

**Central Michigan University
Fiscal Year 2019 Capital Project Request
Recommended Five-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:

Central Michigan University (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 98th largest four-year public institution 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 being committed to the pursuit of knowledge, wisdom, discovery and creativity. The project would assist students in fostering personal and intellectual growth through their studies in the sciences. The renovation of Brooks Hall would benefit all students in the College of Science and Engineering, as well as students in every major across the university as they fulfill their general education program. Specific programs that would benefit from the renovation include:

- Astronomy
- Biology
- Earth and Atmospheric Sciences

- Fermentation Science
- Geology
- Meteorology
- Neuroscience

More than 1,100 CMU students, including 1,000 on campus this fall, are majoring in programs such as those cited above. Fifty-four percent of students admitted to CMU as part of the fall 2017 freshman class indicated an interest in science.

CMU is actively exploring the development of many new programs — whether in preliminary discussion or in some stage of approval and implementation — including:

- Master of Information Technology
- Applied Biostatistics
- Engineering Science
- Health Information Management
- Technology Management
- Applied Environmental Geoscience
- Computational Math
- Master in Applied Statistics and Analytics
- Earth and Ecosystem Science (Ph.D.)
- Cellular-Molecular Biology/Biochemistry/Biomedical, (Ph.D.), 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 Entrepreneurial Transactions
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 the 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. Institutional Characteristics:

- CMU is classified as a doctoral university – higher research activity with degree programs that serve 24,445 on-campus and Global Campus students. In 2016, the Higher Learning Commission reaffirmed our accreditation until 2025, giving CMU the highest-possible marks in every evaluation area.
- CMU proactively responds to the needs of society. We were founded to address a shortage of teachers across the state, and most recently, we created a College of Medicine to address a growing shortage of physicians in rural and medically underserved communities. We also have the longest-standing audiology program in the country, Michigan's only undergraduate meteorology program, and its first entrepreneurship and leadership minors.
- Central's national-model leadership programs connect new students to each other, teach them leadership skills and nurture their sense of belonging. Over 2,000 incoming students participate in Leadership Safari, a five-day leadership immersion program. Nearly 300 students in August attended the second year of IMPACT, a mentoring program for multicultural students. Both programs are proven to increase student retention.
- More than 155 U.S. flag officers hold CMU degrees, and the university has been designated a Military Friendly School by Victory Media.

- U.S. News and World Reports ranks CMU No. 6 as best online graduate education programs for veterans and its online MBA programs No. 20 for veterans. It also ranks CMU's online bachelor's degree programs in education No. 29 for all students (including non-veterans).
- CMU is the North American leader in SAP Terp10 certifications (for the business enterprise software used by nearly 40,000 companies worldwide). Our undergrad engineering program ranks among the 100 best by U.S. News and World Report and this spring graduated its 10th class of mechanical and electrical engineers.
- Two CMU physics faculty members have just been awarded \$4.8 million from the U.S. Department of Energy to solve a long-running challenge in molecular modeling, the science of using computer calculations to make predictions about materials at the atomic or molecular level. They will direct the efforts of 10 senior scientists and five universities.
- Three faculty in CMU's College of Science and Engineering over the past 18 months have received prestigious National Science Foundation Early Career Development Program awards for their research. They are the first at CMU to receive these federal grants for emerging faculty researchers. They are studying the mysteries of organism development, what makes bacteria so resilient, and the development of a mass spectrometer that could perform some of the world's most precise atomic mass measurements.
- CMU leads the way in research to sustain and manage the world's largest supply of fresh water, having receiving \$20 million from the U.S. Environmental Protection Agency 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. Over 800 CMU students major in biological and biomedical sciences while another 300 major in conservation and natural resources/chemistry/earth and atmospheric sciences. CMU last year had more than 6,000 enrollments in biology courses, 4,500 enrollments in chemistry courses, 3,600 in geography courses, and 1,800 in earth and atmospheric sciences courses.
- CMU has expansive, highly regarded health care programs, primarily through its Herbert H. and Grace A. Dow College of Health Professions and its College of Medicine. Achievement highlights include:
 - The Carls Center for Clinical Care and Education provides services such as state-of-the-art hearing and balance diagnostics, hearing aid sales and service, cochlear implants, speech and language therapy, and world-renowned summer speech clinics. The center recently

received a grant for pediatric cochlear implants and was able to help a 13-month-old boy — its youngest patient to date — hear for the first time.

- The privately funded Mobile Health Central motor coach takes medical services on the road to residents and families who lack access to certain medical services. In July, faculty and students traveled with the vehicle to Flint for a senior health fair.
 - CMU's new, Interdisciplinary Center for Community Health and Wellness recently held its first event — a forum on opioid use across the region.
 - CMU's first class of medical students graduated in May and all 62 students were placed in residencies — which doesn't always happen because there are more medical school graduates than residencies. Nearly half were placed in residencies in Michigan.
- A CMU neuroscience researcher has received a National Institutes of Health grant for \$2.25 million to study brain disorders.
 - CMU's Center for Children, Families and Communities is designed improve the mental health and well-being of children and families in our region. Further, two psychology faculty are using a \$500,000 grant from the State of Michigan to train students in the leading treatments for children with autism.
 - CMU awards the second highest number of undergraduate education degrees in Michigan and remains key in the preparation of teachers to meet the needs of Michigan communities and school children. This is especially critical as teachers retire and school districts are starting to see a concerning lack of quality replacements.
 - CMU was one of six institutions to enroll students from every county in Michigan last year. Nearly 90 percent of 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. Over 15 of those locations are on military bases, continuing CMU's long-standing commitment to serving those who serve our country.
 - 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: CMU's Biosciences Building added essential wet lab research and classroom space in the biosciences area. The four-story, 169,000 square foot building includes active-learning classrooms, a vivarium to replicate aquatic conditions for research, a molecular biology core, an isotope laboratory, an imaging center for scanning and transmission electron microscopes, an herbarium and a staging and processing storage area for ecological fieldwork. The project was completed in September 2016 with move-in wrapped up in time for classes to start in January 2017.

Grawn Hall's recent renovation brought CMU's longest-serving building into the future. Grawn Hall was built 102 years ago. The recent \$10.8 million renovation updated 16,200 square feet of the building and added 6,600 square feet. A large portion of the new space is intended for student collaboration with mediated study rooms and Skype-ready "huddle" spaces. In addition, classrooms were modernized and the new atrium provides flexible space for events as well. Over 4,000 students learn and build their futures in Grawn Hall each day.

CMU also continues to repurpose facilities as new academic programs and 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 in 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: CMU and its programs have a direct impact on economic development in the State of Michigan.

In a study to be released this winter, Anderson Economic Group documents the total economic impact of CMU, its affiliates and its students and alumni to exceed \$1.2 billion in Michigan.

Our business programs such as that in entrepreneurship are one example of those that have direct impact on economic development. While at CMU, students can take part in a New Venture Competition where they develop an entrepreneurial mindset, learn business start-up techniques and develop business ideas. Workshops assist students along the way and as they prepare proposals to be judged on innovation and viability. Winners in six different categories last year were awarded more than \$80,000, with the best overall proposal receiving \$30,000. Fifteen Michigan businesses are in operation today thanks to this competition.

In the sciences, as another example, undergraduate science majors often pursue high-wage medical and health professions. Scientific research also affects the economy through innovation, preservation of the Great Lakes and improved medical treatments.

Historical data shows about 80 percent of CMU graduates choose to live and work in Michigan. Over 130,000 CMU alums currently reside in Michigan and contribute to the state’s economy.

Further, the Michigan Economic Development Corporation (MEDC) has designated a Michigan SmartZone near our campus, where the City of Mount Pleasant and CMU have developed a 300-acre technology park that includes an incubator and business accelerator called the CMU Research Corporation (CMURC). It houses 9,300 square feet of wet laboratories and 7,900 square feet of offices, and it leverages CMU’s diverse capabilities to assist start-up businesses.

Among the state’s MEDC-funded business incubators, CMURC is No. 1 in terms of jobs created and companies formed. It opened a center in Bay City this past winter, and is in the process of developing a third location in Saginaw.

CMURC offers hands-on expertise and CoWork opportunities. Its services include a competitive, three-phased scholarship program for early stage entrepreneurs; industry, market and feasibility analyses; 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):

CMU is the 98th 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>
2018	22,660
2019	22,298
2020	22,124
2021	21,746
2022	21,594

That said, 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.

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 SAT is 1,104, which represents the 67th percentile of SAT scores. Similarly, CMU’s mean ACT score is 23.1, which

represents the 68th percentile of ACT scores. CMU’s mean high school GPA is 3.36.

Further, CMU has implemented several measures during the past five years to increase retention and four-year graduation rates. These include an Office of Student Success, additional academic advisors, and an online advising workbench that allows faculty and students to see how well they are progressing toward graduation and what classes they still need to take.

CMU’s latest, six-year graduation rate, for the fall 2011 cohort, was 58 percent. Based on its then-R3 Carnegie classification, CMU outperformed the national peer average of 47 percent.

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 4,917 undergraduate students, compared to 1,995 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)

CMU’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	39.7
Engineering Technologies & Engineering-Related Fields	10.3	35.6
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	N/A	12.6
Multi/Interdisciplinary Studies	18.4	22.2
Natural Resources & Conservation	14.1	20.6
Health Professions & Related Programs	15.7	36.1
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:

Year	Fall Enrollment Changes	Additional Staffing
2018	-316	0
2019	-362	0
2020	-174	0
2021	-378	0
2022	-152	0

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 success. That said, the millennial generation was very large and brought a high volume of students into higher education. As each generation transitions into higher education, they have different needs than the previous generation. CMU invests significant funding into student support services through our counseling center, writing center, math center, career services, and student success centers.

Average Class Size:

At CMU, class sizes remain small, giving students 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 2017 National Survey of Student Engagement, 67 percent of CMU seniors say they have worked with faculty members on activities other than coursework. This would include research, creative endeavors, career-related experiences and volunteer efforts. CMU's survey results exceed the 63 percent of seniors at peer institutions and 59 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 often is reserved for graduate-level students.

Course Level	2016-2017 Average Class Size			2017-18 Projected
	On Campus Avg. # of Students	Off Campus-MI Avg. # of Students	Overall Avg. # of Students	
<100	7	0	7	7
100-299	28	19	27	28
300-499	23	20	22	23
500-599	18	13	16	16
600 +	18	16	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, imperatives and strategies 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. 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:

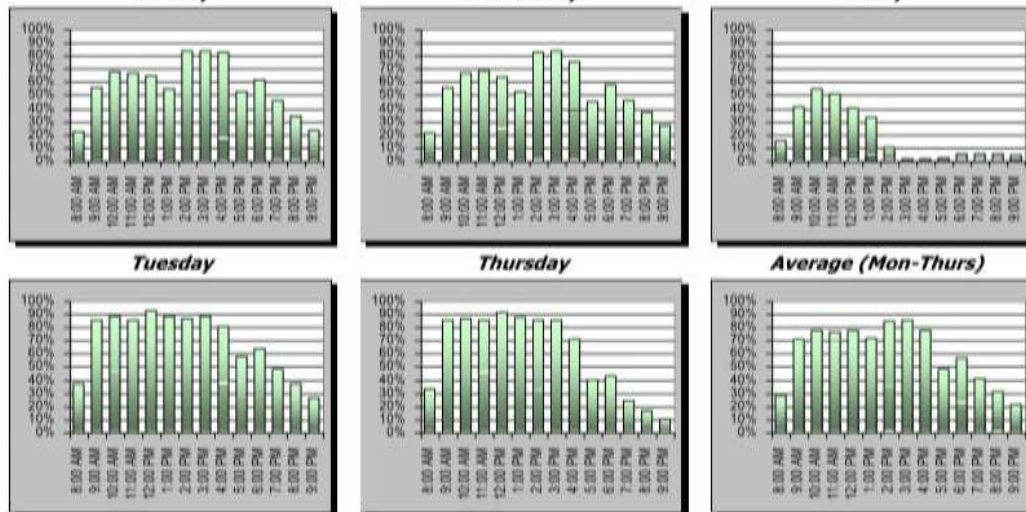
Scheduled Classroom Use by Day and Time (Fall 2011)
(Darker colors indicate a large percentage of rooms are scheduled.)

Time of Day	Monday		Tuesday		Wednesday		Thursday		Friday		Average*	
	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use	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	140	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.

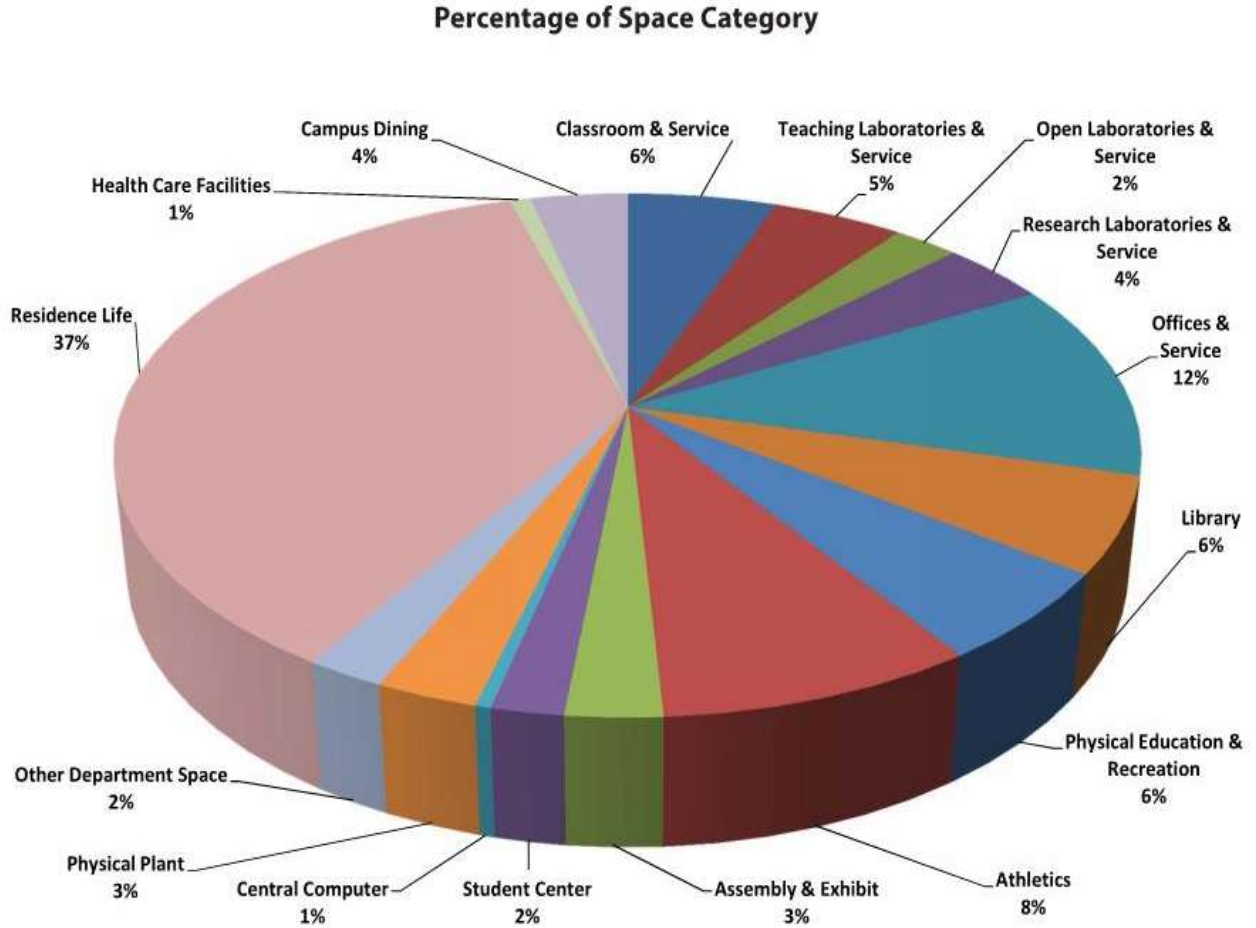
Percent of Classrooms In Use



- 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. Additional space is in the process of being added through our Center for Integrative Health Studies capital outlay project.

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	44.0 years
	All buildings	39.7 years

Replacement Value of Existing Facilities (Insured Value):

General Fund	\$1,125,059,360
Auxiliary	580,939,128
Total	\$1,705,998,488

E. Utility System Condition:

The campus master plan includes a facilities infrastructure assessment of the HVAC, electrical and domestic hot water systems in all of the buildings on CMU's main campus.

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 0.098.

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.
4. Electrical Distribution System: Ongoing assessments during planned electrical outages have identified immediate 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 primary feeds 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.
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/gas 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.

F. 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 11,161 spaces. Parking lots were inspected and condition rated in 2017; all parking lots are on a specific schedule for sealing, crack filling and overlayment.
3. Parking structures: None
4. Sidewalks: Central Michigan University has 33 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. Most 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 taking place.

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

As part of our 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. Central Energy Facility Improvements: Three projects totaling \$3 million are in design to complete infrastructure improvements to the central plant Gas Turbine, Boiler Controls and Absorption Chiller.
2. Storm System Upgrade: Federal Emergency Management Agency grant funding is being requested to expand three storm water detention facilities to mitigate flooding and controlling storm water runoff to a county drain.
3. 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.

H. 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 36 percent or 1,042 tons of solid waste from landfills. The diverted materials include 80 tons of paper, 240 tons of cardboard, 338 tons of food waste and 211 tons of recycled materials.

CMU is composting 100 percent of its pre-consumer and post-consumer waste from all five residence hall food service operations.

CMU is on the Princeton Review’s 2013, 2014, 2015, 2016 and 2017 lists of green colleges (based on a review of over 2,000 U.S. colleges and universities). We take great pride in being a national leader in sustainability and the conservation of energy and other resources.

I. Land Owned by the University:

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

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

- J. State Building Authority: CMU has five 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, the Biosciences Building, and the upcoming Center for Integrated Health Studies. 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	08/31/2052
Center for Integrated Health Studies	To be determined, currently in design phase

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; an updated list was approved in June 2017. These lists were 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 2017/2018 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. We appreciate the state's support of this project and look forward to the completion of this project.

Our Fiscal Year 2019 Capital Outlay submittal is a renovation of Brooks Hall. This facility is also on our 10-year capital plan. The building opened in 1964 and serves students with courses and programs in the fields of biology, biomedical science, earth and atmospheric sciences, astronomy, chemistry, biochemistry, geology, and fermentation science. For more detail, please see the FY 2019 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 replacement 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 began in the building 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.

The Center for Integrated Health Studies is currently wrapping up the planning and design phase. Construction is set to begin in spring of 2018 with substantial completion and move-in scheduled for fall of 2019.

D. Rate of Return on Planned Capital Expenditures: Brooks Hall has significant deferred maintenance needs. If the Brooks Hall project is approved, the deferred maintenance funds otherwise slated for the building will be moved to other projects. In addition, a modernized Brooks Hall with cutting-edge technology will assist the university in recruiting and retaining students who will go on to serve Michigan communities and businesses. While it is hard to quantify a specific rate of return, it is clear that approval of this project would greatly assist the university in addressing deferred maintenance issues and provide additional classroom and laboratory space to alleviate scheduling challenges on campus. The additional, modern laboratory space could allow more research to be performed with enhanced safety. Funded research provides a direct return on the capital expenditures.

E. Alternatives to New Infrastructure: Science courses are some of the most difficult to deliver in a virtual environment. The active learning and lab component are harder to recreate online. Traditional face-to-face instruction is the preferred method for subjects taught in Brooks Hall. During the last decade, a few science courses became available in an online format, yet these offerings are limited due to course content and the need for hands-on, face-to-face experiences.

Maintenance Schedule for Major Items:

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

- Deferred maintenance and repair/improvement of life safety systems (all meet code; this work would take us forward voluntarily)
- Building envelopes
- Mechanical, electrical, plumbing systems, including HVAC
- Utility infrastructure

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

F. Non-Routine Maintenance:

CMU has allocated \$5.7 million annually since 2010 for deferred maintenance. In fiscal year 2014, an additional \$1.3 million in one-time funds was budgeted for roof replacement. Funding for deferred maintenance comes from the capital budget, which is funded by Auxiliary Services, Parking Services and an annual general fund allocation of \$2.8 million. Since 2008, CMU also has invested about \$6 million in the renovation and upgrading of individual classrooms and auditoriums.