional labs. On most campuses, 24 stations is the norm.

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**Appendix A, Page 18**
Figure 12 - Seating Capacity by Building - Class Labs

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| Percentage of Lab Meetings that occur in labs of this capacity: | 0.5% | 25.2% | 53.4% | 9.3% | 4.3% | 0.0% | 0.0% | 4.3% | 3.0% |

Leaning takes place everywhere. Students collaborate in the evening outside the UC Starbucks.
Target Criteria

There are three variables in the space utilization equation: the square footage per student station in each room; the percentage of available hours a room is scheduled; and the percentage of seats filled when a room is in use. A change in any one of these variables has an effect on the utilization of the space.

**Square Footage per Student Station** – The amount of space provided for each student workstation in an instruction space. The square footage per student station should be adequate for the student, the student’s possessions (books, bags, and coats), the instructor, and circulation.

**Room Utilization** – The number of hours an instruction space should be in use during an instructional week.

**Seat Occupancy** – The percentage of seats that should be filled in an instruction space when a course meeting is in session.

The target criteria in Figure 13 were used for this study to determine whether a room was being used efficiently.

The same three factors that influence efficient instruction space also affect the teaching and learning experience.

**Square Footage per Student Station** – Although a smaller area per station may be sufficient for lecture-style instruction, it is not appropriate for peer-to-peer learning or collaborative instruction. An area between 20 and 25 square feet per student station is more supportive of modern pedagogies.

**Room Utilization** – The number of hours a space is scheduled indicates whether there is a capacity to add or a need to reduce course meetings. However, the number of hours a space is scheduled is also affected by campus logistics. For example, the distance students and faculty must travel and campus topography are factors that affect how many course meetings can be scheduled in a day. In addition, factors such
Changing pedagogies

Large-scale instructional environments such as Scale-Up classrooms, combined with interactive teaching and peer-to-peer learning, have produced successful outcomes at NC State University, especially in engineering and other problem-solving programs.

“The primary goal of the Student-Centered Active Learning Environment for Undergraduate Programs (SCALE-UP) project is to establish a highly collaborative, hands-on, computer-rich, interactive learning environment for large-enrollment courses.”

NC State University
www.ncsu.edu/per/scaleup.html

Large-scale instructional technology, acoustics, lighting, and thermal comfort influence the popularity of a space. Popular classrooms are often very well utilized.

Seat Occupancy – The seating occupancy of a space, combined with the square footage per student station, can have a big impact on students’ experience in a space. For example, if a classroom has 30 stations at 18 square feet each, and 25 stations are occupied, then the room will feel crowded with students’ book bags and coats.

These factors are also the components of the institutional space factor. The North Carolina target classroom space factor of 0.79 is difficult to achieve and does not reflect the space requirements for interactive learning. None of WCU’s peer Universities achieved this space factor in 2011 or 2012.5 For classrooms at WCU, a space factor of 1.04 was achieved in 2011 when scheduling software was in full use. This space factor is reasonable to use going forward because it assumes 22 square feet per station, hourly utilization rate of 75 percent (30 hours a week) and seat fill of 70 percent. Twenty-two square feet per station is appropriate for today’s learning environment and will support more interactive and collaborative learning.

Differing space factors can affect space projections (Figure 14). For example, if WCU was held to the North Carolina space factor of 0.79, calculations would yield a classroom surplus of around 7,000 NASF (Figure 14). The higher nationally accepted guideline yields a substantial classroom deficit of about 38,000 NASF. The space factor achieved by WCU in 2011 (1.04) yields about a 28,000 NASF deficit of classroom space compared to the 2013 Space Need.

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4 The space factor is square footage (ASF) divided by the product of room utilization (hours of use) and seat occupancy (students). It can be used to evaluate individual spaces, spaces by type, or whole campuses.
5 University of North Carolina Facilities Inventory and Utilization Study, 2011 and 2012.
Figure 15 shows how WCU’s actual classroom space factor compares to its North Carolina peers. WCU falls below the average, which is good because it suggests efficiency. When the space projections for WCU were prepared, the 2012 data had not been released. The 2011 space factor was used for this report. Since the Health Science Building became active during the 2012-2013 academic year, it is expected that the WCU space factor would increase over the previous year because the building is not yet operating at capacity.

Hourly Utilization of Instruction Space

The following pie charts (Figures 16 - 25) display instructional space hourly utilization by building for the study week in the fall 2012 semester.

- The charts on the left are for classrooms. The dashed line for classrooms shows the North Carolina room use target of 88 percent, or 35 hours out of a 40 hour week, which is the most stringent of the targets. The nationally accepted guideline is less at 67.5 percent, or 27 hours per week. For WCU a target of 75.5 percent, or 30 hours per week, was used. This held WCU at the same hourly use the University achieved in 2011.

- The charts on the right are for teaching labs. For teaching labs the North Carolina room use target is 50 percent, or 20 hours out of a 40 hour week. The national target is 60 percent. Hourly utilization targets are lower for teaching labs than for classrooms because students need access to labs after hours for experiments and practice. In addition, faculty need time between classes for setting up and taking down experiments.

Buildings that showed classroom hourly utilization near targets were Reid, Forsyth, Killian, and McKee. Stillwell was well above the targets, indicating that it is used for more hours per week than any other building on campus. Belk and Natural Science showed the poorest utilization of classrooms. The pie charts for the Health and Human Sciences Building (HHSB) indicate that there is plenty of additional hourly capacity, as would be expected in a new building.

Class lab utilization for most buildings was well under the targets. The exceptions were Natural Science, Coulter, and Stillwell; all three showed hourly utilization near or above targets. The departments using those spaces were primarily Biology, Chemistry & Physics, and School of Music, indicating a possible need for additional lab space.
All colleges used Belk for instruction. There were 19 classrooms and 22 class labs utilized in fall 2012. Both classrooms and class labs fell well below the hourly utilization targets.
Natural Science used three classrooms and 14 class labs. It had less varied departmental use, as expected. It was mostly utilized by Biology and Chemistry & Physics. Classrooms fell short of the targets but class labs came close, which confirmed what was reported during programming interviews - more science lab space is needed.

In Reid, eight classrooms and 13 teaching labs were used for instruction in the fall 2012 study week. Classrooms fell of short of the North Carolina target but were very close to the more reasonable national target.
Coulter had 16 classrooms and seven class labs utilized. Classrooms were primarily utilized by English and fell short of the targets. Class labs, which included ensemble rooms, etc., were used primarily by School of Music and appear to be utilized very well.

Forsyth had 18 classrooms and only two spaces classified as class labs. Class labs showed poor hourly utilization but classrooms appear to be utilized fairly well - close to the national guideline.
In HHSB, 17 classrooms and 22 class labs were in use. The charts indicate that there is plenty of additional hourly capacity in classrooms and teaching labs, as would be expected from a new building.

Killian had 20 classrooms in use with many departments utilizing them fairly well. There was only one class lab in use and it fell well below the hourly utilization target.
McKee had 24 classrooms and no class labs utilized in the fall 2012 study week. Similar to Killian, there were many departments utilizing the spaces and hourly utilization was fairly high.

Stillwell had 17 classrooms and 36 class labs in use. It is the most highly utilized building on campus with many departments using the spaces. This shows that it is being scheduled above capacity. It is actually above both the national guideline and WCU’s target for hourly utilization for classrooms. Teaching labs are also highly scheduled.
Seat Fill of Instruction Space

The following two tables (Figure 26 and Figure 27) illustrate the degree to which class size correlated to room size. Green highlighting indicates the number of course meetings where the class enrollment was appropriate for the room size, meaning there was a good match between the number of students enrolled and the seating capacity of the room in which the course was scheduled. Light green highlighting indicates the number of course meetings that were scheduled in rooms that were marginally larger than the class enrollment but within an appropriate range. Red cells show the number of course meetings that occurred in rooms that were significantly larger or smaller than the enrollment.

Of the 2,285 scheduled course meetings (courses that ran the full semester) in classrooms in which seat data was available, 69 percent of the courses were scheduled in classrooms appropriate for the enrollment or within an appropriate size. A total of 31 percent of classes were scheduled in rooms that were significantly larger or smaller than class enrollment. Of the 740 course meetings held in class labs in which seat data was available, 71 percent of the course meetings were scheduled in rooms that were appropriate for the enrollment or within an appropriate range. Only 29 percent were held in rooms that were significantly larger or smaller than the class size.

Figures 26 illustrates how the weekly course meetings fit into the instruction spaces during the study week. In fall 2012, 161 classrooms were used. By examining the 31 to 40 seat category for classrooms, the following conclusions can be drawn:

- Only eight course meetings were held in rooms that were too small and 51 were held in rooms that were much too big, totaling only nine percent.

In fact, Figure 26 displays that there were far more courses held in rooms that were too big than were held in rooms that were too small. The analysis of course meetings in class labs (Figure 27) showed that 86 (or 25 percent) of the 344 course meetings with 11 to 20 students were held in labs that were too big.

This suggests that there is adequate capacity with WCU’s current classroom and class lab inventory to accommodate increased enrollment through larger section sizes and/or resizing of instruction spaces. A variety of classroom sizes and configurations will help meet the needs of different enrollments, instructional technologies, teaching methods, and learning methods.
### Figure 26 - Classroom Seating Capacity

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<th>21 to 30</th>
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<th>41 to 50</th>
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<th>61 to 70</th>
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### Figure 27 - Teaching Lab Seating Capacity

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Need for Larger Classrooms

During programming interviews, a number of department heads reported a need for large instructional spaces. The charts that follow show the number of course meetings offered by department in each size category by 10-student increments.

The data show that 61 percent of WCU’s course offerings in classrooms continue to enroll 21 to 40 students. Teaching lab offerings in the 11 to 20 student range make up nearly half of WCU’s total (Figures 28 and 29).

Eleven department heads indicated that they would increase course meeting sizes if they had access to larger classrooms. The list below indicates the results of the interview question, “If you had access to larger classrooms, how many larger course sections would you offer now?” The numbers in parentheses indicate the number of course meetings held by each department that had enrollment of more than 40 students during the study week. This may suggest that WCU could make efficient use of larger classrooms if they were available.

Would offer SOME larger course meetings:
- Anthropology and Sociology (6)
- Political Science and Public Affairs (4)
- Accounting, Finance, Information Systems, and Economics (51)
- Construction Management (2)

Would offer MANY larger course meetings:
- Criminology and Criminal Justice (41)
- Chemistry and Physics (40)
- Business Administration and Law and Sport Management (36)
- Global Management and Strategy (-)
- Psychology (63)
- School of Health Sciences (33)
- Engineering and Technology (20)
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Practical application of data, an examination of Forsyth 329

Task Force Guiding Question:
How can classroom utilization be improved? How will changes in instructional technology affect this utilization and prioritization process?

Figures 30 and 31 illustrate how seat fill and hourly utilization apply to an individual space using the fall 2012 course schedule.

- Forsyth 329 has a capacity of 63 students and seat fill average of 43 students in fall 2012. This represents 68 percent seat fill. The North Carolina target is 65 percent; a seat fill rate of 37 to 47 students would fall within an acceptable range of this target.

- Forsyth 329 was scheduled for 23.3 hours during the study week. However, the national target is 27 hours and the North Carolina target is 35 hours. Used at its target efficiency, 47 seats would be occupied and the room would be in use 35 hours per week.

Forsyth 329 is adequately filled or above its target for seven of 10 courses. There is time available for more course meetings to relieve crowding in its most highly filled sections. If the three largest sections were split in two, the new sections would add 5.83 hours to the weekly hourly utilization for a total of 29.1 hours, which is between the national standard and the North Carolina target. The six class sections would all be low in seat fill, but there would be capacity to increase enrollment by about 20 students in each section, or 120 students total. Used at North Carolina target rates for all course sections, Forsyth 329 could accommodate 200 additional students per week. This type of schedule fine-tuning will help WCU continue to grow in FTE while campus improvements are taking place.
Scheduling Practices

Modern scheduling tools, like R25, incorporate room characteristics and time to determine which space is the best match for a class. R25 is in use at WCU and it reveals how instructors’ preferences influence room utilization. Newer, larger, better-equipped classrooms have full seats and full schedules. Classrooms with few upgrades are under-filled and under-scheduled. Tuesdays and Thursdays have more hours scheduled than any other weekday (Figure 32). Classes offered in a Tuesday/Thursday combination are typically 1.25 hours/meeting at WCU, while Monday/Wednesday/Friday classes are typically 0.83 hours/meeting. Of 2,477 weekly class meetings in fall 2012, 205 classes met in the evening (starting after 5PM).

Figure 33 shows that the current space coded for instruction is about 176,000 SF. In 2023, the space need for room use codes 100 and 200 will be 239,253 SF, suggesting a need for an additional 63,203 SF. However, this does not account for the fact that instruction for certain courses take place in space coded for other uses, such as theaters and gymnasiums. This is expected and necessary. However, WCU also used open laboratories, conference rooms, and demonstration spaces for scheduled instruction. In addition, some lecture halls were coded for assembly, when they actually function primarily as instruction spaces. Since instructional space projections are based on credit hours generated, independent of where these hours occur, instruction that took place in open laboratories, conference rooms, and demonstration spaces for instruction is accounted for in the projections.
Western Carolina University is planning for growth of 37 percent in face-to-face students by 2023. In fall 2012 the University had 8,841 face-to-face full time equivalent students (FTE). In 2023, WCU expects 12,086 FTE.

The University created a Program Prioritization Task Force to address the challenge of 2020 Vision Strategic Direction 1: To serve the educational needs of its students, state, and region. In June 2013, the Task Force issued the Program Prioritization Task Force Final Report.

The Report and enrollment history from 2007-2012 were applied to the 37 percent growth appropriately across all departments. The following adjusted percentages were applied to the slow-, average-, and fast-growth programs between 2012 and 2023:

- Slow Growth Programs: 25 percent
- Average Growth Programs: 37 percent
- Fast Growth Programs: 41 percent

The result shows that the College of Arts and Sciences will contribute 42 percent of the entire campus FTE growth 2012-2023 (Figure 34).

<table>
<thead>
<tr>
<th>College</th>
<th>Projected FTE Growth 2012-2023</th>
<th>Percent of total FTE growth</th>
</tr>
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<tbody>
<tr>
<td>College of Arts and Sciences</td>
<td>1,490</td>
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<tr>
<td>College of Health and Human Sciences</td>
<td>418</td>
<td>13%</td>
</tr>
<tr>
<td>College of Education and Allied Professions</td>
<td>491</td>
<td>15%</td>
</tr>
<tr>
<td>College of Business</td>
<td>449</td>
<td>14%</td>
</tr>
<tr>
<td>College of Fine and Performing Art</td>
<td>308</td>
<td>9%</td>
</tr>
<tr>
<td>The Kimmel School</td>
<td>89</td>
<td>3%</td>
</tr>
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</table>

Note: Program growth projections based on Program Prioritization Task Force Final Report (June, 2013) and meeting with WCU Interim Provost.
5. SPACE PROJECTIONS

The analysis of current and projected space needs for Western Carolina University (2012 through 2023) is based on North Carolina space guidelines unless otherwise noted. Spaces are categorized according to Higher Education General Information Survey (HEGIS) categories.

Space Projection Data Assumptions

- Projections were organized by space use code from the Physical Space Inventory (PSI).
- Projections were broken down by College and Department for teaching labs, research space, and offices.
- Existing area (NASF) and space use code (HEGIS) for 2012/2013 came from the PSI.

Classrooms (HEGIS category 100)

Classroom space (110) is defined as a room or space used primarily for instruction that is not tied to a specific subject or discipline by equipment in the room or the configuration of the space. This includes rooms or spaces generally used for scheduled instruction that require no special, restrictive equipment or configuration. These spaces may be called lecture rooms, lecture-demonstration rooms, seminar rooms, and general purpose classrooms. Included are service rooms (115), space that directly serves one or more classrooms as an extension of the activities in that space. Spaces may include rooms such as projection rooms, cloakrooms, preparation rooms, closets and storage.

- WCU will need just over 21,000 NASF of additional classroom space for 2023, including service space.

Laboratories (HEGIS category 200)

Laboratory facilities can be subdivided into three categories: class, open, and research/nonclass laboratory. A class lab is used for scheduled instruction. An open lab supports instruction but is not formally scheduled. A research/nonclass lab is used for research, experimentation, observation, research training, or structured creative activity that supports an extension of a field of knowledge.

Each category includes service rooms, space that directly serves one or more class laboratories as an extension of the activities in that space. Spaces may include rooms such as projection rooms, coat rooms, preparation rooms, material storage, dark rooms, closets, etc. Not included are animal facilities, greenhouses, or central services.

- The overall projection for the laboratories category (200) at WCU shows a deficit of over 80,000 NASF, or a need for 56 percent more laboratory space. The need for open labs (220) is a 75 percent increase over the existing space.

Class Laboratories (Teaching Labs - HEGIS category 210)

Class/Teaching Lab space is defined as a space used primarily for formally or regularly scheduled instruction that require special purpose equipment or a specific space configuration for student participation, experimentation, observation, or practices in an academic discipline.

- The projected need in this category is 44,854 additional NASF in 2023.

Open Labs (HEGIS category 220)

Open Lab space is defined as a laboratory used primarily for individual or group instruction that is informally scheduled, unscheduled, or open. An open lab is designed for or furnished with equipment that serves the needs of particular discipline or discipline group for individual or group instruction where use of the space is not formally or regularly scheduled, or access is limited to specific groups of students. Included in this category are spaces generally called music practice rooms, language laboratories used for individualized instruction, studios for individualized instruction, special or learning laboratories if discipline restrictive, and computer laboratories involving specialized restrictive software.
or where access is limited to specific categories of students.

• WCU will need 31,203 additional NASF in category 220 in 2023.

Research Laboratories (HEGIS category 250)
Research/nonclass lab space is defined as a space used for laboratory experimentation, research, or training in research methods; professional research and observation; or structured creative activity within a specific program or for sponsored research. A research/nonclass lab is designed or equipped for faculty, staff, and students for the conduct of research and controlled or structured creative activities. These activities are generally confined to faculty, staff, and assigned graduate students and are applicable to any academic discipline.

• The Strategic Plan calls for a 50 percent increase in research at WCU. In 2011, the University engaged in roughly $6 million in research. A 50 percent increase would yield $9 million in research. The existing 36,000 NASF coded for research is adequate to accommodate the University’s current research according to CEFPI guidelines. However, considering the strategic goal, WCU will need 5,000 additional NASF in category 250 in 2023 is recommended.

Offices (HEGIS category 300)
Office space (310) is defined as a space housing faculty, staff, or students working at one or more desks, tables, or workstations. Included are faculty, administrative, clerical, graduate and teaching assistant, and student offices. Office service space (315) directly serves an office or group of offices as an extension of the activities in those spaces. This category includes all offices (administrations and academic/faculty).

• With a surplus of over 10,000 NASF in this category, there appears to be more than enough space to carry WCU forward to 2023. The North Carolina standards are very generous. The national trend is toward less space per person, so WCU’s actual need is likely even less. While the University as a whole has a surplus of office space, it is not true of every College. The College of Business, College of Education & Allied Professions, and College of Health & Human Sciences all show deficits in office space.

Study Space (HEGIS category 400)
Study Space is classified into five categories: study room (410), stack (420), open-stack study room (430), processing room (440), and study service (455). Offices used for library activities are coded as office facilities. A study space may contain equipment or materials that aid the study or learning process and that do not restrict the space to a particular academic discipline or discipline group. Study service space is defined as a space that directly serves study spaces, stacks, open-stack study spaces, or processing rooms as a direct extension of the activities in those spaces.

• Study space and related service is also showing a substantial deficit in 2023 of 22,864 NASF, which supports the notion of creating study/collaborative space outside the library closer to students’ areas of study.

• To advance the strategic goal of student engagement, a portion of that 22,864 NASF should be study space that is directly associated with academic departments. For every FTE student in a department, 0.5 NASF was allocated. For small departments, a 150 NASF minimum was used. It is expected that complementary departments will co-locate study space to enhance collaboration. Overall, the space reserved for distributed study space is just under 6,500 NASF (Figure 36).

Special Use Facilities (HEGIS category 500)
This category includes several space use categories that are sufficiently specialized in their primary activity or function to merit a unique space code. Although many of these special use facilities provide service
to other areas, their special use or configuration dictates that these areas not be coded as service spaces. Included in this category are Athletic or Physical Education (520), Media Production (530), Clinic (540), Demonstration (550), Animal Facilities (570), Greenhouse (580), and Other/All Purpose (590), as well as associated service space. Athletics is showing a surplus of space, but this is a category that is typically driven by specific athletic programs and individual campus needs, not FTE calculations. Therefore, reducing existing area would not be suggested. In fact, based on the emerging Athletics Strategic Plan, more space may be necessary to respond to particular programmatic needs.

General Use (HEGIS category 600)

General Use Facilities are characterized by a broader availability to faculty, students, staff, or the public than are Special Use Facilities, which are typically limited to a small group or special population. General Use Facilities comprise a campus general service or functional support system for the institutional and participant community populations. Included in this category are Assembly (610), Exhibition (620), Food Facility (630), Day Care/Child Care (640), Lounge (650), Merchandising (660), Recreation (670), and Meeting Room (680), as well as service space, defined as a room or area that directly serves the space as an extension of the activities in that facility, for each.

- The results support the reported need for a dining facility, which is already evident on upper campus, where students require a place to eat and gather near their residence halls.

Support Facilities (HEGIS category 700)

Support Facilities, which provide centralized space for various auxiliary support systems and services of a campus, help keep all institutional programs and activities operational. While not as directly accessible to institutional and community members as General Use Facilities, these areas provide a continuous, indirect support system to faculty, staff, students, and the public. Support facilities are centralized in

<table>
<thead>
<tr>
<th>Department</th>
<th>Dedicated Study Space</th>
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<tr>
<td>Accounting, Finance, Information Systems &amp; Economics</td>
<td>299 NASF</td>
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<tr>
<td>Anthropology &amp; Sociology</td>
<td>169 NASF</td>
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<td>Art and Design</td>
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<td>Biology</td>
<td>303 NASF</td>
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<tr>
<td>Business Administration/Law &amp; Sport Management</td>
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<td>Chemistry &amp; Physics</td>
<td>390 NASF</td>
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<td>Communication</td>
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<td>Communication Sciences &amp; Disorders</td>
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<td>Construction Management</td>
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<td>Criminology &amp; Criminal Justice</td>
<td>212 NASF</td>
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<td>English</td>
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<td>Entrepreneurship, Hospitality, Sales, Marketing</td>
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<td>Stage and Screen</td>
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that they typically serve an area ranging from an entire building or organizational unit to the entire campus. Included are centralized areas for Computer-based data processing and Telecommunications (710), Shop (720), Central Storage (730), Vehicle Storage (740), and Central Service (750), as well as associated service area.

• Central computer, shops and Service and Support could all use more space. The calculations suggest that a Public Safety facility (Police, EMT, etc.) and a centralized IT facility are justified. Central storage and vehicle storage is “ad hoc,” so projections are justified by individual campus needs, such as the reported need for appropriate space to store the items currently located in the basement of Brown (an inactive building).

Health Care Facilities (HEGIS category 800)

Health facilities provide space for patient care located in student infirmaries and teaching hospitals and clinics, and include patient rooms, treatment rooms, nurses’ stations, observation rooms, examination rooms and a variety of support facilities.

• WCU will need an additional 1,080 NASF of health care space in 2023.

Residential (HEGIS category 900)

Residential facilities include housing for students, faculty, staff, and visitors to the institution. There is a substantial need to accommodate higher enrollment.

• The current space allocation per bed at WCU is 162 ASF. Some campuses use as much as 225 ASF per bed, which reflects trends such as suite and apartment living. For future student housing at WCU, 200 ASF per bed is recommended, which includes student living quarters and associated support space.
Summary of Space Projections

Considering all surpluses and deficits in all space categories, it appears that WCU will need a total of approximately 284,000 (or about 15%) more NASF in 2023 to accommodate enrollment growth of 37 percent. However, theaters, gymnasiums, kitchens and other highly specified spaces are not easily converted to other space uses, so surpluses in those areas will not offset deficits in other areas, like class labs, residence halls, etc. The “True Variance,” shown in Figure 37 (left), reflects non-fungible surpluses in Special Use Facilities (500s) and General Use Spaces (600s). When considering the non-fungible space, the true variance is a deficit of close to 460,000 NASF.

Looking at the space necessary for academic departments in 2023 (faculty offices, classrooms, class labs, research space, and service/support space totaling approximately 135,000 NASF), it is apparent that Arts and Sciences, the largest contributor of FTEs, also has the largest space needs. Figure 39 shows the historical space distribution and credit hours generated by College (repeated from Figure 2) and the projected FTE growth and 2023 space need by College.

It is important to note that these projections reflect the quantity of space only, not the quality. In addition, the projected square footage needed in 2023 reflects net increases over what is currently in use on campus. The numbers do not reflect replacement of space that might be repurposed or demolished to enable projects in the Campus Master Plan.
There are several departments that have a projected space deficit of more than 10,000 NASF for 2023:

- School of Health Sciences – 33,817 NASF
- Chemistry & Physics – 27,853 NASF
- Biology – 23,244 NASF
- School of Teaching and Learning – 12,948 NASF

Four departments are projected to have modest to moderate space surpluses:

- Physical Therapy – 4,942 NASF
- School of Music – 1,295 NASF
- Communication Sciences & Disorders – 428 NASF
- School of Art & Design – 248 NASF

**Space Needs by College**

The following tables illustrate the projected 2023 lab space needs. Academic Administration space needs (2012 space, 2023 need, and variance) are summarized for each college in bullets. While the University as a whole has a surplus of office space in 2023, many Colleges have deficits of academic administration space. This indicates an opportunity for improving efficiency in the H.F. Robinson administration building and other non-academic offices.
College of Arts & Sciences

- This College is the largest generator of lab credit hours
- Biology and Chemistry and Physics drive the need for science lab space
- 53 percent of new College of Arts & Sciences teaching lab space (23,194 NASF) and 74 percent of all new College of Arts & Sciences space is needed by Biology and Chemistry and Physics
- The College of Arts & Sciences had 41,665 NASF of office space in 2012. In 2023, the College will need 40,770 NASF, so there is a theoretical surplus of 875 NASF. Office space needs and surpluses are often variable depending upon whether departmental offices are to be located in new space (which can be customized) or existing space (which might not be resized to meet the space program).

College of Business

- In the study week, there were no weekly student contact hours (WSCH) generated in class labs for the College of Business; therefore their projected lab space need is zero in 2023. The College may, indeed, need multipurpose instruction space from time to time. This type of space is accounted for in two factors. First, the classroom space factor is larger than the North Carolina target, which leaves space for multipurpose classrooms. Second, the study space allowance provides for a variety of group work spaces.
- The College of Business had 5,139 NASF of office space in 2012. In 2023, the College will need 11,550 NASF. There is a need for 6,411 NASF additional space in 2023.

### Table 1: College of Arts & Sciences Teaching Labs Space Projection

<table>
<thead>
<tr>
<th>Space Use Code</th>
<th>Space Name</th>
<th>Existing 2013 (Inventory)</th>
<th>Projected 2023 (Need)</th>
<th>Variance</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>College of Arts and Sciences</td>
<td>20,434</td>
<td>44,075</td>
<td>(23,641)</td>
<td>115.70%</td>
</tr>
<tr>
<td></td>
<td>Anthropology and Sociology</td>
<td>0</td>
<td>889</td>
<td>(889)</td>
<td>193.20%</td>
</tr>
<tr>
<td></td>
<td>Biology</td>
<td>6,696</td>
<td>19,630</td>
<td>(12,934)</td>
<td>106.90%</td>
</tr>
<tr>
<td></td>
<td>Chemistry and Physics</td>
<td>9,596</td>
<td>19,857</td>
<td>(10,261)</td>
<td>108.50%</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Criminology and Criminal Justice*</td>
<td>1,309</td>
<td>518</td>
<td>791</td>
<td>60.40%</td>
</tr>
<tr>
<td></td>
<td>English</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Geosciences and Natural Resources</td>
<td>2,833</td>
<td>2,758</td>
<td>79</td>
<td>2.60%</td>
</tr>
<tr>
<td></td>
<td>History</td>
<td>0</td>
<td>55</td>
<td>(55)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Mathematics and Computer Science</td>
<td>0</td>
<td>368</td>
<td>(368)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Modern Foreign Languages</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Philosophy and Religion</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Political Science and Public Affairs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Please note that Criminology and Criminal Justice was within A&S in fall 2012, but has since moved to the College of Health and Human Sciences.

### Table 2: College of Business Teaching Labs Space Projection

<table>
<thead>
<tr>
<th>Space Use Code</th>
<th>Space Name</th>
<th>Existing 2013 (Inventory)</th>
<th>Projected 2023 (Need)</th>
<th>Variance</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>College of Business</td>
<td>898</td>
<td>0</td>
<td>898</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Accounting, Finance, Information Systems, and Economics</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>898</td>
<td>0</td>
<td>898</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Hospitality &amp; Tourism</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Global Management and Strategy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
</tbody>
</table>
The College of Fine & Performing Arts had 21,961 NASF of office space in 2012. In 2023, the College will need 16,620 NASF. There is a need for 9,766 NASF additional space in 2023.

College of Education & Allied Professions

- The School of Teaching and Learning generated class lab credit hours in 2012 but did not do so in space coded as class lab (i.e., six physical education courses held in Reid gym, a 520-coded space), so this shows a projected need for class lab space that is not really necessary.

- The College of Education and Allied Professions had 10,694 NASF of office space in 2012. In 2023, the College will need 20,460 NASF.

College of Fine & Performing Arts

- With the College of Fine & Performing Arts, it is essential to consider 2023 space need independent of the space shifts that are part of the Master Plan concepts. The 2023 space need describes NASF over and above what the College used in 2012. It does not account for replacing spaces that may be demolished as part of the Plan implementation.

- While it appears that Music has a surplus of square footage in 2023, it is not recommended that Music Department space be reduced.

- Lab credit hour projections in the College of Fine & Performing Arts indicate a need for 7,417 NASF of additional lab space in 2023.

- Many of this College's lab instruction takes place in spaces not coded for instruction, such as Niggli Theater and Breese.

- The College of Fine & Performing Arts had 21,961 NASF of office space in 2012. In 2023, the College will need 16,620 NASF, so there is a theoretical surplus of 5,341 NASF.
College of Health & Human Sciences

- There is a 2023 need for an additional 25,400 NASF in class lab space in the School of Health & Human Sciences. Health Sciences-related programs are strong and are projected to grow in the next decade. Expansion of Cullowhee West Campus will help accommodate the need for additional lab space, and the departments that will maintain a presence on the Cullowhee Main Campus will see expansion of their lab space in the Academic Core.

- No WSCH were generated in class labs for Communication Sciences & Disorders or School of Nursing; therefore, their projected space need is zero. Based on the course schedule data the majority of courses for both departments were held in the new Health Sciences Building in spaces coded as classrooms, which could indicate a need to re-code some spaces.

- The College of Health & Human Sciences had 15,129 NASF of office space in 2012. In 2023, the College will need 22,210 NASF, resulting in a need for 7,081 NASF of additional office space in 2023.

Kimmel School of Construction Management & Technology

- The Kimmel School has fast growing programs and is predicted to grow at a faster rate than the University. Even using more aggressive growth projections, the School has more existing space than it is projected to need in 2023. However, additional flexible research space should be located near the Kimmel School so that, if they grow the amount of research and collaboration they do with other colleges, the space will be available for their use.

- The Kimmel School had 8,059 NASF of office space in 2012. In 2023, the School will need 5,410 NASF in offices. There is a theoretical surplus of 2,649 NASF in this category.
6. RESHUFFLING THE DECK

The WCU Campus Master Plan is a strategic design framework based on a set of data-derived space challenges. Following the analysis phase, the team departed from the numbers and embraced the 2020 Vision plan as the key tool for evaluating concept success.

The following broad-brush goals are the foundations of the academic and administrative projects in the master plan. Space plan recommendations are repeated when they support more than one strategic direction. Detailed space moves are described elsewhere in this report.

**Strategic Direction 1:**
**Fulfill the educational needs of our state and region**

**Space Plan Recommendations**
- Make a Science Quad composed of instructional spaces that offer real-world lab experiences for students.
- Create a formal Academic core that is home to most of the non-science and non-health science departments.
- Cluster Fine and Performing Arts schools near Bardo Fine and Performing Arts Center to form an Arts Destination or quad.
- Locate complementary departments near one another to make the best use of shared resources, large classrooms, and (where appropriate) specialized instruction spaces.
Strategic Direction 2: Enrich the total student experience

Space Plan Recommendations

• Create a Center for Student Engagement (CSE). The CSE should be considered a “crossroads” space where students and faculty come together. The CSE will be home to a variety of study and collaboration spaces and Active Learning Labs, open labs, faculty commons, writing and learning commons, and International Programs.

• Combine student services (One-Stop), health services, and information services in a central, easily accessible location.

• Locate complementary departments near one another to make the best use of shared resources, large classrooms, and (where appropriate) specialized instruction spaces.

• Make collaboration and study spaces (formal and informal) throughout campus, close to students’ areas of study.
Strategic Direction 3:
Enhance our external partnerships

Space Plan Recommendations

• Create a Center for Student Engagement (CSE). The CSE should be considered a “crossroads” space where students and faculty come together. The CSE will be home to a variety of study and collaboration spaces and Active Learning Labs, open labs, faculty commons, writing and learning commons, and International Programs.

Strategic Direction 5:
Invest in our core resources

Space Plan Recommendations

• Locate complementary departments near one another to make the best use of shared resources, large classrooms, and (where appropriate) specialized instruction spaces.
• Streamline space use of H. F. Robinson Administration building to make room for a new Admissions office.
• Prioritize modernization of existing buildings and campus infrastructure.