

## Instructional Programming

- A. *Description of existing academic programs and projected programming changes during the next 5 years, in so far as academic programs are affected by specific structural considerations (i.e., laboratories, classrooms, current and future distance learning initiatives).*

Lake Michigan College (LMC) has served Southwestern Michigan for over fifty years. The College offers 8 degree programs which prepare students for transfer to four-year institutions or employment including:

- Associate in Arts
- Associate in Science
- Associate in Business Administration
- Associate in Applied Science
- Associate in Applied Business
- Associate in Industrial Technology
- Associate in Skilled Trade Technologies
- Associate in General Studies

The tradition of educational excellence and partnership development is evidenced by the fact that Lake Michigan College:

- Has been the organizer and coordinator of a Community Leadership Program for Southwest Michigan since 1990.
- Was the first community college in the nation selected to participate in developing metalworking skill standards and is now NIMS certified.
- Develops, evaluates and revises courses and programs according to standards validated by local industry.
- Has been designated as the “*trainer of choice*” by Cornerstone Alliance, the region’s premier economic development agency.
- Has provided over \$2 million in training funded by the Michigan Economic Development Corporation in Southwest Michigan over the last ten years.
- Is the cultural and community center of the region as a result of the Mendel Center.
- Was one of only eight community colleges in the State of Michigan to receive an M-TEC<sup>SM</sup> grant in the first grant competition.
- Meets the needs and expectations of area businesses –M-TEC was rate a four out of five on overall satisfaction of our training programs (five being the best) in a telephone survey conducted in summer 2009.

## **Existing Academic Programs**

The College for-credit academic programs are divided into two instructional divisions: 1) Arts and Sciences and 2) Career Education.

The Arts and Sciences Division consists of six departments, with courses in the following disciplines:

### **Art & Humanities**

Art, Music, Theater, Philosophy, Humanities, Foreign Languages

### **Transitional Studies**

Remedial and Developmental English, Mathematics, Reading, Composition, and English as a Second Language

### **Natural Sciences**

Biology, Chemistry, Physics, Physical Science

### **English and Communication**

Communication, English

### **Mathematics, and Physical Education-Wellness**

Mathematics, Physical Education, Elementary Education

### **Social Science**

Geography, History, Political Science, Psychology, Sociology

The Career Education Division consists of three departments, with courses in the following disciplines:

### **Business**

Business Administration, Computer Information Systems, Hospitality Management, Office Information Systems, Law Enforcement, Corrections

### **Health Sciences**

Dental Assisting, Nursing, Radiologic Technology, Sonography, MRI, Health, EMT, Paramedic, Phlebotomy, and Early Childhood Education

### **Technologies**

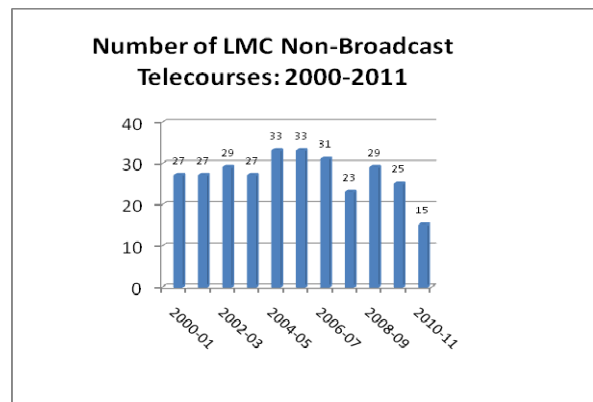
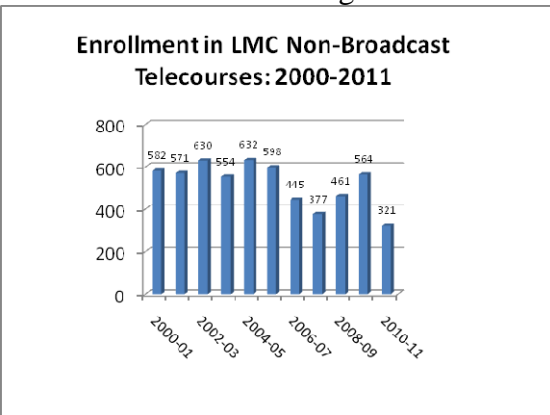
Drafting and Design, Energy Production, Industrial Maintenance Technology, Machine Tool Technology, Apprentice Training, Welding, and Agriculture.

The Apprentice Training Program at Lake Michigan College has a history of providing education and training opportunities to compete in a global marketplace. Nearly 100 employers are active partners with LMC in the Apprentice Training Program, which combines classroom study with work-based learning. Occupational areas include

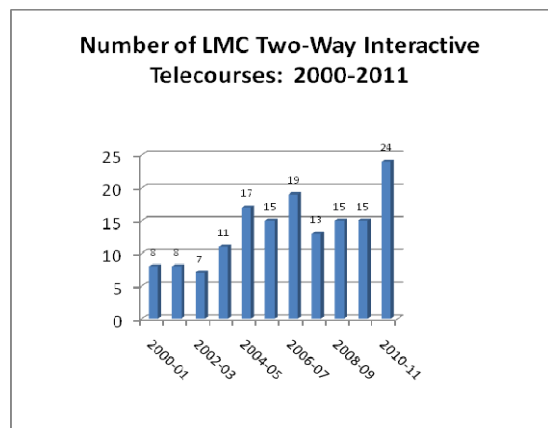
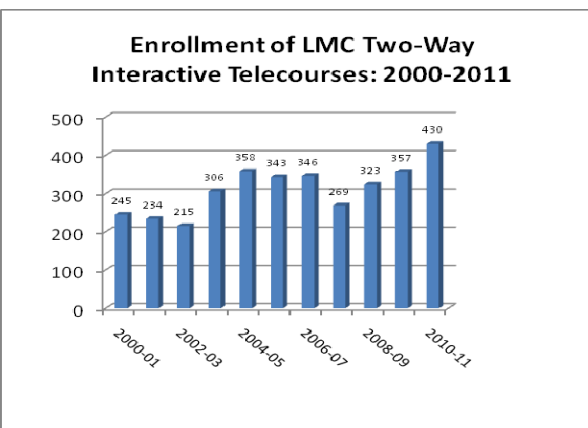
drafting/design, machine building, maintenance, metalworking, mold making, quality control, and other skilled trade classifications.

Seven programs are operated in College facilities in cooperation with local high schools and the Berrien County Regional Educational Service Agency: Law Enforcement, Pharmacy Tech, Allied Health, and the Professional Health Careers Academy, Machining is offered at Bertrand Crossing. Certified Internet Web (CIW) Design, CISCO Academy, Basic EMT, Machining, and Energy Academy are held at the M-TEC.

Recognizing that not all students can attend regularly scheduled classes because of conflicting work and family responsibilities, the College initiated telecourses in Winter 1989. With a modest beginning of two courses and 55 students, LMC's course offerings have grown, with our largest offering of 33 telecourses in 2005-2006 and our largest enrollment of 632 students in 2004-2005. Courses in a variety of disciplines are offered including History, Spanish, Business, Psychology, Marriage and Family, National Government, Economics, Management, Marketing, Sociology, and Small Business Management.



Lake Michigan College was the **first** Michigan community college to offer two-way interactive courses. The College is equipped with three electronic classrooms capable of originating and receiving two-way interactive classes between all three sites simultaneously. The technology is used to conduct classes between the Napier Avenue Campus, the Bertrand Crossing Campus, and the South Haven Campus. During the past eighteen years, enrollments in these classes have averaged about 276 students each year. In addition to Lake Michigan College courses, the College also has facilitated two-way interactive courses for educational institutions including Western Michigan University, Michigan State University and the Van Buren Intermediate School District.



## **The Teaching and Learning Center**

Technology has made a definite impact on the learning resources available to our students and on how they access them. Students are turning to online resources in increasing numbers, although the high personal touch ethos traditional to smaller community colleges continues.

Blackboard, the learning management system (LMS) used by the College, is administered through the Teaching and Learning Center. Originally created in Fall 1996 as a limited resource center directed part-time by an English faculty member, the intent of the Teaching and Learning Center (TLC) was to introduce and disseminate to faculty new methods in postsecondary education and to offer technical help in academic technology in recognition of a need to increase computer literacy across all disciplines. A previous NCA self study recommended hiring a full time director to handle instructional technology responsibilities and to provide a greater range of faculty development opportunities.

In 1999, a five-year Title III grant "Integration of Technology to Strengthen Academic Programs" infused multimedia into the curriculum by providing infrastructure and support:

- Fiber optic backbone at the Napier Avenue Campus
- Equipped all classrooms with multimedia capable instructors' stations (computer, projector, VCR/DVD)
- Expanded the TLC to fulfill the faculty development needs created by the above, hiring a full-time director in year two (2000) and a multimedia equipment technician year three (2001), both of which continued beyond the 2004 conclusion of the grant to the present.
- Created specialized and open computer labs with discipline specific software

Today the center provides support for a large number of software applications and instructional technologies, including audience response systems ("clickers"), screencasting, blogs, wikis, and webinars. The center is used for many varied purposes.

### **Strengths**

Within the first three years, the high rate of adoption of Blackboard was impressive; 68% of full-time faculty and many adjunct faculty members have embraced the use of Blackboard. Today, an average of 275-350 courses per semester are active on Blackboard, which has truly become a mission critical application for the College in the area of distance education. The variety of software applications and academic technology support is broad. Instructors are responding favorably to access to Blackboard's advanced features, such as plagiarism detection, blogs, wikis, journals, and mobile access via smartphone. The physical environment is a welcoming space and staff members enjoy strong faculty relations and professional credibility. Workshops are delivered in many formats, at all campuses, at differing times.

Over the past ten years, changes have occurred in educational programs at the College that reflect changing programmatic and educational needs for students, advances in educational technology, and reorganization of personnel and departments. During this time-frame the College installed personal computer base grew from an estimated 400, to over 1,600 and the number of labs went from 12 to over 50. Most of the computer labs are dedicated to particular courses and/or disciplines, with open laboratories available to students as well. Overall, the College has over 1,000 computers dedicated to Academic usage. Over 100 classrooms are now

equipped with a teacher station, desktop computer and data projector. Information Technologies has implemented a five year technology refresh plan to support instructional programs, faculty and staff. To further support the student technology needs, wireless Internet access points have been implemented across all campuses. New email collaboration services were also implemented in 2010 using Google Gmail and doc hosted services. In 2011, Lake Michigan College plans to add additional capacity to its wireless network to support the growth demand of wireless devices and smartphones.

The college network is also being enhanced to ensure that faculty and students have access to Blackboard and other online course content. In 1999, the College instituted web-based courses in Chemistry and Economics. Web-enhancement has existed for several years and continues to grow through Title III grant activities. The introduction of Blackboard as an online tool has led to web enhancements for seventy courses and delivery of nine courses exclusively through the Internet. Information and communication technologies are continuing to revolutionize the way the college functions both administratively and academically. Applications and the means of communications provided by these technologies shape the learning environment and the student experience as a whole.

The College has offered credit classes in modular, open-entry, open-exit (OE/OE) format for more than ten years in Dental Assisting. OE/OE classes have been offered for more than for five years in Computer Skills. Courses offered in Dental Assisting and the Technologies Department are available in modules to encourage employers to send employees for targeted training and to facilitate the transition from traditional classes to the open-entry, open-exit format.

**The Community and Business Services Division (CBS)** provides credit and non-credit programming to area businesses. CBS works in partnership with academic divisions to create custom solutions for their clients. CBS acts as a focal point between businesses and organizations in the region and the college. The major services of CBS are:

**Community Outreach** - as a point-of-contact for the college, CBS is positioned to listen to the needs of businesses and organizations to be their advocate in the areas of workforce development, training and education.

**Business and Industry Contract Training** - CBS works closely with businesses and organizations in a consultative role to develop specific training programs that best meet their needs. CBS prides itself on listening to clients and recommending training and education that will meet an organization's need to solve problems or advance a firm's workforce. CBS is able to provide customized training by calling upon the resources of the college and outside individuals accustomed to working with businesses.

- On Company Site Credit Courses include:
  - “Best Ticket in Town” at Whirlpool Corporation
  - Four Winds Casino
- On Company Site or On Campus Non Credit Training Programs

**Workforce Training Institute** offer business and professional development programs that

provide the individual business person and his/her organization with information for continuous improvement. The theories and skills discussed in these non credit classes apply to small, large, non-profit, and government organizations. Unique programming includes:

- Certified Nurse Assistant
- Manufacturing Fundamentals
- Pharmacy Technician
- Welding Academy
- Green Construction Academy
- Line Mechanic D

Some courses aim to update a variety of professional licensures. For example, Pre-licensure education for residential builders and maintenance contractors.

### **Community Leadership Academy**

The Community Leadership Academy is sponsored by Lake Michigan College, as well as other community organizations. The academy targets emerging managers and directors, executives new to the community and established leaders seeking to refresh their skills. It provides the participants with a broad understanding of community issues and development, an increased understanding of leadership styles, improved personal leadership skills and a network of colleagues and resources. It provides employers and the community with individuals connected to a diverse network of dynamic leaders who are prepared to discuss and act on community issues.

**Non Credit Computer Classes** introduce students to various software programs for professional or personal enrichment. The classes are usually presented in two and a half or three and a half hour modules, and at a pace to meet the needs of students. Concepts are developed in a relaxed environment without tests or grades. Classes are offered for the beginner who needs to learn basic skills or for the more advanced student who wishes to develop skills and knowledge. All classes are hands-on and provide the opportunity for individuals to practice newly acquired skills and to ask questions specific to their particular use.

This training in computer skills is offered at the various campuses and at the work site. The College has a CISCO lab. The CISCO lab is operated in cooperation with Benton Harbor Schools.

**Workforce Service Programs - Grant- Funded Programs** – The College administers economic development and Job Training (EDJT) grants with strategic partners such as Michigan Works! and MEDC to enhance the employability skills of the area workforce by providing instruction and curriculum consultation. Course delivery may be to employees of a grant eligible company or to individuals who are unemployed and need specific skill development. Examples of programs offered include:

- Customer Service
- Hospitality Training
- Literacy Training
- Incumbent Worker Training

- Certified Nurse Assistant
- Road Construction Apprenticeship Readiness
- Manufacturing Fundamentals
- Welding Academy
- Green Construction

**Workforce Service Programs – Contracts-** Lake Michigan College has been selected as a sub-contractor by the Workforce Development Boards in two areas of the State. The Kalamazoo-St. Joseph Workforce Board selected Lake Michigan College as the job placement provider for the Jobs, Education, Training (JET) program in St. Joseph County and the Michigan Prisoner Re-Entry Initiative (MPRI) job placement provider for Kalamazoo and St. Joseph Counties. The Workforce Development Board for Berrien, Cass and Van Buren Counties selected Lake Michigan College as the provider of staffing services at the five One Stop Service Centers in the three county region.

**Testing Service Center** – Lake Michigan College is an authorized site for GED testing and WorkKeys Assessment Testing. WorkKeys is used to identify skill gaps between the employee and what is required for the position. It is used by local business for both hiring and promotion. CBS is designated a Work Keys Service Center by ACT, Inc and the Michigan Department of Career Services. Three WorkKeys assessments make up the National Career Readiness Certificate (NCRC). The NCRC is the nationally recognized standard for workplace readiness credential.

**High School Partnerships** – Sponsored by the Benton Harbor Area Schools, CISCO Academy classes are taught at M-TEC. It is a comprehensive e-learning program that provides area high school students with knowledge and skills in preparation for industry standard certifications. Coloma High School sponsors the Green Fabrication High School Academy. The academy prepares students for “Green” jobs in the many areas of energy production.

**M-TEC Room and Facilities Rental** – Services include facilities, audio-visual and breakout rooms.

### **Career Services**

Lake Michigan College offers a variety of services to help students and community members prepare for the future. Career Services maintains “job boards,” free of charge to employers and job seekers, in strategic locations both on and off campus, listing a variety of available part-time and full-time local jobs. In addition, the Center provides resources to help individuals choose or reaffirm the career best suited to their interests and talents. Career Services offers career assessment, career guidance, employment information and workshops to address issues such as resume preparation and interviewing techniques.

## Projected Programming Needs for Next 5 Years

Working with representatives of business and industry within Southwestern Michigan and all 16 K-12 school districts served by Lake Michigan College, the following programming expansion needs have been established:

<b>Academic Program</b>	<b>Requires Structural Needs</b>	<b>Distance Learning Component Included</b>
Web Based Quality Certificate		X
NetWare Management (CISCO)		
Computer Information Systems		X
Agriculture	X	X
Computer Support Technician		
Digital Animation and Gaming	X	X
High School Academics	X	X
Emerging Technologies including: <ul style="list-style-type: none"> <li>• Science, Engineering, Math, Technology (SEMT)</li> <li>• Biotech</li> <li>• Cyber Security</li> <li>• Building Technologies</li> <li>• Energy Production</li> <li>• Lineman Mechanic Training</li> <li>• Digital Animation and Game Design</li> <li>• Logistics</li> </ul>	X	X
Manufacturing Technologies <ul style="list-style-type: none"> <li>• Welding Training and Certifications</li> <li>• Wind Energy &amp; Maintenance</li> <li>• Industrial Maintenance</li> <li>• Advanced Manufacturing</li> <li>• Pre-Engineering</li> </ul>		X
Business – Management Marketing	X	
Culinary	X	



Hydrology – Water Quality Technology	X	
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The following programs have now been established: Graphic Design, Education – Teacher Training. Early Childhood Education, Sonograph, MRI and Energy Production.

The number of students enrolled in Business Department courses – marketing and management, office information systems, computer information systems, accounting, and hospitality management – have doubled in just the last few years. Enrollment in the sciences has also doubled.

In addition to an environmental scan, the College uses advisory committees in all career education programs to assist with curriculum and equipment needs and to keep us abreast of trends in employment in the area. An area of increasing need in this geographic area is computer skills, particularly in technical and administrative support. In addition to the typical transfer programming skills, students now have the availability of new courses in Networking Fundamentals and Advanced Networking Skills. These courses cover local area and other networks in one lab, and routers, using the CISCO lab. CIS courses have been restructured to provide ability to achieve 18 hour certificates that prepare completers to take certification exams. Health Information Technologies is a major focus for both CISCO and LMC in 2010-11.

#### **Expanded Opportunities for Adult Students**

As a result of advancements in technology, the College is providing more open-entry/open-exit computer skills enhancement courses for use in managed computer labs, a plus for individuals who have previously been held back from taking classes by irregular schedules or work constraints.

The College currently offers non-credit computer training and includes Microsoft Office Suite training as well as other specialized software. We anticipate a 50% increase in the demand for computer training over the next five years.

Business, Management & Marketing Degrees are being developed as on-line programs for 10-11.

#### **Customized Training for Business and Industry**

Over the next five years, the focus for training will swing back to training for new careers as well as training focused on improving employee productivity causing an increased demand for classroom space at the Napier Avenue Campus and M-TEC. New program areas will include, but are not limited to: Green Construction, Hospitality Training, Customer Service Training, Quality, Computers and Welding Training, with a 20% increase in new programs expected over 5 years.

There will continue to be demand for technical and “soft skills” training. Community and Business Services will use Work Keys to assess training needs within a business, and expects a 15% growth in this area over the next 5 years.

*B. Unique characteristics of each institution's academic mission*

- The College district consists of Berrien County and contiguous Covert Township and South Haven in neighboring Van Buren County. Located in the southwest corner of the State, Berrien County has a population of 161,734 and a workforce of 82,100. The three largest cities include Benton Harbor, Niles, and St. Joseph. In 1997-98, the College expanded its service area to include the northern Indiana counties of Elkhart, St. Joseph, and LaPorte. In 2003, the College added South Haven to its service area.
- In August 2009, the North Central Association awarded a 10-year continuation of accreditation.
- The College maintains articulation agreements with numerous colleges, universities, and high schools in the area and throughout the State. To serve students better, the College continues to seek partnerships and develop mutually agreeable articulation plans. The high school and four-year articulation agreements are a work in progress, with policy and procedures in place and being evaluated and revised as needed.
- The College has a Student Support Services program through a five-year, \$281,489 per year, U.S. Department of Education grant. Designed to help two hundred students overcome class, social, academic, and cultural barriers to higher education, the program is intended to help first generation, low income students and students with a disability persist until they earn a certificate or associate degree; or earn a certificate or associate degree and transfer to a four-year institution to complete a baccalaureate degree or higher.
- Beginning in Fall 09, an Agriculture Degree program is scheduled to begin.
- Siena Heights University has maintained a degree completion center on the Napier Avenue Campus since 1982. The University extension center offers five baccalaureate degrees (and one master's degree. Last year, 162 students attended classes for the bachelors' degree programs and 12 participated in the master's degree program.
- To better serve students at Lake Michigan College and the Western Michigan University (WMU) - Southwest Regional Center, WMU has a 40,000 square foot regional center located on the LMC Napier Avenue Campus. The facility opened October 25, 2002. WMU and LMC have partnered to improve educational programming for residents of Southwest Michigan. WMU is the primary transfer institution for LMC students. This facility allows students to complete their baccalaureate degree without commuting or relocating. Higher education opportunities have also expanded in the community. In 2003, Lake Michigan College and Western Michigan University expanded their partnership to include a WMU office and classrooms in the Lake Michigan College South Haven Campus.
- The Educational Opportunity Center (EOC) at Lake Michigan College serves a minimum of 1,300 participants each year. The EOC receives funding from the U.S. Department of Education, and serves individuals in the Michigan counties of Berrien, Cass, and Van Buren,

and the Indiana counties of La Porte and St. Joseph.

The EOC provides information and assistance to adults (19 years and above) who are interested in furthering their education. The services to eligible participants include academic tutoring (in preparation for GED or college assessment testing), career assessment, assistance completing applications toward college entrance, referrals to appropriate adult education centers, and/or community assistance agencies. The goal of the EOC program is to increase the number of adult participants who enroll in postsecondary education institutions.

- The College partners with Benton Harbor Area Schools to serve 65 students in the Upward Bound Program. The Upward Bound Program focuses on preparing high school students to graduate from high school, enroll in, and complete a program of postsecondary education. Benton Harbor High School is the target school.

To assist students in the above objectives, the Upward Bound staff provides academic advancement services, college prep sessions, parent workshops, a six-week summer academic institute, life skills workshops and cultural activities. This intensive college preparatory program also assists students in completing and submitting college and scholarship applications.

- During the 2009-2010 school year, more than 1,300 eighth graders from twentyone Berrien County public and private schools visited LMC during six Career Exploration Days and learned about various careers through classes, workshops and demonstrations. Career Exploration Days are sponsored by Berrien Regional Education Service Agency and Lake Michigan College. Informational presentations were made during 8<sup>th</sup> Grade Parent Night meetings at Hopkins High School in January. Approximately 150 students and their parents attended and learned more about the importance of the impact their choices in high school can have on college and future careers.
- Lake Michigan College at Bertrand Crossing near Niles opened its doors to students for the first time Fall 1998, introducing new educational and training opportunities to thousands of residents of southwest Michigan and north central Indiana. Approximately 500 students signed up for classes at the new campus the first fall semester, contributing significantly to the increase in the College's overall fall enrollment. Since 1998, the College has expanded services to the area K-12 school districts and to the home school students. The new Line Mechanic D program produced its first graduates in October 2010 and the campus has shown enrollment increases for several consecutive semesters for both credit classes, community education, and workforce training classes. Area elementary, middle, and high school students are on campus regularly for robotics and fabrication classes.
- The new Bertrand Crossing Early College Academy brings area high school seniors to campus as full time students.

- Lake Michigan College at South Haven opened its doors to students for the first time Fall 2003, introducing new educational and training opportunities to thousands of residents of Van Buren County and surrounding counties. Four hundred and fifty-one students signed up for classes at the new campus the first fall semester, contributing to the increase in the College's overall fall enrollment. Enrollment soared Fall 2010 resulting in a 25% increase and seeing 796 students.
- The Educational Talent Search Program services 600 6<sup>th</sup>-12<sup>th</sup> grade students in the Benton Harbor and Covert School Districts each year. The focus of the program is to assist students to graduate from high school and then enroll in post-secondary education. Services provided by the program include field trips and college campus tours; college entrance exam registration information, fee waivers, and preparation workshops; college admission assistance and information, and in-school workshops designed to enhance life skills and college preparation.

*C. Planned initiatives which may impact facilities usage*

Lake Michigan College will be submitting a \$7,920,100 million capital outlay request to help advance the **College agenda to create a 21<sup>st</sup> century learning environment and support network, enhance student success, and improve energy efficiency.** The proposal will impact students and faculty at the College's Napier Avenue Campus.

This investment will supplement the \$7.3 million investment the College has already made in the renovation of its science labs in the last three years to support its STEM initiative. It is also expected that during the next five years the College will invest an additional \$14.4 million in critical infrastructure that is more than 40 years old and no longer supports current teaching, learning and student engagement.

Included within the College Capital Outlay request are the following:

21<sup>st</sup> Century Teaching and Learning and Advancing Student Success

- Improve the classroom environment and incorporate new teaching technologies into College classrooms to enhance student success and better prepare them for the use of "real-world" technologies at work or in advanced studies.
- Create a new service center to assist faculty with:
  - Redesign and revitalization of curricula, and
  - Identifying and learning new technologies and incorporating those technologies into the classroom.
- Create new student engagement spaces on the Napier Avenue Campus to provide group study and classroom project preparation areas supporting interdisciplinary collaborative learning throughout the College.

## Energy Savings

- Replace our original heating and cooling plant and air handling units. This equipment is over 40 years old and well past its design lifetime. Annual energy savings is estimated at \$277,400.
- Connect the STEM initiative and the physical plant replacements by bringing the energy data into the classroom, thereby using the building itself as part of the instruction.

The proposed grant is grounded in two fundamental needs:

- **21<sup>st</sup> Century Teaching and Learning and Advancing Student Success**
- **Energy Savings**

## 21<sup>st</sup> Century Teaching and Learning and Advancing Student Success

- **The College proposes renovating 50 classrooms in its 40+ year classroom facility along with several areas for student engagement and learning.**

Learning occurs everywhere, in many forms, and is interdisciplinary. Compared to what learning meant, it is now increasingly rigorous in keeping with the demands of “21<sup>st</sup> century literacies.” Most importantly, it is increasingly occurring in “technology-rich environments.” As a means to acquire new skills, opportunities for social interaction are a must-have norm. Learning is increasingly flexible, forward-thinking, and challenges existing approaches to student engagement.

In 2011, Lake Michigan College completed a 3-year, \$7.3M renovation of our science laboratories in support of our Science, Technology, Engineering and Math (STEM) initiative. Included in our five year capital plan is a \$4.1M replacement of our primary HVAC plant which we expect to result in more than \$277,400 in energy savings annually. In conjunction with the College’s efforts we seek funding support to close the loop on our initiative to use our physical plant as a learning laboratory and improve student outcomes by providing teaching spaces that support the incorporation of the current technologies and teaching methods into the College.

**Learning Today:** Gone are the days when students would accept muted, inflexible settings where individual work was the core approach to the acquisition of knowledge. Today’s students thrive on interdisciplinary, collaborative and engaging approaches to learning; a distinct movement away from lecture-based mediums. The most successful students learn from multiple interactions with their physical environment and social exchanges. With recent activities at the College focused on the advancement of STEM learning opportunities, evidence suggests remarkable advances in student engagement through campus redesign efforts. Today’s students demonstrate a strong preference for renovated spaces, and expect to see innovative learning tools at the College. Roughly 70% of Fall 2010 students who utilized resource center advancements “were retained in Winter 2011, compared to only 35% of students who did not use the resource center. Student learning is greatly enhanced by the provision of multiple, flexible tools for skill acquisition, like those provided through the College’s STEM-focused efforts. Within a new science resource center students had a 13% higher chance of being successful in a science course after utilizing the redesigned resource center versus those who did not use the resource center (Hanover Research, Fairbanks Science Student Resource Room, Lake Michigan College). Clearly, renovated spaces coupled with student engagement are essential for learning

advancements.

**Classroom Technology:** Use of advanced technologies in College environments is a requirement for today's learning landscape. When employed with a focus on up-and-coming technology trends, student satisfaction and engagement with learning tools increases, as was the case "with use of SmartBoards jumping by more than two thirds" at Ryerson University of Toronto. Students no longer learn well through the use of "old-school" chalkboards, but instead, thrive when multiple forms of media are incorporated into the learning environment.

**Classroom Design:** Students' satisfaction levels with learning activities are increased, and learning itself is positively impacted by sustainable implementations of acoustics, sightlines, access to power outlets and internet, white boards, air quality, ventilation and temperature instrumentation accessibility, moveability, and comfort of furniture partnered with tech-based features. Advanced learning and use of space for small group work increased by 80% in one semester at Ryerson University in Toronto. The way students learn today is largely influenced by multidisciplinary and collaborative technology approaches, needs assessments, networking, research and evaluation efforts, resulting in more fully engaged teachers and learners.

**Students' perceptions of their current learning environment have been found to "be a stronger predictor of learning outcomes . . . than prior achievement at school!"**

**Flexible Learning Spaces:** "Studies released by Cornell University showed direct connections between educational architecture and high performing students (Cunningham, 2002)." For generations wanting flexible, digital learning versus being "lectured-at," smaller, team-based interactive rooms (University of Alberta), with few furniture barriers and teaching pods with views are increasingly popular as a means to enhance skills acquisition.

**"Learning is optimized when physical environments are treated in the same focused way that curricular material and teacher presentations are created (Graetz, Goliber, 2002)."**

**Physical Space, the Physical Plant and Learning:** Clearly, student learning is greatly influenced by the physical environment. The College took intentional and distinct actionable steps in designing the 11 new science classrooms/labs to incorporate the physical plant as a learning tool; but further

implementation is needed in the remaining 50 classrooms to provide an internal environment that parallels that understanding. Integrated redesign would allow for much-needed new technologies across the remaining College classrooms.

### Energy Savings

The Lake Michigan College (LMC) Academic Building is a three-story structure, with the largest floor being the first floor, which is partially underground. The underground portion of the structure connects the second and third floor wings. Open for fall classes in 1969, the building serves as the primary instructional facility for the College, with 303,147 square feet.

- **Lake Michigan College proposes to replace our aging mechanical infrastructure and support systems with new sustainable, energy efficient mechanical and support systems, including heating, cooling, air distribution, building control systems, supporting electrical and ceiling systems, fire alarm system, and security systems.**

The HVAC and Support Systems currently being utilized at Lake Michigan College are now beyond their recommended service life with antiquated controls and obsolete technologies. While the College was originally constructed with sustainable energy features such as a green roof and a cooling system utilizing the College's lake, the majority of the equipment was installed with the original building construction, thus most of the equipment is in excess of forty years old. In the past forty years, technology has changed and advanced in Mechanical and Support Systems. The proposed renovation will build on the College's legacy of providing an educational environment with the latest in sustainable, energy efficient technologies. We expect implementing this renovation will save the College approximately **\$277,400 in energy costs on an annual basis.**

### **Conclusion**

This grant intentionally helps the College complete the process of sustainable campus redesign by providing interdisciplinary learning not just in our science curriculum, but across the College. Most importantly, it adds necessary value to the College's investment of general funds in replacing the heating and cooling plant, in-turn enabling data used in that project to be incorporated into the classroom. Energy simulation modeling through campus redesign will allow for buildings to serve as teaching tools, technology, operations and maintenance tools, educational and policy outcomes learning tools.

This grant will allow the College to link the investment of general funds on the plant upgrades, in a full-circle systems approach, to interdisciplinary, co-curricular student outcomes environments. The campus infrastructure, through this grant, will be allowed to enhance the campus architecture, classroom surroundings, teaching methods and highly-focused available technologies for unique, advanced skills.

#### *D. Demonstration of economic development impact of current/future programs*

- Lake Michigan College is preparing a workforce to meet accelerated shifts in technologies. We are planning for growth in manufacturing, energy, computer information systems (CIS) and in our bio-medical, health science/medical imaging and science curricula, the emergence of a science and technology-based economy. We have waiting lists for our health science programs. The College partners with fourteen (18) area health care providers for clinical sites. The American Society of Healthcare Executives reported in October 2004 that 72% of hospitals were experiencing a nursing shortage at their facilities. Employment opportunities in medical imaging are expected to grow faster than the average through 2014 (means an increase of twenty-seven percent [27%] or more). Eighty-five percent (85%) of our graduates currently remain employed locally, boosting Michigan employment.
- A number of today's and tomorrow's Emerging Technologies require an integrated science, academic approach with current laboratory facilities, accessible instruments, and an educational environment that engages scientific learning and interaction with faculty and

students. The College has received a complimentary Title III grant that will allow redesign of twenty-two (22) science courses with a goal of increasing the number of students who will successfully complete science courses with greater academic rigor. The State's community colleges are integral to providing Michigan companies with a steady stream of qualified and skilled workers in change processes and emerging technologies.

- M-TEC was made possible by a \$4.1 million grant from the State of Michigan and \$1.5 million from private support with \$1 million coming from the Whirlpool Foundation. The Center houses industrial maintenance, precision metalworking, energy, and computer-assisted design programs. Configuration of space and equipment within the Center creates an efficient and realistic learning environment that can be reconfigured as needs change. The facility is 43,879 square feet on a single level. A fiber infrastructure throughout the center is included to support state-of-the-art technology, and transports integrated data and video, allowing faculty to take advantage of new teaching tools and technologies including programs offered through the Internet, Michigan CCVLC, Michigan Virtual University and other higher education institutions. The facility includes 8 classrooms: each wired and equipped for multimedia presentation.
- The Apprentice Training/Trade Related Instruction program serves more than 100 regional training partner companies. Some 85 apprentices in 35 occupational areas fill much-needed area jobs. The Bureau of Apprenticeship and Training, U.S. Department of Labor approves the apprenticeship training programs.
- The Business and Industry Training staff assists in the implementation and delivery of cost-effective education and training, including development of employee screening, assessment, and orientation programs; and set up of basic skills laboratories. Staff members assist local companies to obtain State grants to help fund training costs.
- Community Education offered 451 events serving 2,909 participants last year. These classes are designed for personal enjoyment and professional development.