

Central Michigan University
Fiscal Year 2018 Capital Project Request
Recommended 5-Year Master Plan Components

I. University Vision Statement

Central Michigan University, an inclusive community of scholars, is a national leader in higher education, inspiring excellence and innovation.

– Adopted by the CMU Board of Trustees, December 6, 2012

Mission Statement

At Central Michigan University, we are a community committed to the pursuit of knowledge, wisdom, discovery and creativity. We provide student-centered education and foster personal and intellectual growth to prepare students for productive careers, meaningful lives and responsible citizenship in a global society.

– Adopted by the CMU Board of Trustees, December 2, 2010

Core Values

To achieve our mission, we adhere to the core values of integrity, respect, compassion, inclusiveness, social responsibility, excellence and innovation.

– Adopted by the CMU Board of Trustees, December 2, 2010

II. Instructional Programming

A. Existing Academic Programs and Projected Changes:

CMU has grown from a teachers' college founded in 1892 to being among just 5 percent of U.S. universities in the highest two Carnegie research classifications. CMU is the 91st largest of 4-year public institutions in America and offers more than 200 academic programs at the undergraduate, masters, specialist and doctoral levels. Its nationally acclaimed degrees include programs ranging from the health professions and biosciences to business and communications.

The proposed capital project would further the university's mission of addressing great need and would enhance CMU's ability to deliver several programs in the health care area. First and foremost is expansion of existing programs within The Herbert H. and Grace A. Dow College of Health Professions — programs that have reached maximum facility capacity and therefore no longer can grow despite significant demand. These are:

- Physician Assistant
- Doctor of Physical Therapy
- Audiology
- Communication Disorders
- Speech-Language Pathology
- Community Health Education
- Health Administration
- Athletic Training

More than 1,900 CMU students, including 1,556 on campus this fall are majoring in programs such as those cited above. About 22 percent of students admitted to CMU for the Fall 2016 new freshman class indicated an interest in health careers. Interest in a number of these majors has more than doubled in the past five years.

It should be noted that CMU graduates in the PT, PA, audiology, speech-language pathology, and athletic training programs have a nearly 100 percent, first-time pass rate on their national certification exams. Job placement in most programs is 100 percent, and students commonly receive multiple job offers.

During the next five and 10 years, CMU is confident of growth in a number of fields within The Herbert H. and Grace A. Dow College of Health Professions *if the proposed capital outlay project is approved and provides the required space.* These include:

1. Doctor of Physical Therapy — This current program could be expanded but is totally maxed out until further classroom and laboratory space is constructed. CMU offers a joint PT program with Michigan Technological University in Houghton, in an arrangement that could be expanded to other universities if space in Mount Pleasant allowed.
2. Physician Assistant — This existing master's level program is completely at capacity until larger spaces for classroom and laboratory activities are secured. The PA program also presents an opportunity to leverage distance-learning sites.
3. Master of Public Health — This program is newly developed and about to launch with 15 to 40 students per cohort. Once operating on campus, CMU will expand it to online offerings to meet the demand of more students and fill a greater need within the state and across the nation for expertly trained public health professionals.
4. Health Sciences — This major is in the conceptual stage; high demand at universities nationwide indicates a significant need for this program, with a focus that includes environmental health.

5. Communication Disorders — This current program could offer more non-major courses and more sections of the five prerequisite courses.
6. Health Administration — This major has experienced incredible enrollment growth in recent years and now is being offered online.

With additional space, CMU has other degree programs that could be created or expanded through the Center for Integrative Health Studies with tremendous results for students and the state. These would positively impact access to health care and our understanding of medical treatment, while modeling the academic integration that has been shown to be most transformative in delivering positive results. Such programs could be created only with the development of new class and laboratory facilities. They include:

- Biomedical Engineering. This specialized area within CMU's mechanical engineering program in the College of Science and Technology is linked to biomechanics. The understanding of the way human bodies work and the importance of structure on function make this an important cognate program in health professions.
- Health Information Management. Information systems management is an exciting, growing program in CMU's College of Business Administration. With the impetus of the Affordable Care Act, electronic medical records are rapidly expanding and evolving. CMU's goal is to train students to become leading professionals in the health care arena.
- Other possible programs include clinical laboratory sciences, occupational therapy and respiratory therapy.

Beyond health care, new programs in development at CMU — whether in preliminary discussion or in some stage of approval or implementation — include:

- Master of Engineering (newly offered)
- Master of Information Technology
- Applied Biostatistics
- Engineering Science
- Technology Management Concentration
- Applied Environmental Geoscience
- Computational Math
- Master in Applied Statistics and Analytics
- Medical Physics Minor
- Ph.D. in Earth and Ecosystem Science
- Ph.D. in Cellular-Molecular Biology/Biochemistry/Biomedical, a collaboration among biology, chemistry and the College of Medicine

These programs would be a mixture of on-campus and online programs and in some cases, have the potential for implementation in collaboration with other colleges and universities.

CMU's current degree listing is:

- Bachelor of Arts
- Bachelor of Applied Arts
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Engineering Technology
- Bachelor of Fine Arts
- Bachelor of Individualized Studies
- Bachelor of Science in Mechanical Engineering
- Bachelor of Music
- Bachelor of Music Education
- Bachelor of Science
- Bachelor of Science in Athletic Training
- Bachelor of Science in Business Administration
- Bachelor of Science in Computer Engineering
- Bachelor of Science in Education
- Bachelor of Social Work
- Master of Arts
- Master of Arts in Teaching
- Master of Business Administration
- Master of Health Administration
- Master of Music
- Master of Public Administration
- Master of Public Health
- Master of Science
- Master of Science in Administration
- Specialist in Education
- Specialist in Psychological Services
- Doctor of Audiology
- Doctor of Education
- Doctor of Educational Technology
- Doctor of Health Administration
- Doctor of Medicine
- Doctor of Philosophy
- Doctor of Physical Therapy

The university's academic planning process involves an analysis of the needs of students and demands of public and private sector employment markets. Thus,

the potential for new and/or revised academic programs reflects a continuous feedback cycle in the university's planning system.

- B. Unique Characteristics: Central Michigan University is classified as a doctoral university – higher research activity with degree programs that serve 26,080 on-campus and Global Campus students.

The mission of CMU relies heavily on community engagement, hence the predominance of professional doctorates. Indeed the use of education to serve the public is a hallmark of our university. Not only was CMU started to increase the number of professionally educated teachers, we also have the longest-standing audiology program in the country. CMU has Michigan's only undergraduate meteorology program, the first entrepreneurship minor and the only undergraduate leadership minor.

In fact, CMU students have access to more leadership programming than their peers at any other university in the nation – through the five-day Leadership Safari immersion experience before the start of the school year, guest lectures, leadership scholarships, and more.

More than 155 U.S. flag officers hold CMU degrees, and the university has been designated a Military Friendly School for the seventh consecutive year by Victory Media.

CMU's ranks among the best 25 in the nation for veteran education. It also maintains its leadership in this area among Michigan institutions. CMU ranked No. 17 as best online graduate education programs for veterans. It also ranked No. 43 in best online bachelors programs and No. 36 in U.S. News' first-ever ranking for best online MBA programs for veterans.

CMU is the nation's leader in SAP Terp10 certification for the business enterprise software used by more than 38,000 companies worldwide. Its undergrad engineering program, started just a decade ago, is named among the 100 best by U.S. News and World Report.

CMU leads the way in research to sustain and manage the world's largest supply of fresh water, receiving \$20 million from the U.S. Environmental Protection Agency over the past six years to monitor and assess Great Lakes coastal wetlands. The grant involves nine other universities and three governmental agencies. Notably, a CMU biology researcher first discovered evidence of Asian carp in the Great Lakes, and CMU team members now are leading the way in mussel research. Over 800 CMU students major in biological and biomedical sciences and there were nearly 6,800 enrollments in biology courses.

Within the health professions (The Herbert H. and Grace A. Dow College of Health Professions and America's 137th College of Medicine), the thrust has been service to people in our region. The Carls Center for Clinical Care and Education, for example, provides services such as state-of-the-art hearing and balance diagnostics, hearing aid sales and service, a cochlear implant clinic, speech and language therapy, and world-renowned summer speech clinics. Its new privately funded Mobile Health Central motor coach takes medical services on the road to serve residents and families who lack access to certain medical services.

Going further, the College of Humanities and Social and Behavioral Sciences has opened a Center for Children, Families and Communities to help improve the mental health and well-being of children and families in our region. Further, two CMU psychology faculty are using a \$500,000 grant from the State of Michigan to train students in the leading treatments for children with autism. In addition, a neuroscience researcher is conducting a study with the potential to reduce cognitive deficits after stroke. CMU's undergraduate neuroscience program has been ranked No. 1 in the nation.

Central Michigan University awards the third-highest number of education degrees in Michigan and remains key to the preparation of educators to meet the needs of Michigan. The university also is one of six in the nation to offer a sociology degree with a concentration in youth studies.

CMU is one of six institutions to enroll students from every county in Michigan last year. Nearly 90 percent of CMU on-campus students are from the state.

CMU's Global Campus offers online programs to students around the world as well as degree programs at over 40 locations in the United States and Canada. Twenty-one of those locations are on military bases, continuing CMU's long-standing commitment to serving those who serve our country.

Notably, CMU student volunteers go on the nation's third most Alternative Break trips each year, volunteering to help others during the holidays and spring/summer breaks rather than relaxing on vacation. Break Away, the national organization for Alternative Breaks, shows CMU students rank No. 1 among all Michigan public universities for their participation.

- C. Other Initiatives and Their Impact on Facilities Usage: Central Michigan University's Biosciences Building added essential wet lab research and classroom space in the biosciences area. The project was substantially completed in September 2016 with move-in September 2016 – January 2017. The first classes are scheduled for January 2017.

CMU also continues to repurpose facilities as new academic programs/initiatives are implemented. For example, CMU has installed state-of-the-art active learning classrooms in Pearce Hall and the Dow Sciences Building and a Bloomberg financial trading floor for the College of Business Administration. It also completed a \$14 million renovation and upgrading of its busiest academic space, Anspach Hall, which serves more than 5,000 students a day.

- D. Economic Development Impact: The state of health care in Michigan is undergoing significant change due to the aging of our population and continued changes at national and state levels in health care delivery. As a consequence, there is greater importance than ever in training professionals to provide preventative and remedial health care services. These are precisely the professionals who are alumni of CMU's College of Health Professions and who would graduate in even greater numbers if the CMU Center for Integrative Health Studies were built.

The economic impact of these new health care professionals would be significant for two major reasons:

- (a) Historical data shows about 77 percent of CMU graduates choose to live and work in Michigan. With an average salary range of \$89,000 to \$102,000 for a physician assistant, the new center would have a direct fiscal impact on the regional economy.
- (b) The improved health of the general population resulting from the care provided by CMU's additional graduates in many fields would indirectly raise the income of other Michigan residents while also decreasing health costs of employers and the state.

In addition to the impact of our health care graduates, the new construction would enable CMU to further grow the economy through other university activities.

A report released in December 2013 by the Anderson Economic Group shows Central Michigan University contributed more than \$940 million in regional and statewide economic activity in 2012. Key findings include:

- Wages and benefits for CMU's 2,707 faculty and staff total \$243.9 million.
- CMU's non-payroll spending for items such as instruction, research and operations equals \$167.5 million.
- Spending by CMU students on- and off-campus for room and board, books and supplies, apparel, and meals and entertainment totals \$380.5 million.

Beyond health care, the Michigan Economic Development Corp. has designated CMU's Center for Applied Research and Technology a Michigan SmartZone. The City of Mount

Pleasant and CMU have developed a 300-acre technology park that includes an incubator and business accelerator, called CMURC, which houses 9,300 square feet of wet laboratories and 7,900 square feet of offices. CMURC leverages CMU’s diverse capabilities to assist start-up businesses.

Designed to advance economic development by accelerating the success of entrepreneurs, startups and growing companies, CMURC offers hands-on expertise and CoWork opportunities to connect like-minded individuals. CMURC services include a competitive, three-phased scholarship program for early stage entrepreneurs, industry, market and feasibility analysis; product, manufacturing and supply chain development; business strategy and implementation; marketing services; and investor relations and partnerships. More than 30 companies are active between feasibility and launch in this Right Choice Program.

III. Staffing and Enrollment

A. Full- and Part-Time Student Enrollment (Fall 2016):

Central Michigan University is the 91st largest 4-year public university in America. It is the fourth-largest in Michigan, is within 700 students of the third largest.

Classification of Instructional Program (CIP)	Mount Pleasant Campus		Off Campus (MI)	
	Full time	Part time	Full time	Part time
Agriculture, Agriculture Operations & Related Sciences	1	0	0	0
Area, Ethnic & Cultural & Gender Studies	132	3	5	0
Biological & Biomedical Sciences	601	131	69	9
Business Management, Marketing & Related Support Services	2434	228	478	1357
Communication, Journalism & Related Programs	797	83	92	27
Computer & Information Sciences & Support Services	411	114	22	30
Education	996	177	92	555
Engineering	331	31	20	2
Engineering Technologies/Technicians	222	33	15	67
English Language & Literature/Letters	111	41	15	1
Family & Consumer Sciences/Human Sciences	252	46	62	54

Foreign Languages & Literatures & Linguistics	40	12	2	1
History	85	32	4	3
Legal Professions & Studies	22	2	2	0
Liberal Arts & Sciences, General Studies & Humanities	2	10	0	0
Mathematics & Statistics	56	36	3	0
Multi/Interdisciplinary Studies	7	8	0	0
Natural Resources & Conservation	118	33	17	1
Health Professions & Related Programs	1471	85	84	263
Parks, Recreation, Leisure & Fitness Studies	743	93	84	56
Philosophy & Religious Studies	17	3	1	0
Physical Sciences	120	69	4	2
Psychology	453	83	203	215
Public Administration & Social Service Professions	192	16	146	489
Social Sciences	461	63	62	35
Visual & Performing Arts	304	45	21	6
Undecided / Unsigned	6886	318	170	213
Total	17265	1795	1673	3386

B. Future Enrollment:

If one considers ONLY the size of Michigan’s high school graduating class, CMU’s overall enrollment would gradually decrease through the next five years:

<u>Year</u>	<u>Enrollment</u>
2017	22,976
2018	22,660
2019	22,298
2020	22,124
2021	21,746

CMU has completed a thorough enrollment management planning process and is implementing a number of strategies to maintain and grow its student population to benefit students, employers and the state as a whole. With an original “stretch” goal of 3,500 for its fall 2016 freshman class, CMU was successful in enrolling 3,462 students. CMU attained this level of enrollment thanks to the whole-campus, collective efforts of its faculty and staff.

On behalf of students and families who invest in college, CMU is committed to maintaining a high caliber of students who have demonstrated an ability to be successful in college. CMU’s mean ACT score is 23.1; the mean high school GPA is 3.38. Both are slightly above the 2014 student profile. Both have increased for the third consecutive year.

Further, CMU has implemented several measures to increase retention and four-year graduation rates. These include a new Office of Student Success, additional academic advisors, and an online Advising Workbench that allows faculty and students to see how well they’re progressing toward graduation and what classes they still need to take.

CMU’s latest, six-year graduation rate, for the fall 2009 cohort, was 59 percent. That rate is well above the 50 percent average of CMU’s Carnegie peers and the 51 percent graduation rate predicted for CMU students by U.S. News and World Report.

CMU was a national pioneer in distance learning, offering its first off-campus programs in 1971. At first, most of its programs were at the graduate level. Today, CMU’s Global Campus serves 4,821 undergraduate students, compared to 1,911 a decade ago. Many of these students take classes online, as today’s CMU Global Campus also is a recognized leader in classes available anytime, anywhere — delivering the flexibility students need.

C. Enrollment History: (Michigan Students Only)

Central Michigan University’s total enrollment has remained relatively stable for the past decade. As the data below show for Michigan-based enrollment, the range between CMU’s highest and lowest enrollments is 2,018 students — about 7.9 percent. Nearly 90 percent of CMU’s on campus students today are from the state of Michigan.

Fiscal Year	FYES*	Fall Headcount		
		Mount Pleasant	Off Campus-MI	Unduplicated Total
2001-02	20,961	19,188	5,466	24,492
2002-03	21,307	19,380	5,384	24,594
2003-04	21,447	19,402	5,195	24,496
2004-05	21,431	19,792	4,929	24,550
2005-06	21,579	19,917	4,787	24,562
2006-07	21,356	20,025	4,177	24,033
2007-08	21,142	19,867	4,511	24,083

2008-09	21,529	20,246	4,507	24,348
2009-10	21,888	20,444	4,875	24,799
2010-11	22,522	21,290	5,169	25,583
2011-12	22,510	21,220	5,842	25,473
2012-13	21,694	20,504	6,196	24,744
2013-14	20,891	19,634	6,618	23,875
2014-15	21,278	19,858	6,831	24,184
2015-16	20,804	19,549	6,798	23,565

* Based on 30 SCH for undergraduates

D. Staff/Student Ratios:

Classification of Instructional Program (CIP)	Student/Instr. Staff Ratio	Student/Admin. Staff Ratio
Area, Ethic & Cultural & Gender Studies	7.1	255.6
Biological & Biomedical Sciences	13.1	29.6
Business Management, Marketing & Related Support Services	19.2	89.9
Communication, Journalism & Related Programs	16.3	88.2
Computer & Information Sciences & Support Services	14.7	123.5
Education	12.5	62.9
Engineering	11.4	
Engineering Technologies & Engineering-Related Fields	10.3	75.5
English Language & Literature/Letters	12.8	108.8
Family & Consumer Sciences/Human Sciences	19.8	57.9
Foreign Languages, Literatures, & Linguistics	13.0	211.4
History	14.9	161.6
Legal Professions & Studies	16.5	87.3
Liberal Arts & Sciences, General Studies & Humanities	15.8	71.3
Mathematics & Statistics	18.0	117.6
Reserve Officer Training Corps		12.6
Multi/Interdisciplinary Studies	18.4	22.2
Natural Resources & Conservation	14.1	20.6
Health Professions & Related Programs	15.7	36.1

10/31/2016

Parks, Recreation, Leisure & Fitness Studies	18.2	122.3
Philosophy & Religious Studies	20.7	159.0
Physical Sciences	14.7	52.5
Psychology	13.6	104.1
Public Administration & Social Service Professions	13.0	248.3
Social Sciences	17.3	89.0
Visual & Performing Arts	10.5	58.1
Total	15.6	74.5

E. Future Staffing Needs:

<u>Year</u>	<u>Fall Enrollment Changes</u>	<u>Additional Staffing Needs</u>
<i>2017</i>	<i>-589</i>	<i>0</i>
<i>2018</i>	<i>-316</i>	<i>0</i>
<i>2019</i>	<i>-362</i>	<i>0</i>
<i>2020</i>	<i>-174</i>	<i>0</i>
<i>2021</i>	<i>-378</i>	<i>0</i>

This chart reflects staffing needs with current academic programs and projected enrollments based on Michigan high school graduating class sizes only. As noted earlier, the entire CMU campus is engaged in recruitment and retention efforts that are showing significant success. Additional academic programs would require instructional and administrative staff levels to be adjusted upward. For example, an occupational therapy program would require about seven full-time faculty and three staff. A respiratory therapy program would require about three faculty and two staff members; a new master's in public health involve three new faculty and one staff member.

Average Class Size:

At CMU, class sizes remain small, giving student's optimal opportunity to interact directly with their professors. Nearly 95 percent of CMU classes are taught by professional faculty rather than teaching assistants or graduate students. Students at CMU are more than a number; they're known by name.

According to the 2015 National Survey of Student Engagement, 64 percent of CMU seniors say they have worked with faculty members on activities other than coursework. This

compares to 59 percent of seniors at peer institutions and 57 percent of seniors at universities within our Carnegie class.

In many cases, even undergraduate students are able to do research in concert with their instructors. At larger universities, this hands-on experience typically is reserved for graduate-level students.

Course Level	2015-2016 Average Class Size			2016-17 Projected
	On Campus Avg. # of Stu.	Off Campus-MI	Overall Avg. # of Stu.	
<100	12	0	12	12
100-299	29	20	27	27
300-499	23	19	22	22
500-599	19	12	16	16
600 +	18	17	17	17

IV. Facility Assessment

A. A comprehensive Campus Master Plan, which addresses facilities condition, space utilization, utility infrastructure, land use, telecommunications infrastructure and capital planning, was completed July 2013. The comprehensive plan for the physical campus reflects and upholds the vision, priorities and initiatives established for CMU in its strategic plan. Attached is a summary description of CMU facilities. The university plans to further update the document to match the DTMB categories and have buildings with more than one ‘type’ of space broken down by percentage. This update will be incorporated into our next space utilization analysis.

B. Building and/or Classroom Utilization Rates:

A comprehensive utilization and space needs analysis was completed by Paulien and Associates as part of the master planning process in 2013. This study was completed in accordance with the Postsecondary Education Facilities Inventory and Classification Manual.

- Classroom Utilization: CMU’s 180 classrooms are utilized an average of 34 hours per week, with an average student station occupancy of 63 percent. The average space per student station is 21 ASF.
- Teaching Laboratory Utilization: CMU’s 102 teaching laboratories are utilized an average of 24 hours per week, with average student station occupancy of 77 percent. The average space per student is 54 ASF.
- Classroom utilization rates were studied for peak (M-F, 10-3) and off peak (M-F, 8-10 a.m., 3-9 p.m.) time frames as shown in the following charts:

Scheduled Classroom Use by Day and Time (Fall 2011)

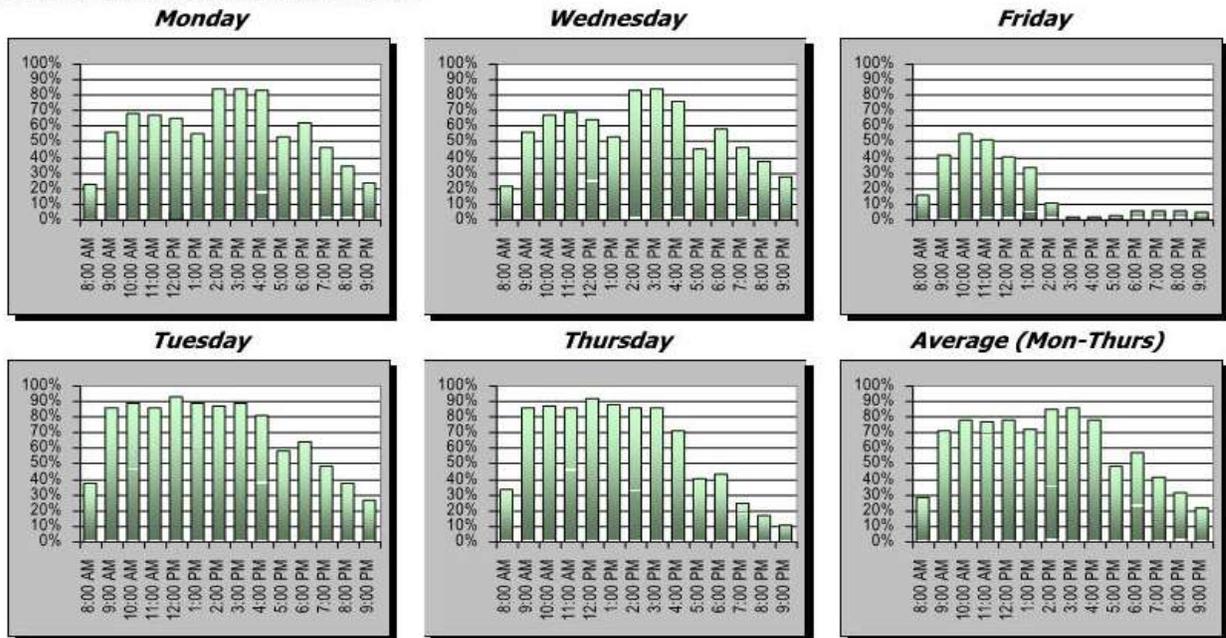
(Darker colors indicate a large percentage of rooms are scheduled.)

Time of Day	Monday		Tuesday		Wednesday		Thursday		Friday		Average*	
	Rooms in Use	% In Use										
8:00 AM	41	23%	68	38%	39	22%	62	34%	28	16%	53	29%
9:00 AM	100	56%	154	86%	100	56%	154	86%	75	42%	127	71%
10:00 AM	122	68%	160	89%	121	67%	156	87%	99	55%	140	78%
11:00 AM	121	67%	155	86%	124	69%	155	86%	91	51%	139	77%
12:00 PM	117	65%	167	93%	116	64%	165	92%	73	41%	141	78%
1:00 PM	99	55%	161	89%	96	53%	159	88%	61	34%	129	72%
2:00 PM	151	84%	157	87%	150	83%	154	86%	19	11%	153	85%
3:00 PM	152	84%	160	89%	152	84%	154	86%	4	2%	155	86%
4:00 PM	149	83%	146	81%	137	76%	128	71%	4	2%	140	78%
5:00 PM	96	53%	104	58%	82	46%	74	41%	6	3%	89	49%
6:00 PM	112	62%	115	64%	105	58%	80	44%	10	6%	103	57%
7:00 PM	84	47%	89	49%	84	47%	45	25%	10	6%	76	42%
8:00 PM	63	35%	69	38%	69	38%	30	17%	10	6%	58	32%
9:00 PM	43	24%	48	27%	50	28%	20	11%	9	5%	40	22%

Total classrooms = 180

* Based upon the consultant's experience, Friday is typically underutilized, therefore the average is calculated on Monday thru Thursday use.

Percent of Classrooms In Use

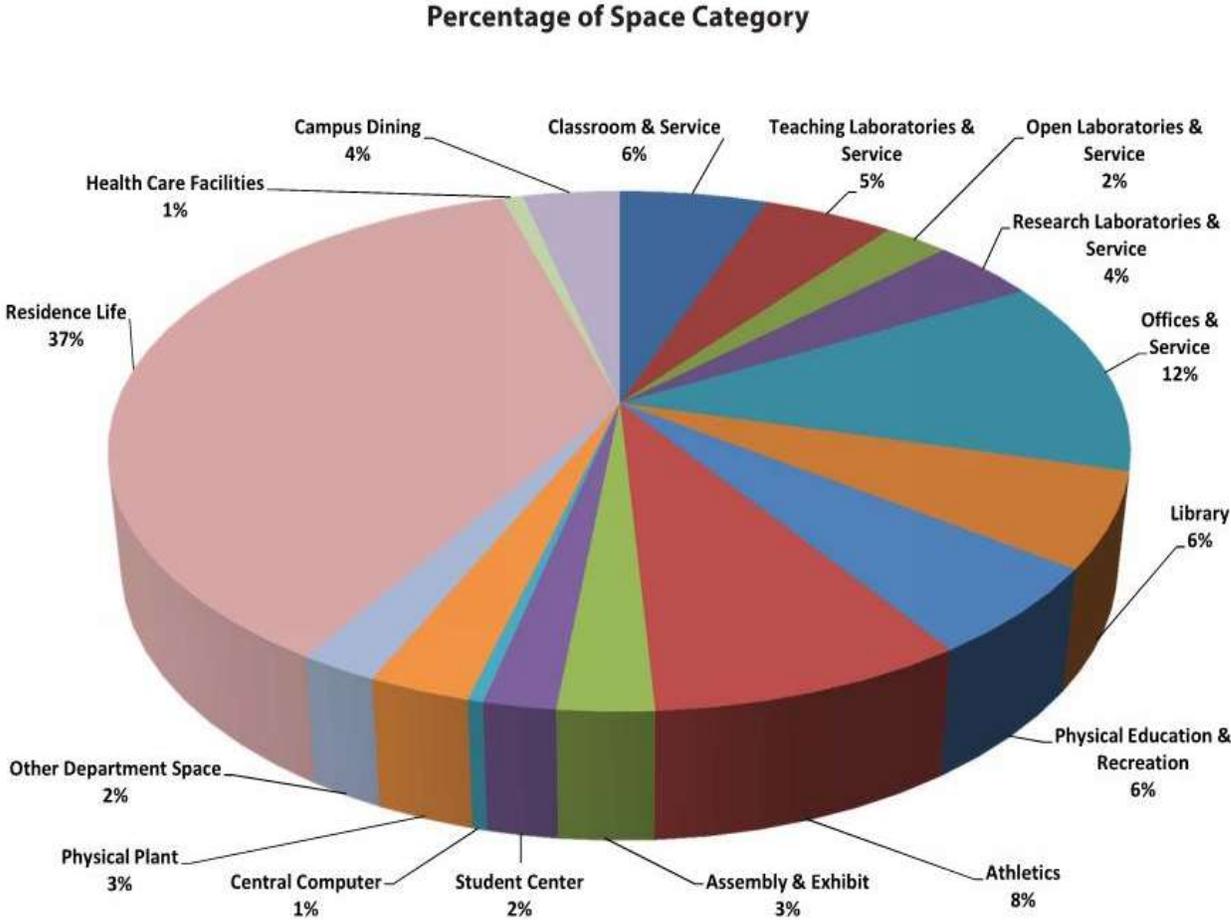


- C. Mandated Facility Standards: CMU meets general and minimum space requirements as noted in federal accreditation standards. This includes successfully meeting higher levels of space and equipment standards for specialized programs such as the physician assistant and physical therapy programs, biology and chemistry laboratories, speech and hearing clinics, performance spaces, library collections, and art exhibit spaces. Programs also meet the stringent, mandated facility standards of the National Association of Industrial Technology. In programs such as those in the health professions area,

CMU is at capacity as allowed by the standards and must add physical space in order to grow to serve more students and meet the increasing needs of Michigan residents and employers.

D. Functionality and Space Allocation:

Found in the Campus Master Plan, the following chart depicts the percentage of space on campus by category:



<i>Average age of buildings:</i>	General Fund	35.4 years
	Auxiliary	43.0 years
	All buildings	<hr/> 39.2 years

E. Replacement Value of Existing Facilities (Insured Value):

General Fund	\$1,100,440,013
Auxiliary	569,489,405
Total	<u>\$1,669,929,417</u>

F. Utility System Condition:

The 2013 campus master plan includes a facilities infrastructure assessment that evaluated each of the major systems in all of the buildings on CMU's main campus. Systems assessed included HVAC, electrical and domestic hot water.

The majority of CMU buildings have served the campus for more than 40 years. The buildings have been well maintained, are structurally sound and functioning reasonably well. In a number of cases, mechanical and electrical systems are functioning successfully beyond their projected useful lives. The Facilities Condition Index for the campus is 0.097.

The deferred maintenance needs identified as part of the Facilities Condition Assessment total \$129 million in repair, upgrade and replacement costs over the next 10 years for building assets valued at \$1.5 billion.

CMU has campus utility distribution system assets totaling approximately \$125 million.

1. City Water: CMU is working with the city of Mount Pleasant to improve on documentation of system age and our shared responsibilities for maintaining the distribution system.
2. Sanitary Sewage System: The 12.7 miles of sanitary sewer collection system, which is integrated with the city of Mount Pleasant system, is sufficient for the existing and future needs of CMU in Mount Pleasant.
3. Storm Sewer System: The 22.5 miles of storm sewer on CMU's campus are in generally good condition. CMU has completed maintenance of manholes and catch basins across campus as identified in the 2007 storm sewer assessment. Inspection of the 54" storm sewer, owned by the city of Mount Pleasant that passes under and near buildings in the campus core will require \$460,000 in maintenance in the next one to four years.
4. Electrical Distribution System: Ongoing assessments during planned electrical shutdowns have identified immediate repair and long-term repair requirements. A short circuit analysis and an arc flash study have been

completed. The campus electric distribution system is in generally good condition. The campus has a redundant electricity supply from Consumers Energy.

5. Steam and Condensate System: The campus has 7.8 miles of steam and condensate lines located both within our 3.5 miles of utility tunnels and direct-buried. These lines are generally in good shape. In 2014 a second steam and condensate connection to campus was made to provide redundant supply and to increase capacity to the southern portion of campus. A 16-inch steam and an 8-inch condensate line were installed.
6. Chilled Water System: The 9.7 miles of chilled water lines, supply and return, are in generally good condition.
7. Central and Satellite Energy Facilities: These facilities house 1 wood boiler, 3 gas boilers, 1 steam turbine, 1 gas turbine, 6 electric chillers and 5 steam absorption chillers and are in generally good condition. The Central Energy Facility has a Facilities Condition Index of 0.02 and the Satellite Energy Facility, which was built in 2006 has a Facilities Condition Index of 0.00.

G. Facility Infrastructure Condition:

1. Roads: Roads are generally adequate. Repairs are made on a planned basis. An all-campus pavement condition study was completed in 2004, with follow-up annual inspection by CMU personnel. Several campus roads, particularly West Campus Drive, serve significant city and county/state traffic.
2. Parking lots: Central Michigan University has 89.4 acres of parking lots with 11,064 spaces. Parking lots were inspected and condition rated in 2007; lots are on a specific schedule for sealing, crack filling and overlayment.
3. Parking structures: None
4. Sidewalks: Central Michigan University has nearly 31 miles of sidewalks, and work occurs every year to replace and repair designated portions. With increasing reliance on bicycles, the university recognizes that bike paths are needed to separate pedestrians and bicyclists.
5. Bridges: None

6. Computer and telephone lines: There are two infrastructure components:
 - a. A new CMU Data Center began operations in July of 2013. Many of the university's IT assets have already been moved to the new facility, and work continues to transition the remaining assets. Networking, electrical and physical security systems will be augmented and enhanced during the current fiscal year.
 - b. The university's network infrastructure has been strengthened in order to transition the existing Cable TV and traditional voice telephone systems to Voice and Video over Internet Protocol (VOIP) solutions. Initial phases of a plan for converting traditional telephone and cable technologies to Internet Protocol-based ones are funded and proceeding.

H. Adequacy of existing utilities and infrastructure systems to current and 5-year projected programmatic needs:

As part of the 2013 campus master plan, the overall facilities condition assessment, utility infrastructure assessment, land use, and capital planning work products have identified the following utility and infrastructure upgrades that are required to support current and 5-year project programmatic needs.

1. East Utility Loop: Detailed modeling of the existing steam and condensate systems, including future campus needs, determine that 16" steam and 8" condensate lines to connect South Main and Center Main Tunnels are required. This connection is needed for system redundancy and reliability and to provide capacity for current and future buildings included in the five- and 10-year capital plan. This \$5.4 million project was approved by CMU's Board of Trustees in July 2013. Construction was completed in October 2014 with an actual cost of \$4.2 million.
2. Cooling Tower Addition: Installed an additional cooling tower to satisfy the load of the existing 1,250-ton absorption chiller located in the Central Energy Facility. The project was completed in January 2015 at a cost of \$297,000 and was on-line in time to support peak 2015 demands.
3. Storm System Upgrade: The installation of two storm water detention facilities was completed in September 2015 mitigating chronic flooding and controlling storm water runoff to a county drain.

- 4. Although the campus network is currently running well and reliably, IT strategic planning has determined a need for approximately \$10 million in deferred maintenance investment across the CMU network before FY 19.

The rest of the utility and infrastructure systems have the capacity necessary to support current and five-year needs.

I. Enterprise-wide energy plan:

Central Michigan University received the “excellence in Recycling for Outstanding Recycling Education & Outreach” Award from the Department of Environmental Quality and the Governor’s Recycling Council in May 2015.

Over the past year CMU has diverted 26% or 628 tons of solid waste from landfills. The diverted materials include 61 tons of paper, 225 tons of cardboard, 115 tons of compost and 227 tons of recycled materials.

CMU is currently composting 100% of the pre-consumer and post-consumer waste from all 5 residence hall food service operations.

CMU is on the Princeton Review’s 2013, 2014 and 2015 lists of green colleges (out of nearly 5,000 U.S. colleges and universities). We take great pride in being a national leader in sustainability and the conservation of energy and other resources.

J. Land Owned by the University:

Improved (landscaped)	579.58 acres
Unimproved	<u>1,179.15 acres</u>
Total	1,758.73 acres

The Land Use Study completed as part of the 2013 Campus Master Plan confirmed that capacity exists to meet immediate and long-range (100 year) future demands. CMU may need to change some of its land use strategies such as migrating to parking structures or increasing building density, however there is currently sufficient land to support the university’s needs for the next 100 years. Furthermore, understanding the long-term land use plan will allow CMU to make short-term building decisions with the confidence that we are doing what’s right for the future of CMU.

- K. State Building Authority: Central Michigan University has four buildings obligated to the State Building Authority. The buildings include: Park Library, The Herbert H. and Grace A. Dow Health Professions, Education and Human Services Building, and

the Biosciences Building. The expiration dates of the State Building Authority leases are shown in the table below:

Building	Proposed Lease Expiration Date
Park Library	04/01/2037
Health Professions	11/01/2040
Education and Human Services	12/01/2044
Biosciences	To be determined - expected end date in 2056

V. Implementation Plan

A. Prioritized Major Capital Projects Requested:

As part of the campus master plan, a 10-year capital plan project list was approved by the CMU Board of Trustees in July 2013. This list was developed by a cross-campus team of faculty and staff based on input from thousands of on-campus and community stakeholders. The CMU Center for Integrative Health Studies is on that 10-year capital plan and was selected as CMU’s Fiscal Year 2017 Capital Outlay Project based on student and state needs. Student demand for these programs is high and is not met by Michigan’s higher education system. This, in turn, leaves critical gaps in the delivery of health services across the state. What’s more, expanded and new health care academic programs can be facilitated by space constructed with a moderate investment. For more detail, please see the attached Capital Outlay Project Request Form.

B. Impact of Addressing Deferred Maintenance and Structural Repairs: The 2013 Facilities Condition Assessment of buildings on CMU’s main campus identified \$129 million in projected repair, upgrade and replacements costs ideally implemented during the next 10 years. In addition, deferred maintenance funds will be required to maintain the utility distribution systems valued at \$125 million and site infrastructure valued at \$45 million.

C. Status of Ongoing SBA Projects: Construction of the \$89.4 million Biosciences Building began in July 2014 and was substantially completed in September 2016. Classes will begin in January 2017, this project takes a significant step in addressing CMU’s 54 percent space deficit for academic research laboratories and services as identified in the 2013 utilization and space needs analysis.

D. Rate of Return on Planned Capital Expenditures: Increased enrollments through the CMU Center for Integrative Health Studies would generate tuition and auxiliary service dollars across campus, through University Program required courses as

well as major courses. Most importantly, the new programs would add critically needed health care providers across the state, improving the health and well-being of Michigan residents as well as contributing to the state's economy.

- E. Alternatives to New Infrastructure: Addressing health care education specifically, the traditional method for course delivery has been face-to-face. This type of instruction requires great amounts of classroom and laboratory space. During the last decade, a number of CMU health care disciplines have shifted gradually toward a hybrid model in which some of the content also is delivered using distance learning technologies. When considering the programs that CMU believes will fit best in the new Center for Integrated Health Studies, the hybrid face-to-face and online model will be used. Indeed, in considering space for the requested infrastructure, we are planning the dual delivery. CMU's plan at this point is to introduce new programs as face-to-face and then, over time, migrate content to an online mode. Under all circumstances, laboratory sessions will be delivered face-to-face. In the health care education world, this has been shown to be the best delivery mode.

As indicated in previous sections, CMU anticipates including infrastructure space for components of information science (specifically for health care informatics) and, possibly, biomedical engineering in the biomechanics realm. The intent is to leverage interaction between students and faculty involved in direct health care delivery (from physical therapists to audiologists to physician assistants) and those in informatics and engineering. By establishing these links in the education venue, CMU will build the connectivity that fuels excellence among health care teams in hospitals and in community health. This type of team formation requires face-to-face interaction at least at the initiation, and hence the requested infrastructure is critical for optimal program success.

Maintenance Schedule for Major Items:

As defined in the 2013 facilities condition assessment, priority areas for major maintenance are:

- Deferred maintenance is a priority for CMU and Repair/improve life safety systems (all meet code; this work would take us forward voluntarily)
- Protect the building envelope
- Mechanical, electrical, plumbing, including HVAC
- Utility infrastructure

It is CMU's intent to continue to fund major maintenance at a minimum of \$5.7 million a year; more if possible. Allocations among the various types of maintenance will depend on the priority ranking and urgent needs.

F. Non-Routine Maintenance:

For 2010 - 2013, and in 2015, CMU allocated \$5.7 million toward deferred maintenance. In fiscal year 2014, an additional \$1.3 million in one-time funds was budgeted for roof replacement, making the 2014 total budget for deferred maintenance \$7 million. Funding for deferred maintenance comes from the institution's capital budget, which is funded by Auxiliary Services, Parking Services and a general fund allocation of \$2.8 million. Since 2008, CMU also has invested \$5.9 million renovating and upgrading individual classrooms and auditoriums.