

Program Review

**Associate of Applied Science
Architectural Technology**

**Bachelor of Science
Facility Management**

Ferris State University
College of Engineering Technology
School of Built Environment

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Background Information

Degrees Awarded:

Associate of Applied Science in Architectural Technology

Bachelor of Science in Facility Management

Bachelor of Science in Architecture and Sustainability (not part of this program review cycle)

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Section 1: Overview

Section 1. Overview

1.A.1. Program Goals – Architectural Technology

The goals of the Architectural Technology program have evolved over the years. At its inception in the early 1950s, the main goal was preparing students to immediately become employed upon graduation within architectural firms as drafters and technicians. With the advent of CAD, the emphasis changed to digital “drafting”. However, in the current work environment, nearly all personnel are capable of working with computers. There is no longer a need for “drafters”. Therefore the focus of the degree provides a foundation for further study within professions related to the built environment. Further, the program now lays a basic foundation for appreciation of the history and aesthetics of the built environment. With the emerging focus of the profession on sustainability, this concept is being integrated into the curriculum.

The next evolution is in how buildings are designed and documented utilizing BIM (Building Information Modeling). This technology is integrated into the curriculum to ensure that students will have current skills as well as a sound foundation in theory and practice.

Most students now seek baccalaureate level degrees. Thus the primary goal of the Architectural Technology program is to prepare students for further study and to assist them in discerning the aspect of the built environment they wish to pursue. The program feeds students into the Bachelor of Science in Facility Management and a new degree within this program area, the Bachelor of Science in Architecture and Sustainability. The Bachelor of Science in Construction Management, offered within the School of Built Environment, is also an option, requiring a slightly different curriculum during the first two years at Ferris. To this end the curriculum has adopted higher standards in mathematics, art, science, and architectural history.

While it is still possible to enter the workforce upon graduation from the AAS program, due to economic and professional expectations, it has become a less viable route to a career in the built environment, especially Architecture. Thus the emphasis on preparation for further study and the option of pursuing a Master of Architecture degree after completing a baccalaureate degree at Ferris is addressed by the new higher standards.

Mission Statement:

The mission of the Architectural Technology Associate Degree program is to provide students with a foundation of architectural concepts, skills and values necessary to continue education for advanced degrees in programs related to the built environment or enter the employment market at an entry-level position in architecture and professions related to the built environment.

This career oriented program supports the FSU mission by contributing to the workforce needs of Michigan and prepares students to be lifelong learners in a rapidly changing and diverse

world. Students are actively engaged in the learning process inside and outside of the classroom in order to help each student maximize his or her potential.

Program Objectives:

Program goals and objectives are established by faculty with guidance from the Architectural Technology Advisory Committee. Program goals and objectives are also responsive to the changing needs and trends of the architectural profession. Since the last program review, the computer has impacted classroom learning activities to a greater degree. The efficiencies of the computer allow more time for engaging students in critical thinking, facilitating higher student performance and a higher level of technical sophistication.

With the addition of the new Bachelor of Science in Architecture and Sustainability degree, and the preference of students to pursue baccalaureate level study, the associate level degree has evolved to more specifically prepare students for successful completion of the advanced degree by creating a broader foundation, especially in General Education. In the near future the faculty will consider distinct tracks for students planning baccalaureate level degrees in Architecture and Sustainability, Facility Management, and Construction Management.

Under the guidance of the faculty of professional, licensed architects the program prepares students to:

- Develop manual and computer aided graphic skills and other appropriate visual communication skills necessary to document the architectural process that includes both the design and construction document phases.
- Develop knowledge of building materials, building systems and technology in conjunction with the architectural and construction processes.
- Develop a basic understanding of architectural design, the history of architecture and an appreciation of architecture.
- Develop a foundation in mathematics, physical science, and written and verbal communication. (Note: the foundation for mathematics and physical science has been enhanced since the last program review, to meet the requirements of the new Bachelor of Science in Architecture and Sustainability Degree, to be consistent with the entry requirements of Master of Architecture degree programs, and to meet the new requirements of the Bachelor of Science in Construction Management Degree.)

The Architectural Technology program has a long and proud history of providing professional cutting-edge architectural technology education. The program is recognized among Michigan architects as producing qualified, employable graduates with valued technical skills. Current graduates enjoy successful careers in architecture, facility management, construction management, interior design and other areas associated with the built environment.

1.A.2. Program Goals – Facility Management

The Bachelor of Science in Facility Management degree program was established in the early 1990s. It was designed to serve as a unique baccalaureate degree option for graduates of Ferris' and community college Associate Degree Programs in Architectural Technology.

Ferris' Baccalaureate Program in Facility Management was developed to provide education in the core competencies identified by the International Facility Management Association (IFMA). IFMA later developed a methodology to "recognize" academic programs that adequately prepare students for careers as facility management professionals. This designation has evolved to "accreditation" and is now administered by the non-profit IFMA Foundation. Ferris State is among the original academic programs recognized and later accredited by this body. Ferris State faculty has been instrumental in the evolution of the Standard used to accredit programs. The program was successfully reaccredited, for a six year term, in 2008.

There are currently five accredited baccalaureate level facility management programs in North America and nine in the world. This information was accessed on the IFMA Foundation Website on 28 December 2010 <http://www.ifmafoundation.org/scholarships/degree.cfm>

Currently there are ten core competencies identified by IFMA. All competencies must be addressed, at least to an awareness level, in accredited baccalaureate degrees in facility management. The current competencies accessed on the IFMA Foundation Website on 28 December 2010 <http://www.ifmafoundation.org/scholarships/standards.pdf> are:

- Leadership and Management
- Operations and Maintenance
- Planning and Project Management
- Communication
- Finance
- Human and Environmental Factors
- Quality Assessment and Innovation
- Real Estate
- Technology
- Integrative and Problem Solving Skills

A core of general education, business and management, building technology, and facility management coursework provide graduates with the skills, knowledge, and abilities for employment in the field of facility management consistent with IFMA's core competencies.

Mission Statement:

The mission of the Bachelor of Science in Facility Management degree program is to be a nationally recognized program that provides students with a foundation of concepts, skills and values to effectively begin the practice of facility management and instill the value of life-long learning.

Through the career-oriented program, the Facility Management Degree supports Ferris' mission by contributing to the workforce needs of Michigan and prepares students to be lifelong learners in a rapidly changing and diverse world. Students are actively engaged in the learning

process both inside and outside the classroom, to ensure each student achieves his or her full potential.

Program Objectives:

Under the guidance of the faculty, a combination of licensed architects and a Certified Facility Manager (CFM), the program prepares students to:

- Obtain a foundation in mathematics and physical science, behavioral science, written and verbal communication, and computer skills.
- Obtain a solid foundation in business and management and its application to Facility Management.
- Develop an ability to use the tools and techniques of the facility management profession.
- Develop an understanding of facility analysis, planning, project management, and design.
- Develop knowledge of the architectural and construction process.
- Develop knowledge of contemporary office technology and philosophy.
- Develop knowledge of building systems technology and the proper operation and care of those systems.

Program goals and objectives are established by faculty with guidance from the Facility Management Advisory Committee. Program goals and objectives are also responsive to the changing needs and trends of the facility management profession. Since the last program review, the curriculum has been revised to allow more flexibility in the selection of a science elective, as well as to make room for a management elective. The capstone/thesis, required in the final semester of the curriculum has been enhanced with the addition of a research planning course required in the semester prior to the development of the capstone/thesis.

Since this degree is accredited by an outside body, IFMA, it is important that the curriculum meets the requirements of IFMA, while providing an academic experience consistent with Ferris' blend of theory and practice based on a strong general education foundation.

The Facility Management program has been recognized within the profession and by other academic institutions as one of the major influences in the development of facility management education. Graduates of the program currently work in all types of facilities including healthcare, hospitality, governmental agencies, academic institutions, and facility and architecture related consulting firms.

1.B.1. Program Visibility and Distinctiveness – Architectural Technology

Taught by practitioners, the architectural technology curriculum is unique in its emphasis on the practice of the profession. Studio classes provide students with experience in the areas of residential and commercial building materials, hand and digital drawing, hand and digitally generated 3D modeling, BIM, building codes, presentation techniques, architectural design, and architectural history along with a strong base in general education courses, specifically mathematics, physical science, studio art, and verbal and oral communications. The curriculum provides the skills, knowledge, and the necessary preparation to allow students to become

successful architectural technicians or pursue related educational opportunities after graduation.

Several career path options are available to students upon completion of the associate degree in Architectural Technology. This distinct feature provides students with the following opportunities after two years of study, provided they meet the entry requirements specific to the program they desire to enter.

- Enter into the architectural profession as an architectural technician.
- Pursue a Bachelor of Science in Architecture and Sustainability degree at Ferris. This degree is designed to also prepare students to apply to NAAB accredited Master of Architecture degree programs.
- Pursue a Bachelor of Science in Facility Management degree at Ferris.
- Pursue a Bachelor of Science in Construction Management degree at Ferris.
- Pursue a Bachelor of Arts in Interior Design at Kendal College of Art and Design.

The primary market for Ferris' Architectural Technology program is high school students who are interested in computer drawing, architecture, and art. Survey results indicate that students choose Ferris because of the program's reputation, cost, and technical emphasis along with the desire to study at a "traditional" university. Over the last five years, the trend to continue on to a baccalaureate level degree after attaining the associate level degree has not only continued, but intensified. It is now the exception for a student to seek employment after completing the associate degree.

With the addition of the newly approved Bachelor of Science in Architecture and Sustainability degree, more students should stay at Ferris for four years, rather than transfer to other institutions. This new degree should also serve to market the associate degree program for students who are more serious and academically qualified than traditional students seeking associate level degrees.

There are a number of institutions in Michigan offering associate level degrees in drawing, drafting, or architectural technology. Ten community college programs were identified: Delta Community College, Grand Rapids Community College, Henry Ford Community College, Lansing Community College, Macomb Community College, Monroe Community College, Mott Community College, Oakland Community College, St. Clair Community College, and Washtenaw Community College. There are also several "for profit" schools offering similar degrees such as Baker College, and ITT Technical Institute.

In comparison to Ferris' Architectural Technology program, the institutions listed above offer a variety of programs that differ in scope and quality, from residential design to computer aided drafting. Ferris' curriculum offers a more comprehensive architectural education in terms of breadth and depth than the institutions listed above; and its newly revised curriculum will better prepare students seeking advanced degrees and architectural licensure. Lastly, all faculty teaching in the program are licensed architects and former or current practitioners, bringing real world connections to the classroom.

With the implementation of the new Bachelor of Science in Architecture and Sustainability, the Associate of Architectural Technology degree was revised to integrate foundation concepts and practices of sustainability. In addition to the technical aspects of the curriculum, these new concepts will continue to match trends and needs of Built Environment professions.

1.B.2. Program Visibility and Distinctiveness – Facility Management

The pioneering Facility Management curriculum at Ferris State University has a proud record of providing relevant, professional facility management education. The program is recognized among professionals and professional associations, corporations and institutions, and academic institutions as producing qualified and employable graduates with respected technical and managerial skills. As such, students enter the program knowing they will obtain a valued education and will enjoy successful careers in facility management or other professions of the built environment.

Several career paths are available to students upon completion of the baccalaureate degree in Facility Management. This distinct feature promises the following opportunities after completion of the degree:

- Enter the facility management profession as a facility manager or specialist.
- Enter into the architectural profession as an architectural technician or as a facility specialist.
- Continue education in a Master of Architecture program to obtain licensure as an architect. With the new Architecture and Sustainability degree's implementation, students who desire an architectural license will now most likely choose that baccalaureate option. However, the Facility Management degree option, while not as directly applicable to the Master of Architecture degree, does provide a more varied and diverse background that may benefit the student in future years, and several students in recent years have followed completion of the Facility Management degree with entry into accredited Master of Architecture programs.
- Continue education in an MBA program. Many students who enter the workforce simultaneously further their academic credentials with this option.

The Facility Management program is one of only five baccalaureate level facility management programs in North America, and one of nine in the world accredited by the IFMA Foundation. The most recent six year accreditation cycle was successfully completed in 2008. Ferris' program was one of the first programs in the world to be "recognized" (the designation used prior to accreditation) by the IFMA Foundation. This information was accessed on the IFMA Foundation Website on 28 December 2010

<http://www.ifmafoundation.org/scholarships/degree.cfm>

Ferris's program and its visibility are strengthened by the program faculty member who serves on the IFMA Foundation's Committee for Academic Affairs. This committee oversees the development and revisions to accreditation standards, visits schools applying for accreditation

or reaccreditation, and addresses other issues associated with the advancement of facility management as a recognized profession with a distinct academic core.

Ferris offers three educational programs in Facility Management designed to meet the needs of traditional and non-traditional students who plan to manage facilities or currently do so. All three utilize courses that comprise the baccalaureate degree program. They are:

- Bachelor of Science Degree in Facility Management. The degree accredited by the IFMA Foundation and the degree that is relevant to this study.
- Minor Degrees in Facility Management. These degrees are designed for students in other majors at Ferris. While any major is acceptable, the degree was intended for students who plan to have some responsibility for facilities such as Construction Management, HVACR, Recreation and Leadership, Hospitality Management, etc.
- Certificate Degree in Facility Management. This certificate is designed for non-traditional students who are currently working or have worked in facility management or a related area. It is ideal for tradespersons who wish to move to a management position, persons who have facility management responsibilities with minimal facility related training, etc. The courses used in the certificate are fully online.

While the certificate and minor degrees address an educational need and attract new students to Ferris, they also benefit the program and the university by improving program productivity.

The majority of students enrolling in the baccalaureate facility management program enter from associate degree programs in architectural technology or other building related programs. Approximately half the students enter the program from Ferris' associate degree in architectural technology. The bulk of the remaining students enter from community colleges, primarily Grand Rapids Community College and Lansing Community College.

The last few years has seen an increase in students applying for admission to the program who have strong academic skills but come from diverse academic backgrounds. These students typically need additional coursework in architectural technology and general education prior to entering the facility management core.

Survey results indicate that students choose Ferris' facility management program because of its reputation and the growing demand for graduates who hold degrees from IFMA Foundation accredited programs.

Since its inception, the Facility Management program has had a graduate placement rate in the high 90% range. Graduates work for a variety of industry and professional sectors; healthcare, education, government, hospitality, and various manufacturing and service industries. The General Services Administration has hired nearly half the students graduating over the last few years. The US State Department attended its first Ferris job fair in Spring 2010, specifically to recruit Ferris' Facility Management and Construction Management students. Other prominent organizations have a record of hiring students as well, including Spectrum-Health, Hyatt Hotels,

the Environmental Protection Agency, and Public Works Canada (Canadian students). These high visibility employment connections aid in the recruiting process.

There are four additional institutions in North America that offer accredited baccalaureate level facility management programs: Brigham Young University (Utah), Conestoga College (Ontario), Cornell University (New York), Wentworth Institute of Technology (Massachusetts). Each of these programs has its own unique focus. Brigham Young focuses on the project management process and property management; Cornell focuses on the design process; Wentworth focuses on interior design.

Conestoga College in Ontario is most similar to Ferris. It is based in Architectural Technology. It is a relatively new program and was accredited in 2009. In the last five years Ferris' program has had seven Canadian students complete degrees. With Conestoga's inception it is less likely that Ferris will continue to attract Canadian students. Due to the presence of Canadian students, an agreement was arrived at with Public Works Canada to recognize Ferris' Facility Management program and offer selected Canadian students co-ops with Public Works Canada.

With the strong interest expressed by the General Services Administration, the US State Department, and other organizations, strong recruiting by employers will continue to be a strong point of Ferris' facility management program.

The main element of IFMA Foundation accredited programs is the diversity of content. While all baccalaureate and graduate level facility management programs are required to address all IFMA core competencies, it notable that each program has its own emphasis. Many North American programs are based in building and architecture, while Asian programs are more technically oriented, and European programs are often based in real estate and hospitality management. Allowing for students to explore the diverse areas of facility management is the primary lesson to be learned from these programs.

1.C.1.a. Program Relevance; Labor Market/Demand – Architectural Technology

Labor Market Demand Source: US Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, 2010-2011 Edition. Accessed on 29 December 2010 at: <http://www.bls.gov/oco/>

For this study salaries of architectural technologists were not listed in the Occupational Outlook Handbook. The closest listing is for "Architectural Drafters". The information for this job classification was accessed at: <http://www.bls.gov/oco/ocos111.htm>

Since the Architectural Technology curriculum may lead to students applying to Master of Architecture programs, information is also provided for Architects. Information for this job classification was accessed at: <http://www.bls.gov/oco/ocos038.htm>

It should also be noted that the statistics in the 2010-2011 Edition of the Occupational Outlook Handbook is from 2008. This may lead us to question the validity of these government statistics, since the bulk of the recession period is not reflected in them.

Job Outlook for Architectural Drafters:

Employment of drafters is expected to grow more slowly than average for all occupations during the 2008-2018 time period. However, for Architectural Drafters, average growth (approximately 9%) in jobs is expected during this period. Architectural Drafters should experience the fastest growth of all drafting categories. This increase is based on population growth and the need to upgrade the nation's infrastructure. It might also be noted, that changes to a "greener" infrastructure may contribute to growth of jobs in this category.

Opportunities should be best for individuals with at least 2 years of postsecondary training in a drafting program that provides strong technical skills as well as considerable training in digital drafting and modeling. As technology advances, employers will look for drafters with a strong background: understanding of building systems, sophisticated computer skills, and an ability to apply their knowledge to a broad spectrum of responsibilities.

Demand for drafters varies throughout the country as well as by industry. Economic conditions particularly affect architectural drafting employment opportunities. During periods of recession, drafters are likely to be laid off. Increasingly drafters are hired on a temporary, contract basis as many firms utilize the employment service industry to meet their changing needs.

Earnings for Architectural Drafters:

The median annual earnings for architectural and civil drafters was \$44,490 in May of 2008. The middle 50 percent earned between \$36,170 and \$57,420. The lowest 10% earned less than \$29,050 and the highest 10% earned more than \$69,610.

Job Outlook for Architects:

As the economy recovers from the current recession, the job outlook for architects should also recover. The Occupational Outlook Handbook 2010-2011, expects a 16% growth in the number of architectural positions between 2008 and 2018. This is a better than average growth rate when compared to all occupations. Competition is expected for positions at prestigious firms and architects who are noted for their creativity will have an advantage in filling these positions. While some positions will simply be the replacement of architects who retire or leave the profession, a net gain in the number of architects is expected.

The profession is expected to grow at various rates in each geographic region of the country, particularly in the Sunbelt. Specific building types will also comprise a larger portion of the work. Healthcare facilities, nursing homes, and retirement communities will be built to serve the Baby Boomers as they enter their senior years. Educational facilities will also require replacement or renovation.

There has been a trend to outsource the production of construction documents. This trend may limit opportunities for lower level architects and intern architects.

Those who have internship experience during school, a strong knowledge of “green” design, and those who distinguish themselves through their creativity will be in greatest demand.

Since the architectural profession is dependent upon cyclical changes in the economy, some instability will exist within the profession. Firms focusing on institutional work such as schools, healthcare, nursing homes, etc. see less fluctuation in work.

Earnings for Architects:

Median annual earnings for architects was \$70,370 in May 2008. The middle 50 percent earned between \$53,480 and \$91,870. The lowest 10 percent earned less than \$41,320 and the highest 10 percent earned more than \$119,220. Those starting internships can expect to earn much less.

Earnings of partners in established architectural firms may fluctuate due to changing business conditions. Some architects may have difficulty establishing their own practices, and go through a period when expenses are greater than income.

Salary Results from Alumni Survey:

The results of the alumni survey of Ferris Architectural Technology graduates are similar to the government statistics for such positions. The survey results for AT alums are weighted to graduates prior to 1995, over 50%. Most graduates reported starting salaries under \$30,000 and most graduates, over 50%, report current salaries in excess of \$60,000. It should also be noted that only 5, or 10% ever worked in the architectural profession. Most work in fields related to architecture but more specific to their baccalaureate degree.

Based on information from the IRT Graduate Follow-Up Survey Report 2008-2009, the placement rate was 80% with the average starting salary of \$28,787. This is based on a response of 5 of 36 graduates, a response rate of 14%. The low response may be due to graduates continuing on to baccalaureate degrees and choosing to not respond to the survey.

1.C.1.b. Program Response to Changing Needs – Architectural Technology.

Ongoing assessment of both employer and student needs occurs through annual advisory board meetings, small focus group style student meetings conducted by the program coordinator, and student surveys. Comments and concerns expressed by these groups are reviewed by faculty and changes implemented as appropriate. These changes may be as minor as changing a course or assignment or providing tutoring opportunities, to a major change such as the development of a new degree option.

Examples of minor changes include, but are not limited to; increased use of computer software and online resources in relevant studio classes, upgrade of studios to simulate architectural

office equipment, weekly AutoCAD workshops, introduction of modeling software such as REVIT, introduction of digital presentation techniques in architectural presentations.

The new Bachelor of Science in Architecture and Sustainability is an example of a more major initiative that is partially a response to ongoing industry and student requests. This curriculum will address some of the issues listed in the *US Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, 2010-2011 Edition*. Specifically, this degree will expose students to real world situations and infuse sustainability into the curriculum in a holistic manner – addressing environmental, community, and economic sustainability. The Small Town Studio will link students to the community to address real architectural issues.

1.C.1.c. Summary of Program Exit Surveys – Architectural Technology.

Students graduating from the Architectural Technology program are surveyed by the program one to two weeks prior to graduation. This survey has been done most years since 1992. The information gleaned from the exit survey is used by faculty to assess the curriculum, faculty, facilities and equipment, explore unmet needs, understand graduate career goals, and to identify the factors that motivated students to choose Ferris and this program.

Most of the survey utilizes multiple choice and Likert Scale methodologies to measure student attitudes, concerns, and feelings. It also has a “comment” section, where students can share the concerns and comments in a less structured manner. The results of the survey are tabulated by a faculty member and distributed to the entire faculty.

Generally, the survey reinforces many things that are already known about Architectural Technology students: most are traditional students, most complete the curriculum in two years, and most plan careers in some area of the built environment. However, there are other things that provide insight into what student concerns and interests are as well as what motivated them to choose Ferris. Some of the findings that are consistent over the years are:

- Students would recommend the program to others and feel it provides valuable knowledge that will help them achieve future goals.
- They come for the technical emphasis of the curriculum.
- Location and cost are factors in their decision.
- Students say they want to design, but often rank classes in history, design, and presentation as not that important.
- That the equipment is lacking in quality.
- That nearly all plan to continue on to baccalaureate level degrees.
- That most would prefer to earn their baccalaureate level degrees at Ferris.
- That many would like to have the opportunity to earn a NAAB Accredited Master of Architecture degree at Ferris.

Oftentimes there are certain “themes” in a cohort’s exit surveys. These might include planning a career in a certain area, criticizing a specific instructor or course, negatively commenting on computers, equipment, and facilities.

The exit surveys serve as another source along with advisory board meetings, speaking with employers, staying current with developments in the profession, etc. that help the faculty shape the future of the Architectural Technology program.

1.C.2.a. Program Relevance; Labor Market/Demand– Facility Management

Labor Market Demand Source: US Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, 2010-2011 Edition. Accessed on 29 December 2010 at: <http://www.bls.gov/oco/>

For this study salaries of facility managers were not specifically listed in the Occupational Outlook Handbook. The closest listing is for “Administrative Services Managers”. The information for this job classification was accessed at: <http://www.bls.gov/oco/ocos002.htm>

It should also be noted that the statistics in the 2010-2011 Edition of the Occupational Outlook Handbook is from 2008. This may lead us to question the validity of these government statistics, since the bulk of the recession period is not reflected in them. However, from recruiting results and ongoing correspondence with alums, it appears that Facility Managers were less affected by the recession than architects.

Job Outlook for Administrative Services Managers/Facility Managers:

While job growth is expected to be about 12 percent, about as fast as average, from 2008-2018 for Administrative Services Managers, demand for Facility Managers is expected to be higher. Applicants for higher level management jobs will have strong competition, while less competition is expected for lower level management jobs.

While continued downsizing by companies and the increased use of technology may result in a more streamlined management structure with fewer levels of management, demand for facility managers should remain strong. This is due to businesses increasingly realizing the importance of maintaining, securing, and effectively operating their facilities. Cost cutting measures to improve profitability and compete globally will continue in many organizations, resulting in more outsourcing of facility management services, or in hiring qualified facility managers who are capable of achieving these goals in house.

Consulting opportunities should grow as companies look to outsource administrative and specialized tasks such as food services, janitorial services, space planning and design, energy management, telecommunications, information technology, energy conservation, and grounds and equipment maintenance and repair.

Job prospects should be better for those who can manage a wide range of responsibilities, than for those who specialize in particular functions. In addition to job opportunities resulting from growth, many job openings will stem from the need to replace workers who transfer to other jobs, retire, or otherwise leave the occupation. Note: The General Services Administration, US

State Department, and Public Works Canada have all expressed concern over retiring baby boomers with few mid career replacements.

As in other occupations, fluctuations in the economy may impact job opportunities in a specific year.

Earnings for Administrative Services Managers:

Wages of administrative services managers vary greatly depending on the employer, the specialty, and the geographic area. In general, however, median annual wages of salaried administrative services managers in May 2008 were \$73,520. The middle 50 percent earned between \$52,240 and \$98,980. The lowest 10 percent earned less than \$37,430, and the highest 10 percent earned more than \$129,770. Median annual wages in the industries employing the largest numbers of these managers were:

Management of companies and enterprises	\$85,980
General medical and surgical hospitals	77,870
Local government	74,860
Colleges, universities, and professional schools	72,460
State government	65,690

In the Federal Government, industrial specialists averaged \$82,169 a year in March 2009. Corresponding averages were \$78,995 for facility operations services managers, \$79,457 for industrial property managers, \$70,386 for property disposal specialists, \$78,562 for administrative officers, and \$71,049 for support services administrators.

Another source for information on earnings of Facility Managers is *Profiles 2007: Salary Report, International Facility Management Association. ISBN 1-883176-68-9*. This was the most recent salary information found from IFMA. This survey lists the following:

Median Salary	\$80,000
Average Salary	\$84,945
90% earn between	\$43,000 and \$144,000
10% earn less than	\$50,000
10% earn more than	\$125,000
Specialist (14 years experience)	\$70,000
Unit Supervisor (13 years experience)	\$68,000
Section Head (16 years experience)	\$80,000
Manager (17 years experience)	\$90,000
Director (19 years experience)	\$105,000

Salary Results from Alumni Survey:

The results of the Facility Management alumni survey are similar to the government statistics for such positions. Over 50% of the survey results are from alumni who graduated after 2006. Overall, alumni reported starting salaries with 10% starting for more than \$50,000 per year and

50% starting for more than \$40,000 per year. Alumni report current salaries as follows; 25% earn in excess of \$60,000; 50% earn in excess of \$50,000. It should also be noted that over 80% of alumni found FM employment within 6 months after graduation and 80% remain in the FM profession.

Based on information from the IRT Graduate Follow-Up Survey Report 2008-2009, the placement rate was 88% with the average starting salary of \$47,227. This is based on a response rate of 24%; this includes 8 of 26 baccalaureate graduates and 8 certificate graduates.

1.C.2.b. Program Response to Changing Needs – Facility Management

Ongoing assessment of both employer and student needs occurs through yearly advisory board meetings, student surveys, and small focus group student meetings conducted by the program coordinator. Comments and concerns expressed by these groups are annually reviewed by faculty and changes are implemented if appropriate.

The main changes to the curriculum over the past five years have been to allow students to select a management elective as well as a science elective. This allows students to tailor their curriculum to their interests, to some degree, while still fulfilling the accreditation requirement of thoroughly covering the IFMA competencies. Another major change has been the integration of sustainability content throughout the curriculum; setting sustainability goals prior to the design of a facility, selecting sustainable products and an energy efficient design during the design process, and adopting sustainable methods to operate and maintain the facility throughout its life.

The addition of sustainability content into the curriculum is consistent with the direction the Architecture and Facility Management Program Area has taken, specifically with the introduction of the new baccalaureate degree in Architecture and Sustainability.

1.C.2.c. Summary of Program Exit Surveys – Facility Management

Students graduating from the Facility Management program are surveyed by the program one to two weeks prior to graduation. This survey has been done most years since 1996. The information gleaned from the exit survey is used by faculty to assess the curriculum, faculty, facilities and equipment, explore unmet needs, understand graduate career goals, and to identify the factors that motivated students to choose Ferris and this program.

Most of the survey utilizes multiple choice and Likert Scale methodologies to measure student attitudes, concerns, and feelings. It also has a "comment" section, where students can share the concerns and comments in a less structured manner. The results of the survey are tabulated by a faculty member and distributed to the entire faculty.

Generally, the survey reinforces many things that are already known about Facility Management students: they are mostly traditional students but there are more non-traditional students in this program than in Architectural Technology, most complete the curriculum in two years, the average GPA is higher than Architectural Technology students, and many plan to earn

masters degrees...most commonly an MBA or M Arch. However, there are other things that provide insight into what student concerns and interests are as well as what motivated them to choose Ferris. Some of the findings that are consistent over the years are that:

- Students value that the Facility Management program is accredited by IFMA.
- An internship is required for graduation.
- A good number of students choose the Facility Management degree in order to earn a baccalaureate degree at Ferris, even though they plan careers in architecture.
- More students are transferring from community colleges such as Grand Rapids Community College and Lansing Community College.
- Most consider Architectural Technology as a good preparation for Facility Management.
- Nearly all would recommend the program to others.
- The internship is typically valued more highly than any of the courses.
- Students believe the more technical courses will benefit them more than the design and planning oriented classes.
- Career opportunities and Ferris' FM program reputation are major motivating factors for choosing Ferris.
- The vast majority plan to seek employment in Facility Management immediately upon graduation.

Oftentimes there are certain "themes" in a cohort's exit surveys. These might include planning a career in a certain area, criticizing a specific instructor or course, negatively commenting on computers, equipment, and facilities.

The exit surveys serve as another source along with advisory board meetings, speaking with employers, staying current with developments in the profession, etc. that help the faculty shape the future of the Facility Management program.

1.D. Program Value

The students and faculty within the Architectural Technology and Facility Management programs have been involved in a number of projects and activities which benefit the local and larger scale communities. These include:

Faculty Involvement:

Mary Brayton

- Architect for various projects.
- Participated in and judged various student competitions.
- Involved students in community based service projects.
- "Art 3D" Badge Workshop for Mecosta county girl scouts, March 27, 2010
- "Making it Matter" Badge Workshop for Mecosta County Girl Scouts, November 21, 2009
- "Ms. Fix-it" Badge Workshop for Mecosta County Girl Scouts, January 24, 2009
- "Ms. Fix-it" Badge Workshop for Mecosta County Girl Scouts, January 26, 2008

Bruce Dilg:

- Chairperson of Festival of the Arts 2007, 2008, 2009, and 2010.
- Architect for various projects in the Big Rapids community.
- Involved students in community based learning projects such as:
- Long term planning for Immanuel Lutheran Church, 2010.
- BIM model illustrating design and construction for Women's Center in Angola, Africa. With Ministry Architecture. 2010.
- Band Shell for City of Big Rapids, 2006.

Gary Gerber:

- Architect for various projects in West Michigan.
- Continuing Education Director for American Institute of Architects (AIA) Grand Valley 2008-2011.
- Acts as liaison between FSU architecture students and the professional architectural community.
- Organizes continuing education credit programs for AIA members.
- Coordinates AIA guest speakers.
- Administers \$1000 scholarship for baccalaureate and master level architecture students.
- Participated in Michigan AIA Leadership Retreat in 2008, 2009, 2010.
- Networking event for AIA leadership, with Ferris represented along with the NAAB accredited architecture schools in Michigan.
- Member AIA Continuing Education Task Force.
- AIA Liaison to Construction Specifications Institute (CSI).
- CSI Member.
- Served on committee for annual Design Professionals' Expo.

Dane A. Johnson:

- Presenter, Festival of the Arts 2007.
- Architect for various projects in the Detroit area.
- Coordinated Box City event for Ferris students and Big Rapids elementary students as part of Festival of the Arts 2011.

Diane Nagelkirk:

- Architect for various projects in West Michigan.
- Grand Rapids-Kent County Convention/Arena Authority (CAA)
- Operations Committee Member 2009-current

Joe Samson:

- Presenter, Festival of the Arts 2010.
- Member, IFMA Foundation Academic Program Accreditation Committee. (January '07 to present).
- Visitation Committee: TCI College, New York. (September 2010)
- Chair: Brigham Young University Re-recognition. (Summer '08).

- Member: Conestoga College, Kitchener, Ontario Recognition Committee. (Summer '08).
- Mentor to resolve final issues for recognition: Conestoga College, Kitchener, Ontario Recognition Committee. (Summer '08).
- Member: BREDA University Recognition Committee. (Summer '07).

Section 2: Perceptions

Section 2. Perceptions

2.A. Organization of Information

The information in this section is separated such that the perceptions of each program: the AAS degree in Architectural Technology and the BS degree in Facility Management, are presented separately. Since the methodology used to collect the data is the same for each, a section on methodology will precede the discussion of findings. In order to make this section more readable, samples of the surveys as well as the tabulation of survey results are provided in Appendix B, rather than in this section.

2.B. Methodology

Content:

The surveys were developed separately for each degree since the focus of each degree is a unique facet of the built environment. Architectural Technology focuses on design sensitive development and documentation of methods and materials of construction for a building, while Facility Management addresses the management and administration of all stages of a facility's life cycle from conception through disposal.

In the case of all surveys, the goals described in Academic Program Review: A Guide for Participants, 2010-2011 Revision, Division of Academic Affairs, Ferris State University as well as topics from past surveys and program reviews were used to develop survey questions. In the case of the Facility Management program, curriculum questions were based on the Competency Areas identified in the Accreditation Standard of the International Facility Management Association (IFMA) Foundation.

Alumni surveys were designed to collect the following information:

- Demographic information was collected to allow the program to assess who responded to the survey, what further education they pursued, what types of careers they pursued, what their earnings potential has been, and the geographic region where they live and work.
- Information on the adequacy of each degree's curriculum in preparation for work and further study.
- Additional comments to allow alums to add information which they may feel is relevant.

The employer surveys were designed to collect the following information:

- Demographic information about the employer was collected to allow the program to assess where employers are located geographically, what types of organizations and firms employ alumni, and the history the employer has of employing graduates of the program.
- Information on the adequacy of preparation the employer feels the alumni have received at Ferris.
- Additional comments to allow employers to add information which they may feel is relevant.

The student surveys were designed to collect the following information:

- Demographic information on student's grade level (1st year, etc) within the program, GPA, why the student chose the program, previous academic experience between high school and entering the program.
- Information was also collected on the structure of courses, teaching methods, convenience of courses, relevance of courses, availability of faculty, and ability of faculty.
- Questions regarding the physical teaching spaces as well as equipment, furnishings, and computers were also collected.
- Additional comments to allow students to add information which they may feel is relevant.

A faculty survey was designed to collect information regarding:

- Preparation of incoming students for academic work.
- Preparation of outgoing students for further academic work or entry into the work force.
- Ability of graduates in various aspects of the curriculum.
- Adequacy of support by University and College Administration for the program.
- Adequacy of teaching spaces.
- Adequacy of equipment and furnishings.
- Adequacy of computers.
- Additional comments to allow faculty to add information which they may feel is relevant.

Surveys for Advisory Board members were prepared to collect the perceptions of these groups on:

- Preparation of incoming students for academic work.
- Preparation of outgoing students for further academic work or entry into the work force.
- Ability of graduates in various aspects of the curriculum.
- The adequacy of the faculty and their teaching efforts.
- Adequacy of support by University and College Administration for the program.
- Adequacy of teaching spaces.
- Adequacy of equipment and furnishings.
- Adequacy of computers.
- Additional comments to allow advisory board members to add information which they may feel is relevant.

Identification of Subjects:

Since Ferris' Institutional Testing and Research Department was utilized to develop and analyze the surveys, and since the surveys were completed online, email addresses for subjects were identified. The following are the sources of email addresses for each subject group.

Architectural Technology Surveys:

- Alumni – FSU Alumni Relations
- Employers – Reported by Alumni in Alumni Survey/Known employers added by faculty
- Students – FSU Records
- Faculty and Advisory Board – Program records

Facility Management Surveys:

- Alumni – FSU Alumni Relations/program distribution lists
- Employers – Reported by Alumni in Alumni Survey/known employers added by faculty
- Students – FSU Records
- Faculty and Advisory Board – Program records

Distribution of Surveys:

Institutional Research and Testing prepared the surveys online during November 2010. They were proofed in early December 2010. When approved, IRT developed links for each survey and provided them to the Chair of this study. The Chair of the study developed a “letter” explaining the Program Review process, the purpose of the survey, the deadline for survey completion, as well as the link for the survey.

All surveys except the Employer surveys were sent out in early December 2010. IRT closed access to the surveys in January 2011 and tabulated the results. The Employer surveys, since they were dependent on the Alumni surveys for email addresses, were sent out in late February 2011, with tabulation in March 2011.

Analysis of Data:

IRT provided Frequencies for each question on the survey, listing raw data as well as percentages and standard deviation. This information was analyzed and compared and is presented in the following subsections.

2.C.1. Perceptions - Architectural Technology

Perceptions of Student Quality (Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Employer N=3	Faculty N=6	Advisory Board N=5
Academic Preparation of incoming AT students	-	2.33	-
Maturity/work ethic of incoming AT students	-	2.33	3.60
Preparation of graduates for entry level architectural support positions.	3.33	3.17	3.40
Preparation of graduates for further study. IE. FM, CM, Arch and Sustainability.	-	3.33	4.00
Preparation of graduates for promotion within the architectural profession.	4.00	2.38	3.60
Quality of the General Education of Architectural Technology graduates.	3.33	2.67	3.40
Ability of Architectural Technology graduates to work independently.	3.33	2.83	3.50
Preparation of Architectural Technology graduates for lifelong learning.	3.33	2.83	3.80

Perceptions of Graduate Skills (Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Note: The average is shown in bold prior to each individual measure.

Measure	Alumni N=50	Employer N=3	Faculty N=6	Advisory Board N=5
General Skills	3.42	3.32	2.94	3.67
Responsibility and self management.	3.51	3.67	3.00	3.60
Mathematical skills.	3.31	3.33	2.83	3.40
Critical thinking and problem solving.	3.53	3.33	2.83	3.20
Finding, understanding, and using information.	3.57	3.33	3.00	3.60
Choosing ethical courses of action	3.43	3.67	3.00	4.20
Organizing, planning and allocating resources effectively.	3.37	3.33	3.00	4.00
Participating as an effective team member.	3.57	4.00	3.17	3.40
Working well with individuals of diverse backgrounds.	3.31	3.67	3.00	3.40
Leadership skills.	3.22	3.33	2.67	4.20
Communication	3.19	3.50	2.75	4.00
Effective written communication.	3.21	3.00	2.67	4.00
Effective oral communication.	3.10	3.00	3.00	3.50
Ability to gain rapport with "clients".	3.00	4.00	2.83	4.50
Ability to understand specifications.	3.44	4.00	2.50	4.00
Hand Graphics	3.49	4.00	2.71	3.45
Two dimensional sketching ability.	3.44	4.00	2.83	3.20
Three dimensional sketching ability.	3.33	4.00	2.50	3.40
Hard line hand drafting ability.	3.60	4.00	3.00	3.60
Hand lettering ability.	3.58	4.00	2.50	3.60
Computer Graphics	3.3	4.00	3.25	3.7
Two dimensional digital graphic representations of buildings.	3.65	4.00	3.33	3.80
Three dimensional digital graphic representations of buildings.	2.94	4.00	3.17	3.60
Presentation	3.25	3.55	2.78	3.27
Architectural quality presentation models.	3.18	4.00	2.83	3.20
Cohesive presentations of architectural quality.	3.27	3.33	2.83	3.20
Professional quality portfolio of personal work.	3.29	3.33	2.67	3.40
Contract Documents	3.32	3.84	2.78	3.86
Utilizing graphics effectively to enhance understanding of contract documents.	3.35	4.00	3.00	4.00
Organizing contract documents.	3.39	4.00	3.00	3.60
Developing technical content of working drawings.	3.69	3.67	2.83	3.60
Developing technical content of specifications.	3.16	3.67	2.33	4.00
Interpreting and applying building codes.	3.22	4.00	2.83	4.00
Interpreting and applying information in contracts associated with professional practice.	3.10	3.67	2.67	4.40
Materials	3.26	3.50	3.13	3.60
Identifying basic structural organization methods of building.	3.39	3.33	3.17	3.60
Demonstrating knowledge of properties (strength, acoustic, fire, durability, economic, environmental, etc.) of structural materials used in buildings.	3.22	3.33	3.17	3.60
Demonstrating knowledge of properties (strength,	3.25	3.33	3.17	3.60

acoustic, fire, durability, economic, environmental, etc.) of finish materials used in buildings.				
Selecting appropriate construction and finish materials for specific building applications.	3.20	4.00	3.00	3.60
Architectural History	3.17	3.67	2.83	3.30
Demonstrating understanding of development of architectural styles.	3.16	3.67	2.83	3.00
Demonstrating ability to identify architectural styles.	3.18	3.67	2.83	3.60
Architectural Design	3.18	4.00	2.72	3.33
Identifying elements and principles of architectural design.	3.22	4.00	2.83	3.20
Applying architectural design principles to solve spatial problems.	3.10	4.00	2.50	3.40
Developing design in compliance with the program.	3.22	4.00	2.83	3.40
Sustainability	3.14	3.33	2.92	3.80
Understanding concepts of sustainability.	3.12	3.33	3.17	3.80
Analyzing and advocating for sustainability initiatives	3.16	3.33	2.67	3.80

Perceptions of Facilities, Equipment, Resources, Support

(Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Students	Faculty	Advisory Board
	N=21	N=6	N=5
Program classrooms (used for ARCH and FMAN courses) are aesthetically pleasing.	2.81	2.33	3.80
Program classrooms (used for ARCH and FMAN courses) provide appropriate lighting.	3.24	2.83	3.80
Program classrooms (used for ARCH and FMAN courses) have equipment and furnishings that are ergonomically appropriate	3.14	2.50	3.60
Program classrooms (used for ARCH and FMAN courses) have functional and up to date computers for student use.	2.43	2.17	4.20
Program classrooms (used for ARCH and FMAN courses) have functional and up to date teaching stations.	-	2.50	3.80
Program classrooms (used for ARCH and FMAN courses) provide adequate ventilation.	3.05	2.00	4.40
Program classrooms (used for ARCH and FMAN courses) are a comfortable temperature.	2.86	1.67	4.00
Program classrooms (used for ARCH and FMAN courses) provide enough work stations for students enrolled in courses.	3.38	3.00	4.60
Program classrooms (used for ARCH and FMAN courses) are safe, functional, and well maintained.	3.19	3.00	4.20
Program classrooms (used for ARCH and FMAN courses) are open adequate hours.	2.81	2.67	-
Program classrooms (used for ARCH and FMAN courses) are open when students are most likely to use them.	3.14	2.50	-
Program classrooms (used for ARCH and FMAN courses) are barrier free and accessible.	3.33	2.67	4.60
Program instructional equipment, (used for ARCH and FMAN courses) is dependable and enhances the learning experience.	3.05	3.00	-

Instructional materials such as textbooks and reference books are relevant, current, and enhance the learning experience.	3.00	3.83	-
Instructional support services such as tutoring and lab assistance are available to meet student needs and interests.	3.67	-	4.20
Instructional support services such as tutoring and lab assistance are provided by knowledgeable and interested staff.	3.65	3.83	4.60
Placement services are available to help students identify employment opportunities.	3.45	3.00	4.60
Placement services are available to help prepare students to apply and interview for jobs.	3.38	3.50	

Perceptions of Administrative Support

(Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Faculty N=6	Advisory Board N=5
University and College Administration provides program with financial resources necessary to perform effectively.	2.33	4.40
University and College Administration provide the program with teaching spaces necessary to perform effectively.	2.17	4.20
University and College Administration provide the program with the equipment necessary to perform effectively.	2.33	4.40
University and College Administration provide the program with the faculty necessary to perform effectively.	2.83	4.00
University and College Administration provide the program with adequate support staff.	2.00	3.80

2.C.1.a. Alumni Follow Up Survey – Architectural Technology

Fifty alumni responded to the survey. Over 75% of those who responded graduated prior to the year 2000.

Of those who responded, 82% participated in further formal education with 76% earning an additional degree. Eighty percent of those who earned additional degrees earned them at FSU; 51% in Facility Management and 24% in Construction Management. Seven percent earned Master of Architecture degrees. The remainder of the degrees were in many diverse and sometimes unrelated fields.

The majority of respondents work or had worked in a position in which they utilized their degree. Fifty three percent had worked as architectural technicians. However, 10% had never worked in the field.

Salaries were similar to those expected and reported by sources such as the US Department of Labor. Seventy five percent had started employment making less than \$40,000 per year. However, remember that 75% of the respondents graduated prior to 2000 and many of the respondents earned baccalaureate degrees prior to going into the workforce. Currently 55% earn more than \$60,000 and 81% earn more than \$40,000 per year. It is also important to note that some of the respondents were still students with minimal earnings.

Overall, alumni felt that they had been well prepared for their chosen career. In most measures of preparation in the skills associated with architectural technology, over 85% of students responded that they had “Good” or “Excellent” preparation. Notable exceptions were that 30% felt well prepared in the area of sustainability, 52% felt well prepared for 3d digital graphics, 65% felt well prepared to produce specifications or interpret contracts, 65% felt well prepared to produce models, and 75% felt well prepared to develop a personal portfolio in which to present their work to potential employers.

The areas in which alumni noted lower levels of preparation are generally areas that were either recently introduced or expanded within the curriculum such as 3d digital graphics and sustainability. Other areas such as presentation and portfolio development are stronger components of the revised curriculum which is currently being implemented. The remainder of these areas, contracts and specifications, are generally areas in which senior architectural personnel specialize.

Some of the general comments expressed a feeling that the curriculum was too technical and did not stimulate interest in the creativity of the architectural field.

2.C.1.b. Employer Survey – Architectural Technology

Only three employers responded to the Employer Survey which was sent to 31 employers. The employers were identified from information provided by alumni in the Alumni Survey. It is uncertain why the response was so low. It was difficult to develop a distribution list for this group of subjects. Many alums go on to obtain baccalaureate level degrees, so many of the employers of alums may not feel that they are architectural firms and thus do not complete the survey.

All three employers were located in Michigan; Ann Arbor, Midland, and Big Rapids. One respondent identified their business as primarily architectural, a second as primarily commercial construction, and the final respondent identified their primary business as higher education. All respondents reported having hired more than one Ferris Architectural Technology graduate. In two thirds of the cases, the AT grad had been promoted by the firm and all respondents said they would consider the AT graduates for promotion.

In general, the employers rated the various skills of the alumni as “good” or “excellent”. There were a few areas in which one of the respondents identified the preparation of graduates as “poor”. These were: written and oral communication, ability to develop technical content of working drawings, ability to develop technical content of specifications, and ability to interpret and apply information in contracts associated with professional practice.

2.C.1.c. Student Survey – Architectural Technology

Twenty one current architectural technology students responded to the survey. This is slightly less than half of enrolled students. Forty three percent of respondents were first year students

and 57 % were second year students. GPAs were almost evenly split between above and below 3.0.

The three top reasons students chose Ferris were; 1) for architectural technology degree – 40%, 2) Cost and 3) Location were tied at 20%. Sixty two percent of these students came directly from high school.

The three top reasons students chose Ferris' Architectural Technology program were; 1) cost – 24%, 2) AT curriculum and 3) ladders into Facility Management were tied at 19%.

Most students found out about Ferris' architectural technology program from non-university sources such as family, friends, lived close by, or a website.

Students expressed high levels of satisfaction with the faculty and curriculum, with 90% or more expressing levels of "Good" or "Excellent". The areas they expressed lower levels of satisfaction were: 1) Facilities...ranging from 20% to 60% expressing levels of "Not at All" or "Poor"; 2) Quality of Technology Available...ranging from 60% to 65% expression levels of "Not at All" or "Poor".

The comments written at the end of the survey addressed; the poor computers, that physics was an inappropriate prerequisite, and that the program needs to be publicized to a greater degree.

2.C.1.d. Faculty Survey – Architectural Technology

All six of the faculty assigned to the Architecture and Facility Management program area responded to the survey. A seventh faculty member, who started in Spring 2011 was not surveyed.

Two thirds of the faculty felt that incoming architectural technology students were below average in academic preparation, maturity, and work ethic. This reversed, with faculty indicating that 83% of program graduates were well prepared for the workforce and 100% were well prepared for further education. They also reported that two thirds had acquired good or excellent general education skills. In all measures reported, the faculty rated 83%-100% of graduates as "Good" to "Excellent" in skills such as math, critical thinking, leadership, ethics, teamwork, research, and self management.

Overall, faculty felt that graduates were well prepared for their chosen career. In most measures of preparation in the skills associated with architectural technology, faculty rated over 83% of students as "Good" or "Excellent". Notable exceptions were that faculty felt that only 33% were well prepared to write specifications, 50% were well prepared for 3d digital graphics, design, and hand lettering, 67% were well prepared to interpret contracts or apply concepts of sustainability to a building design.

The areas in which alumni noted lower levels of preparation are generally areas that were either recently introduced or expanded within the curriculum such as 3d digital graphics and sustainability. Contracts and specifications are generally areas in which senior architectural personnel specialize. Hand lettering is a skill that is deemphasized in the current curriculum due to the introduction of digital graphics.

The faculty's impression of the level of support provided by university and college administration is very low. In areas of financial support, provision of teaching spaces, and support staff, 83% of faculty disagreed that these needs were met. This can be explained by significantly reduced program budgets, limited monies for recruitment and advertising, small and outdated teaching spaces, and support staff that is shared with the two other School of Built Environment program areas; additionally the location of the support staff in Granger Building, instead of Swan Building where the Architecture and Facility Management program is located exacerbates the difficulty and dissatisfaction. Prior to this arrangement, the program shared one secretary with the Printing Program area in the Swan Building.

Sixty seven percent of faculty disagree that the program area is supported in areas of equipment. This is mainly due to the state of faculty and student computers. There appears to be no schedule to replace this equipment at the current time. Some faculty computers are barely functional, especially the laptops. Further, the program area was compelled to use \$11,068 (35% of allotted program budget) of S&E funds to replace computers in one of the computer studios.

The area in which support was highest was providing quality faculty. This rating may be artificially high due to the recent hiring of a new faculty for the new BS in Architecture and Sustainability degree program. In reality, since 2003 with the loss of the prime FTE Facility Management faculty member, both programs have suffered due to the absence of this necessary faculty. To fully support and maintain all four degree programs, seven FTE are necessary.

The faculty also expressed dissatisfaction with the teaching spaces and equipment, with 83% expressing concern with the teaching stations, ventilation, and temperature. There is no air conditioning and in winter some rooms are cold. Sixty seven percent of faculty expressed dissatisfaction with computers and other equipment. All are nearing the end of their life cycle with the exception of the studio computers purchased in Fall 2010.

The comments added by faculty include concerns with regarding the size of teaching spaces, limited availability and access to adequately sized lecture spaces (30+ seats), spaces are not up to date with technology and furnishings. Another comment expressed concern for expanding expectations for faculty with limited staff support. New initiatives such as TracDat, MyDegree, recruiting, mandatory advising, and growing expectations for program review and accreditation were cited as impacting the ability to devote adequate attention to teaching.

2.C.1.e. Advisory Board Survey – Architectural Technology

Five of twelve architectural technology advisory board members responded to the survey. In most cases only four valid responses were received. One responded “Don’t Know” to nearly every question and in the Comments area wrote that he was only viscerally familiar with the content of the survey. In past advisory board meetings, efforts have been made to expose the advisors to student work and acquaint advisory members with students and faculty through interactive architectural exercises. Also, the advisory board meetings take place, at least in part, in the teaching spaces. It would seem that the advisory members would have some idea of the curriculum, equipment and spaces, faculty, and the quality of student.

Overall, the responding advisory board members have a positive impression of architectural technology students. Over 80% of advisory board members expressed a conviction that the students had a good work ethic, teamwork skills, and had a good general education and lifelong learning skills.

Responses to questions dealing with preparation to serve as architectural support personnel, 60% agreed with this statement. All believe that the new Architecture and Sustainability degree will provide an even stronger foundation.

When specific architectural skills were identified, 60% of advisory board members highly rated most student and alumni skills. Advisory board members felt that students and alums excelled at the more production based skills like digital graphics and the development of contract documents, with 80% of advisory board members agreeing that they have these skills. Areas where advisory board members felt that students and alums were less skilled were developing rapport with clients - 25% agreed, developing specifications - 50% agreed, 2d hand graphics – 40% agreed, 3d hand graphics – 20% agreed, understanding contracts – 40% agreed.

In questions dealing with administrative support for the program, 80% were unsure of the level of support for most measures. However, the remaining 20% typically marked that they disagreed that the program area received adequate support. The area that was identified as having the weakest support was staff support.

In questions dealing with the adequacy of teaching spaces, 60% were unsure. This is puzzling as they were in the classrooms for advisory meetings.

2.C.2. Facility Management

Perceptions of Student Quality (Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Employer	Faculty	Advisory Board
	N=12	N=5	N=9
Preparation of graduates for entry level Facility Management positions.	4.00	3.60	3.56
Preparation of graduates for further study. IE. MBA	4.17	3.60	3.44
Preparation of graduates for promotion within the Facility Management profession.	3.92	3.60	3.67
Quality of the General Education of Facility Management graduates.	4.00	3.00	3.33
Ability of Facility Management graduates to work independently.	4.00	3.20	3.56
Preparation of Facility Management graduates for lifelong learning.	4.08	3.40	3.33
The AAS in Architectural Technology provides a strong background for the study of Facility Management.	-	3.80	3.78
It is appropriate to accept junior level students from other programs and require foundation architectural courses.	-	3.60	3.78
The Certificate in FM program is valuable to persons working within FM who wish to expand their understanding of the profession.	-	3.60	3.75
The current admission standard of a 2.5 GPA is appropriate.	-	3.40	3.11

Perceptions of Graduate Skills (Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Note: The average is shown in bold prior to each individual measure.

Measure	Alumni	Employer	Faculty	Advisory Board
	N=75	N=12	N=5	N=9
Integrative & Problem Solving Skills (IFMA competency)	3.46	3.76	3.77	3.61
Responsibility and self management.	3.45	3.75	4.00	3.78
Mathematical skills.	3.11	3.75	3.60	3.67
Critical thinking and problem solving.	3.58	3.67	3.60	3.67
Finding, understanding, and using information.	3.59	3.83	3.80	3.89
Ability to analyze and learn new information and concepts.	3.53	3.83	3.80	3.33
Ability to apply new information to solve problems.	3.53	3.75	3.80	3.33
Leadership & Management (IFMA competency)	3.34	3.91	3.80	3.58
Identifies, organizes, plans and allocates resources effectively.	3.27	3.92	4.00	3.89
Demonstrates Leadership and Negotiation skills.	3.15	3.83	3.80	3.56
Develop contracts and negotiate with vendors.	2.88	3.75	3.60	3.44
Conducts self in an ethical manner.	3.50	3.92	4.00	3.56
Participates as a team member.	3.67	4.00	4.00	3.67
Works with individuals of diverse backgrounds.	3.55	4.00	3.80	3.78
Manages processes effectively.	3.41	3.83	3.80	3.56
Effectively manages human resources.	3.27	4.00	3.40	3.22
Operations & Maintenance (IFMA competency)	3.43	3.66	4.00	3.67
Understands Operations and Maintenance issues.	3.41	3.67	4.20	3.56
Demonstrates understanding of building systems.	3.51	3.58	3.80	3.67
Demonstrates understanding of life cycle cost analysis.	3.43	3.58	4.00	3.89

Demonstrates understanding of budgeting and scheduling.	3.38	3.83	4.00	3.56
Planning & Project Mgmt (IFMA competency)	3.37	3.88	3.84	3.67
Demonstrates appreciation and understanding of aesthetic issues.	3.42	3.92	3.60	3.67
Demonstrates planning abilities at the master planning scale.	3.32	4.00	3.80	3.67
Demonstrates planning abilities at the project/room scale.	3.51	3.83	4.00	3.78
Demonstrates ability to work with design professionals.	3.39	3.83	4.00	3.56
Ability to develop project budgets and schedules.	3.22	3.83	3.80	3.67
Communication (IFMA competency)	3.34	3.85	3.68	3.74
Effective written communication.	3.38	3.67	3.60	3.56
Effective oral communication.	3.43	3.83	4.40	3.67
Ability to gain rapport with "clients".	3.31	3.82	4.00	3.67
Ability to understand specifications.	3.43	3.83	3.40	4.00
Ability to write specifications.	3.15	4.08	3.00	3.78
Finance (IFMA competency)	3.08	3.79	3.50	3.33
Understands budgeting process, finance and accounting.	2.97	3.836	3.60	3.22
Develop cost estimates.	3.18	3.75	3.40	3.44
Human & Environmental Factors (IFMA competency)	3.39	3.87	3.96	3.58
Understands and addresses environmental issues effectively.	3.38	3.92	4.00	3.67
Understands and addresses life safety issues effectively.	3.32	3.83	3.60	3.67
Understands the effect of environment on human behavior.	3.42	3.92	4.00	3.67
Understands concepts of sustainability.	3.42	3.75	4.20	3.44
Ability to analyze and advocate for sustainability initiatives.	3.43	3.92	4.00	3.44
Quality Assessment and Innovation (IFMA competency)	3.35	3.85	3.80	3.26
Demonstrates ability to utilize industry benchmarks.	3.36	3.64	3.80	3.22
Demonstrates ability to monitor and assess quality of facility services.	3.39	3.75	3.80	3.44
Demonstrates ability to analyze and re-engineer methods of providing facility services.	3.30	4.17	3.80	3.11
Real Estate (IFMA competency)	2.84	4.19	3.13	3.82
Demonstrates understanding of real estate related contracts.	2.85	4.08	3.00	3.78
Demonstrates understanding of leasing process.	2.84	4.17	3.20	3.78
Demonstrates understanding of the purchase and sale of real estate.	2.84	4.33	3.20	3.89
Technology (IFMA competency)	3.49	3.84	4.00	3.56
Demonstrates ability to learn and utilize architectural and facility management specific software.	3.41	3.75	4.00	3.56
Demonstrates ability to learn and utilize generic software.	3.57	3.92	4.00	3.56

Perceptions of Facilities, Equipment, Resources, Support

(Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Students N=24	Faculty N=5	Advisory Board N=9
Program classrooms (used for ARCH and FMAN courses) are aesthetically pleasing.	2.30	2.40	3.56
Program classrooms (used for ARCH and FMAN courses) provide appropriate lighting.	2.78	2.60	3.67
Program classrooms (used for ARCH and FMAN courses) have equipment and furnishings that are ergonomically appropriate	2.70	2.40	3.89
Program classrooms (used for ARCH and FMAN courses) have functional and up to date computers for student use.	2.48	2.20	3.56
Program classrooms (used for ARCH and FMAN courses) have functional and up to date teaching stations.	2.17	2.00	3.89
Program classrooms (used for ARCH and FMAN courses) provide adequate ventilation.	2.57	2.00	3.89
Program classrooms (used for ARCH and FMAN courses) are a comfortable temperature.	2.61	1.40	3.89
Program classrooms (used for ARCH and FMAN courses) provide enough work stations for students enrolled in courses.	3.13	2.80	3.67
Program classrooms (used for ARCH and FMAN courses) are safe, functional, and well maintained.	3.00	2.80	3.89
Program classrooms (used for ARCH and FMAN courses) are open adequate hours.	3.04	3.00	4.11
Program classrooms (used for ARCH and FMAN courses) are open when students are most likely to use them.	3.26	2.60	3.67
Program classrooms (used for ARCH and FMAN courses) are barrier free and accessible.	2.70	2.40	4.11
Program instructional equipment, (used for ARCH and FMAN courses) is dependable and enhances the learning experience.	2.48	2.40	3.89
Instructional materials such as textbooks and reference books are relevant, current, and enhance the learning experience.	2.74	3.40	4.00
Instructional support services such as tutoring and lab assistance are available to meet student needs and interests.	3.65	3.40	-
Instructional support services such as tutoring and lab assistance are provided by knowledgeable and interested staff.	3.77	3.40	4.22
Placement services are available to help students identify employment opportunities.	3.48	3.40	3.67
Placement services are available to help prepare students to apply and interview for jobs.	3.48	3.40	3.67

Perceptions of Administrative Support

(Mean Scores on 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Faculty N=5	Advisory Board N=9
University and College Administration provides program with financial resources necessary to perform effectively.	2.20	3.22
University and College Administration provide the program with teaching spaces necessary to perform effectively.	1.80	3.44
University and College Administration provide the program with the equipment necessary to perform effectively.	1.80	3.67
University and College Administration provide the program with the faculty necessary to perform effectively.	2.00	2.78
University and College Administration provide the program with adequate support staff.	1.80	3.22

2.C.2.a. Alumni Follow Up Survey – Facility Management

Seventy five alumni responded to the survey. Forty three, or 57% of respondents graduated after 2006. Fifty seven, or 76% of respondents graduated after 1996. Thus the results of the survey are skewed toward recent graduates.

Of the respondents, about half also completed Ferris' AAS in Architectural Technology degree. Most learned about the Facility Management degree while at Ferris and were attracted to the career option mainly because it easily built on the AAS in Architectural Technology degree as well as the salary potential.

Forty one, or 55% did not continue formal education. Most who did continue their education have done so through seminars. Five, or 6% earned Masters level degrees: 3 MBAs and 1 Master of Architecture.

Forty one, or 55% of the respondents currently live in Michigan. Most reported being flexible to relocation options when searching for their first job. Thirty four, or 45% had a job prior to graduation. Fifty eight, or 77% had found employment within 6 months of graduation. Seventy three percent found employment within Facility Management or a closely related field upon graduation. Eighty three percent are currently employed within Facility Management or a closely related field.

Graduates are employed in various sectors of the economy. Of those responding:

- 18, or 24% worked in the government sector
- 16, or 21% worked in the industrial sector
- 14, or 19% worked in the services sector
- 7, or 9% worked in the healthcare sector
- 7, or 9% worked in the education sector

Reported salaries were less than those reported by sources such as the US Department of Labor. This may be in part due to the fact that most respondents were relatively recent graduates. Most alums started at less than \$40,000 per year. Currently 13, or 18% make in excess of \$70,000 per year, while 59, or 80% earn less than \$70,000 per year.

Overall, alumni felt that they had been well prepared for their chosen career. In most measures of preparation in the skills associated with architectural technology, over 85% of students responded that they had "Good" or "Excellent" preparation. Notable exceptions were that for the various aspects of Real Estate, approximately one third felt that they were not adequately prepared. A similar percentage did not feel adequately prepared to negotiate contracts. Approximately 25% felt poorly prepared to develop budgets, approximately 20% felt that they were not prepared to develop specifications, and approximately 16% felt unprepared to deal with Human Resource issues.

The areas in which alumni noted lower levels of preparation are part of course content. Some, especially aspects of budgeting, human resources, and some aspects of contracts are dealt with mainly in courses outside the curriculum. Perhaps, better integration of these general concepts into the curriculum would enhance the student's knowledge of these topics. This is a curriculum goal for the program.

It should also be noted that Facility Management is a general field and that practitioners as well as students often feel that specific topics, namely those which they deal with in their particular job, should be more strongly emphasized.

Most comments of the alumni were positive. Most felt that they had a good preparation for Facility Management and that the Architectural Technology foundation was very helpful in allowing them to be effective facility managers. Some of the positive comments dealt with exposure to professionals through the International Facility Management Association and other outside activities. They also expressed a desire for more faculty with facility management specific credentials and experience.

2.C.2.b. Employer Survey – Facility Management

Twelve employers responded to the Employer Survey which was sent to 32 employers. The employers were identified from information provided by alumni in the Alumni Survey as well as from a database maintained by faculty.

The respondents were from the US and Canada and represented the following sectors of the economy: 2 from Education; 6 from Federal Government; 1 from Healthcare; 1 from Hospitality; and 2 from Real Estate. This distribution corresponds to the faculties' understanding of alumni placement over the last five years.

Many of the responders indicated that their organization had hired more than one Ferris Facility Management alum. Two indicated their organization has hired more than 10 alums; 6 indicated that their organization had hired 2-5 alums, and 4 indicated that their organization

had hired 1 alum. Thus the responses provided, are in most cases, not an evaluation of an individual alumnus.

Eleven of the 12 respondents indicated that they had not hired graduates of other Facility Management Degree Programs. Thus the value of the responses which compare Ferris Alums with alums of other programs is limited.

In general, the Employers rated the various skills of the alumni highly; “good” or “excellent”. There were a few areas in which one of the respondents identified the preparation of graduates as “poor”. These were: understanding of the budgeting process, finance and accounting; demonstrates leadership and negotiation skills; and understands operations and maintenance issues. It is interesting to note that communication skills were not rated “poor”. In the “Additional Comments” portion of the survey, one respondent indicated that “oral and written communication and analytical thinking seem to be lacking with this generation”.

Also in the “additional Comments” portion of the survey, one respondent commented that further emphasis of green and sustainable buildings is important. Most comments indicated satisfaction with the students’ preparation despite different personalities and levels of professionalism.

2.C.2.c. Student Survey – Facility Management

Twenty four current facility management students responded to the survey. This is slightly less than half of enrolled students. Seventeen, approximately 71%, of the respondents were seniors, while 7, approximately 19%, were juniors. GPAs were almost evenly split, with one third in each of the following categories; 2.5 to 2.99, 3.0 to 3.49, and 3.5 and higher.

The top reasons students chose Ferris were, first for the Architectural Technology program and second for the Facility Management program. It is most likely that students who transferred into the Facility Management program from other programs or community colleges were those who identified Facility Management as the top reason they chose Ferris. Forty one percent of the respondents were transfer students. Other reasons such as cost, location, etc. were significantly less important in this decision.

Most students became aware of Facility Management as a career choice during their first two years of college. They reported being attracted to this career option due to the career and salary potential as well as they felt they would enjoy this type of work.

Seventy five percent were satisfied, indicating satisfaction levels of “Good” or “Excellent”, with their decision to attend Ferris, while 92% were satisfied with their decision to study Facility Management. All felt that the prerequisites and foundation in Architectural Technology were appropriate. Over 90% felt that courses were easy to schedule in order to graduate on time. Students also reported a satisfaction level over 90% with regard to design and content of the courses. Over 80% were satisfied with faculty deliver of course content. Similar levels of satisfaction were also indicated for non-program courses.

The area which students expressed low levels of satisfaction was the facilities themselves. Satisfaction was rated much lower, with “Good” or “Excellent” ratings being expressed by less than 50% of respondents for aesthetics, lighting, temperature, and teaching and student computers and technology. The facilities for support areas such as General Education and Business received higher levels of student satisfaction.

The comments written at the end of the survey varied and in some cases contradicted each other. These comments appear to be written by students who were either very positive or very negative. They do not reflect the average ratings obtained from the survey itself. There were consistent negative comments on the performance of computer hardware. There were also several negative comments referring to a specific faculty member.

2.C.2.d. Faculty Survey – Facility Management

Five of the six faculty assigned to the Architecture and Facility Management program area responded to the survey. The faculty member who did not respond does not teach in the Facility Management program and stated that he does not feel he has sufficient knowledge of the program to accurately respond to the survey. A seventh faculty member, who started in Spring 2011 was not surveyed.

Four of the five responding faculty members agreed that the 2.5 GPA entry standard was appropriate for the program, while all agreed that the Architectural Technology curriculum is an appropriate preparatory requirement for Facility Management and that students who transfer from other curriculums be required to complete a core of architectural technology coursework. All faculty agreed that graduates of the Facility Management program were well prepared for entry level Facility Management positions, further study, or promotion within the field of Facility Management.

Four of the five responding faculty reported that two thirds had acquired good or excellent general education skills. In all measures reported, the faculty rated graduates as “Average” to “Good” in skills such as math, critical thinking, leadership, ethics, teamwork, research, and self management. One respondent rated graduates as “Excellent” in responsibility and self management, ability to find and use information, and oral communication.

Overall, faculty expressed satisfaction in how well prepared graduates were in the competency areas as identified by the International Facility Management Association (IFMA), the professional association associated with the accrediting agency for the program. The competency areas which received the highest ratings by faculty were Operations and Maintenance (4.00) and Technology (4.00); which would indicate an “Excellent” rating. The area which received the lowest rating was Real Estate (3.18); which would indicate a “Good” rating. Within the general competency areas no specific sub-areas stood out as being exceptionally weak.

The faculty's impression of the level of support provided by university and college administration is very low. In areas of financial support, provision of teaching spaces, and support staff, 83% of faculty disagreed that these needs were met. This can be explained by significantly reduced program budgets, limited monies for recruitment and advertising, small and outdated teaching spaces, and support staff that is shared with the two other School of Built Environment program areas; additionally the location of the support staff in Granger Building, instead of Swan Building where the Architecture and Facility Management program is located exacerbates the difficulty and dissatisfaction. Prior to this arrangement, the program shared one secretary with the Printing Program area in the Swan Building.

Sixty percent of faculty disagree that the program area is supported in areas of equipment. This is mainly due to the state of faculty and student computers. There appears to be no schedule to replace this equipment at the current time. Some faculty computers are barely functional, especially the laptops. Some faculty computers are barely functional, especially the laptops. Further, the program area was compelled to use \$11,068 (35% of allotted program budget) of S&E funds to replace computers in one of the computer studios. Concerns were also expressed that the Facility Management degree program does not have a dedicated learning space for Facility Management students.

The faculty also expressed dissatisfaction with the teaching spaces and equipment, with 60-80% expressing concern with the teaching stations, ventilation, and temperature. There is no air conditioning and in winter some rooms are cold.

The comments added by faculty reinforced concerns with the size of teaching spaces, that there is not a designated Facility Management lecture/studio teaching space. Rather the Facility Management program must share studio space with the Architectural Technology program. With the addition of the new baccalaureate Architecture and Sustainability degree, there will be even further scheduling conflicts in these spaces. Further, the new program will be very studio intensive, exacerbating this issue. Another comment expressed concern for expanding expectations for faculty with limited staff support. New initiatives such as TracDat, MyDegree, recruiting, mandatory advising, and growing expectations for program review and accreditation were cited as impacting the ability to devote adequate attention to teaching.

2.C.2.e. Advisory Board Survey – Facility Management

Nine of fourteen Facility Management advisory board members responded to the survey. Overall, the responding advisory board members have a positive impression of facility management students. In fact, for measures that were gathered from current students, alumni, employers, and faculty, this group, along with employers, typically rated the program the highest.

The advisory board does believe that the faculty group is very committed to the success of its graduates. All respondents with the exception of one indicated that the faculty has adequate academic credentials.

All respondents indicated that the Architectural Technology program or the core of required courses required for transfer students was good preparation for upper level study in Facility Management. One respondent disagreed with the 2.5 GPA requirement for admission to the program. However, no comments were made to indicate if this respondent believed the 2.5 GPA was too high or too low.

All respondents indicated that graduates had “Good” to “Excellent” preparation for entry level positions and promotions as well as for further academic work and that the Facility Management curriculum is current and relevant.

For general work skills, all respondents rated graduates as “Good” or “Excellent”, except for one respondent who indicated that they were “Below Average” in General Education skills, ability to work independently, critical thinking, and preparation for lifelong learning.

Overall the advisory board members rated students as “Good” to “Excellent” in all competency areas as identified by the International Facility Management Association, upon which degree accreditation is dependent. Mean ratings were primarily within the “Good” category. An individual advisory board member, however, indicated “Poor” preparation in specific competency sub-areas. These include budgeting and accounting, leadership and negotiation, cost estimating, human resource management, large scale master planning, benchmarking and re-engineering, and all aspects of real estate contracts and negotiation.

In questions dealing with administrative support for the program, one to two of the nine respondents marked “I do not know” as a response. This is probably true, as minimal information regarding financial and clerical support is communicated at advisory board meetings. Of those who responded, most felt that the administration supported the program with one or two indicating disagreement. The area in which advisory board members indicated lowest administrative support was in the area of “providing the program with the faculty necessary”. This is probably due to their knowledge that a faculty member, specifically dedicated to the program, was not replaced upon her resignation. Rather, due to low enrollment at the time, teaching responsibilities were shifted primarily to one faculty member with other program area faculty also teaching in the program. One faculty member does not teach facility management courses by his own request.

In questions dealing with the adequacy of teaching spaces, many were unsure, while others indicated that the spaces were acceptable. Again, this group has limited experience with the spaces, even though portions of advisory board meetings are held within them. They also felt that other services such as career services and instructional services are adequate.

The only written comment received from this group indicates satisfaction with the program and its graduates.

Section 3: Program Profile

Section 3. Program Profile

3.A.1. Student Demographic Profile – Architectural Technology and Facility Management

Introduction:

The majority of students in both the Architectural Technology and Facility Management programs would be considered “traditional” students: students who come to Ferris directly from high school. Most are of suburban or rural backgrounds. In the Facility Management program this is also true. However, in recent years many more of these students transfer to Ferris from community colleges, particularly Grand Rapids Community College and Lansing Community College. Also, due to the relatively small number of baccalaureate degree programs accredited by IFMA (International Facility Management Association), students have transferred into the program from various areas of the US and Canada. There are also some students in each program who are not traditional students. These may be veterans, people changing careers, people injured in a career such as construction and retraining for a related career that is less physical in nature.

General Demographics:

As can be seen in the following two tables, most students in both programs are male.

Gender Information – Architectural Technology (Source: FSU-Institutional Research & Testing)

Semester	Total Enrolled	Male	Female
Fall 2006	102	75 (74%)	27 (26%)
Fall 2007	107	79 (74%)	28 (26%)
Fall 2008	79	55 (70%)	24 (30%)
Fall 2009	64 (68)*	45 (70%)	19 (30%)
Fall 2010	42 (55)*	28 (67%)	14 (33%)
2006-2010	394	282 (72%)	112 (28%)

() * Indicates discrepancy with program data. Program data shown in parenthesis.

Gender Information – Facility Management (Source: FSU-Institutional Research & Testing)

Semester	Total Enrolled	Male	Female
Fall 2006	44	35 (81%)	8 (19%)
Fall 2007	38	28 (74%)	10 (26%)
Fall 2008	58	44 (76%)	14 (24%)
Fall 2009	59	45 (76%)	14 (24%)
Fall 2010	54	43 (80%)	11 (20%)
2006-2010	252	195 (77%)	57 (23%)

As can be seen in the following two tables, most students in both programs are of “white” ethnicity. In the “Foreign” column of the Facility Management table, these students are Canadian nationals, who transferred to Ferris to receive a baccalaureate level degree in Facility Management that is accredited by the International Facility Management Association.

Ethnicity Information – Architectural Technology (Source: FSU-Institutional Research & Testing)

Semester	Tot'l Enrl	Unknown	Black	Hispanic	Indian/ Alaskan	Asian / Pac Isl	White	Foreign
Fall 2006	102	5(5%)	2(2%)	1(1%)	1(1%)	1(1%)	91(89%)	1(1%)
Fall 2007	107	0	5(5%)	0	1(1%)	1(1%)	99(92%)	1(1%)
Fall 2008	79	0	3(4%)	1(1%)	0	0	75(95%)	0
Fall 2009	64 (68)*	2(3%)	1(2%)	0	0	0	61(95%)	0
Fall 2010	42 (55)*	2(5%)	0	0	0	0	40(95%)	0
2006-2010	394	9(2%)	11(3%)	2(.5%)	2(.5%)	2(.5%)	366(93%)	2(.5%)

() * Indicates discrepancy with program data. Program data shown in parenthesis.

Ethnicity Information – Facility Management (Source: FSU-Institutional Research & Testing)

Semester	Tot'l Enrl	Unknown	Black	Hispanic	Indian/ Alaskan	Asian / Pac Isl	White	Foreign
Fall 2006	44	3(7%)	0	0	0	1(2%)	35(81%)	4(9%)
Fall 2007	38	0	2(5%)	0	0	1(3%)	33(87%)	2(5%)
Fall 2008	58	1(2%)	2(3%)	1(2%)	0	0	50(86%)	4(7%)
Fall 2009	59	2(3%)	1(2%)	2(3%)	0	1(2%)	52(88%)	1(2%)
Fall 2010	54	1(2%)	2(4%)	0	0	2(4%)	48(90%)	0
2006-2010	252	9(2%)	11(3%)	2(.5%)	2(.5%)	2(.5%)	366(93%)	2(.5%)

The following table provides information on the average age of students in both programs. The Architectural Technology program statistics reinforce that the vast majority of students come to it directly from high school. The slightly higher than expected average age (for students in their junior and senior years of college) of students in the Facility Management program, reflect the presence of non-traditional students.

Average Age – Architectural Technology (Source: FSU-Institutional Research & Testing)

Semester	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010
Average Age	19	19	19	20	20

Average Age – Facility Management (Source: FSU-Institutional Research & Testing)

Semester	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010
Average Age	25	24	23	23	23

The following tables provide information on the residency of students in both programs. While it is true that the vast majority of students in both programs are Michigan residents, the low number of Midwest Compact/Non-Resident students for the Facility Management program, which had a number (the author recalls six) of Canadian students during this time period, perhaps implies some error in the statistics provided.

Residency – Architectural Technology (Source: FSU-Institutional Research & Testing)

Semester	Total Enrolled	Blank	Resident	Midwest Compact	Non-Resident
Fall 2006	102	0	101(99%)	0	1(1%)
Fall 2007	107	0	103(96%)	3(3%)	1(1%)
Fall 2008	79	0	77(98%)	2(2%)	0
Fall 2009	64 (68)*	0	64(100%)	0	0
Fall 2010	42 (55)*	0	42(100%)	0	0
2006-2010	394	0	387(98%)	5(2%)	2(1%)

() * Indicates discrepancy with program data. Program data shown in parenthesis.

Residency – Facility Management (Source: FSU-Institutional Research & Testing)

Semester	Total Enrolled	Blank	Resident	Midwest Compact	Non-Resident
Fall 2006	44	0	41(95%)	1(2.5%)	1(2.5%)
Fall 2007	38	0	37(97%)	1(3%)	0
Fall 2008	58	0	57(98%)	1(2%)	0
Fall 2009	59	0	59(100%)	0	0
Fall 2010	54	0	54(100%)	0	0
2006-2010	252	0	248(98.5%)	3(1%)	1(.5%)

The vast majority of students in both programs are full time students. Both programs are offered only at Ferris' Big Rapids campus. Since most students are not from the Big Rapids area, it is to their advantage to complete their course of study expediently. Since Big Rapids is within commuting distance of Grand Rapids and since many students transfer into the Facility Management program from Grand Rapids Community College and may have family, work, or other responsibilities, a number of these students may commute from the Greater Grand Rapids area. Some of these students choose to attend part time.

Other students who are attending part time may be students who did not perform at an academic level sufficient to meet prerequisite requirements for courses within the program. Since program courses are only offered once per year, students in this situation may not be able to build a full schedule of courses until they successfully complete the course(s) that will satisfy the prerequisite.

Full Time/Part Time Enrollment (Source: FSU-Institutional Research & Testing)

Semester	Architectural Technology			Facility Management		
	Total	Full Time	Part Time	Total	Full Time	Part Time
Fall 2006	102	102(100%)	0	43	35(81%)	8(19%)
Fall 2007	107	106(99%)	1(1%)	38	35(92%)	3(8%)
Fall 2008	79	76(96%)	3(4%)	58	54(93%)	4(7%)
Fall 2009	64	63(98%)	1(2%)	59	54(91.5%)	5(8.5%)
Fall 1010	42	41(98%)	1(2%)	54	47(87%)	7(13%)
2006-2010	394	388(98.5%)	6(1.5%)	252	225(89%)	27(11%)

Format for Course Offerings:

All classes within the degree programs included in this study are offered during the day.

All classes for the degree programs included in this study are delivered face to face. Increasingly, however, more and more of the courses are enhanced via FerrisConnect. This allows faculty to provide students with lectures, study guides, assignments, and other enhancements that improve the quality of the course and use time and resources more efficiently.

While several of the courses in the Facility Management program are developed and delivered 100% online. These sections are reserved for students in the Facility Management Certificate program, which is not a part of this study. It is important that degree seeking students attend and benefit from face to face delivery to experience the benefits of guest lecturers, field trips, etc.

Impact of Demographics on Programs:

The main impact of the demographics of Architectural Technology and Facility Management students on the curriculum, scheduling, and delivery methods are minimal.

- Curriculum is mainly impacted by the previous experiences of students and the sequencing of information delivered in specific courses. The goal has been to minimize prerequisites to allow ease of scheduling, while maintaining quality and ensuring adequate preparation of the students.
- Scheduling has been affected to the degree that the program attempts to accommodate the needs of transfer students into the Facility Management program. Some of these students may require some architectural courses prior to fully entering the Facility Management sequence. Also attempts are made to schedule courses on fewer days per week...IE. Tuesday/Thursday vs. Monday/Wednesday/Friday to minimize the commute time of students.
- The demographics of program students, mainly in their twenties, means that these students are comfortable with the computer. Thus the introduction of web enhanced aspects for most courses.

3.A.2. Quality of Students – Architectural Technology and Facility Management

Introduction:

The majority of students in both the Architectural Technology and Facility Management programs have been academically prepared to an average level. They are not exceptionally gifted in mathematics or composition and report writing. Thus faculty sometimes must spend inordinate amounts of time helping students to complete these aspects of their projects. However, this performance is consistent with their ACT scores. Students who go on to complete baccalaureate level degrees generally develop better academic skills and improve in academic performance.

Students do not take full advantage of the academic opportunities provided by Ferris (SLA and tutoring center) and at the program level (tutoring, scholarship opportunities, memberships in professional organizations, and office hours). This is more of an issue in the Architectural Technology program. Perhaps this is due to the maturity level of the students, most coming directly from high school. The faculty work to engage the students, expose them to the diversity of opportunities, and work with them and monitor their progress. In some instances, the students' lack of preparation has a negative impact on retention.

Since there is now a 2.5 GPA requirement for entry into the Facility Management program, the truly unprepared and non-performing students are not accepted into the program. Thus, maturity is less of an issue in this program.

In Fall 2010 the entry requirements for the Architectural Technology program were raised. This may alleviate this problem and attract more serious students to the curriculum.

ACT Scores and Ferris GPAs:

As can be seen in the following tables, the Architectural Technology students have average ACT scores and average GPAs while at Ferris. While the ACTs of students who graduate from Architectural Technology are similar to those who are admitted into the program. The GPAs of those who graduate are significantly higher than those enrolled in the program.

ACT Scores – Architectural Technology (Source: FSU-Institutional Research & Testing)

Semester	All AT Students Enrolled Fall Term			AT Graduates		
	Average ACT	Minimum ACT	Maximum ACT	Average ACT	Minimum ACT	Maximum ACT
2006	21.27	14	30	21.76	16	29
2007	21.48	15	28	21.92	16	29
2008	21.57	16	28	21.46	17	27
2009	21.54	15	30	22.03	17	30
2010	22.23	16	30	21.59	17	27
2006-2010	21.59*	15.2	29.2	21.75	16.6	28.4

*The Fall Term Average ACT was calculated based on the proportional size of each class for the Term Average in the column above.

FSU GPAs – Architectural Technology (Source: FSU-Institutional Research & Testing)

Semester	All AT Students Enrolled Fall Term			AT Graduates at Graduation		
	Average GPA	Minimum GPA	Maximum GPA	Average GPA	Minimum GPA	Maximum GPA
2006	2.71	1.3	4	3.11	2.424	3.809
2007	2.73	1.64	3.82	3.07	2.076	3.82
2008	2.62	1.52	3.85	3.05	2.17	3.86
2009	2.6	1.13	3.78	2.95	1.93	4
2010	2.49	1.51	3.85	2.91	2.03	3.79
2006-2010	2.69*	1.42	3.86	3.018	2.126	3.8558

*The Fall Term Average GPA was calculated based on the proportional size of each class for the Term Average in the column above.

As can be seen in the following tables, the Facility Management students have average ACT scores. Perhaps due to their academic progress, their GPAs are higher than average while at Ferris. However, ACTs and GPAs of Facility Management students and graduates do not differ much. This is perhaps due to the entry requirements for this upper level program.

ACT Scores – Facility Management (Source: FSU-Institutional Research & Testing)

Semester	All FM Students Enrolled Fall Term			FM Graduates		
	Average ACT	Minimum ACT	Maximum ACT	Average ACT	Minimum ACT	Maximum ACT
2006	20.5	14	29	20.00	16	26
2007	22.26	15	30	18.6	14	24
2008	21.49	15	30	23.09	16	29
2009	21.63	16	28	21.94	17	30
2010	21.73	17	28	20.64	15	26
2006-2010	21.52*	15.4	29	20.854	15.6	27

*The Fall Term Average ACT was calculated based on the proportional size of each class for the Term Average in the column above.

FSU GPAs – Facility Management (Source: FSU-Institutional Research & Testing)

Semester	All FM Students Enrolled Fall Term			FM Students at Graduation		
	Average GPA	Minimum GPA	Maximum GPA	Average GPA	Minimum GPA	Maximum GPA
Fall 2006	3.25	2.07	4	3.2	2.445	4
Fall 2007	3.24	2.14	4	3.36	2.27	3.89
Fall 2008	3.24	2.3	4	3.22	2.74	3.85
Fall 2009	3.07	1.93	3.94	3.29	2.52	3.99
Fall 2010	3.05	1.86	3.83	3.23	2.3	3.91
2006-2010	3.16*	2.06	3.95	3.26	2.455	3.928

*The Fall Term Average GPA was calculated based on the proportional size of each class for the Term Average in the column above.

Entry Requirements Other than ACT and GPA:

No specific entry requirements are in place other than high school GPAs and ACT scores for the Architectural Technology program. A 2.5 High School GPA, ACT Composite of 19, MATH 19, READING of 17 was in effect for the students included in this program review cycle. For incoming Architectural Technology students a 2.75 High School GPA is now required. ACT scores remain the same.

The Facility Management curriculum raised the entry requirements from a 2.0 GPA to a 2.5 GPA during this program review period. In addition to GPA, an equivalent to Ferris' Architectural Technology degree is required. If such a degree is not held, students must be ready to start junior level work (completed at least 60 semester hours). Courses completed are reviewed and general education and architectural courses may be added to transfer student academic plans. This may extend the number of years to complete this degree beyond the typical two years.

The newly launched Bachelor of Science in Architecture and Sustainability will select students competitively and require a 2.75 GPA and design portfolio of work with letter of intent. This degree is not a part of this program review study.

Scholarships and Fellowships - Architectural Technology:

In addition to the scholarships offered through the Admissions Office, there are two scholarships that may be awarded to students enrolled in the Architectural Technology degree program. These scholarships are specific to the program. They are:

1. The Russell and Avis Gerber Endowed Scholarship. (Amount varies) The requirements for this scholarship are:
 - Full-time freshman or sophomore enrolled in Architectural Technology program
 - Minimum GPA of 3.0
 - Financial need is considered*

- *Additional criteria:* Must meet *one* of the following: (1 shall be enrolled in the second year of the AT program and plan to continue their education in the BS in Architecture and Sustainability; 2) shall be enrolled in the second year of the AT program and plan to continue their education in Interior Design at Kendall College of Art and Design; 3) must have demonstrated motivation and participation in program events and student associations; Essay and references required.
2. The James B. Shane Architectural Technology Scholarship. (\$750) The requirements for this scholarship are:
- Full time student enrolled in Architectural Technology program
 - Minimum GPA of 3.2
 - Financial need is not considered
 - *Additional criteria:* Must be enrolled in ARCH 102 for spring semester of 1st/2nd year AT students; Demonstrated enthusiasm and participation in the Architectural Technology Program; Essay and references required.

Scholarships and Fellowships - Facility Management:

There are many more scholarship opportunities for students entering the Facility Management program. First, for students transferring from a community college, Ferris' Transfer Scholarships have been a great benefit, with most transfer students qualifying for some level of this scholarship.

Within the School of Built Environment, the Harry Larson Memorial Endowed Scholarship is awarded annually. This scholarship is for students majoring in Construction Management or Facility Management. (Amount varies). The requirements for this scholarship are:

- Full-time junior or senior
- Minimum 3.00 GPA
- Financial need is considered*
- *Additional Criteria:* Preference given to Construction Technology & Management and Facility Management students; student involvement is considered.
- Need recommendations from two Ferris State University Faculty or Staff and two personal references
- Need a copy of your official transcript

Information for the above scholarships was accessed on 27 December 2010 from http://www.ferris.edu/htmls/colleges/technolo/link_desc.cfm?subLinkID=162

Students majoring in Facility Management also have the benefit of several scholarships offered by various professional groups. These scholarships reinforce the connection between Ferris' Facility Management curriculum and the professional Facility Management community.

1. IFMA (International Facility Management Association) Foundation Scholarships are sponsored by various chapters of IFMA and are awarded annually. The minimum award is \$1,500 plus all expenses paid to attend World Workplace, the annual convention of IFMA. For example, in 2009, 27 scholarships were awarded, totaling \$66,000. Information accessed on 27 December 2010 from <http://www.ifmafoundation.org/scholarships/index.cfm>

Sixteen (16) Ferris State University Facility Management students were awarded IFMA Foundation Scholarships during this program review cycle.

It is most important for Ferris Facility Management students to represent Ferris by receiving this recognition. Ferris is one of the first Facility Management programs to be accredited. This scholarship reinforces Ferris as a primary educator of Facility Managers and assists in gaining visibility for the program and its graduates.

2. The West Michigan Chapter of IFMA awards the Kathy Pruden Memorial Scholarship annually. Four Ferris State University Facility Management students were awarded this scholarship during this program review cycle.
3. The Michigan Society of Hospital Engineers (MISHE) has awarded a scholarship for the last three years to a student completing an internship at a MISHE member hospital. For the last three years, Ferris students interning at Spectrum-Health have been awarded this scholarship. This scholarship is offered on a year to year basis and does not have permanent funding. Its purpose is to encourage students to consider careers in Healthcare Facility Management.

Scholarly and Creative Activities:

Architectural Technology and Facility Management students participate in a variety of activities that complement and enhance their academic and professional formation. For the Architectural Technology students, many of these are associated with the American Institute of Architects (AIA) or the American Institute of Architectural Students (AIAS).

The Ferris State Chapter of the International Facility Management Association (IFMA) visits unique buildings, hosts guest speakers, and also travels to World Workplace – the annual convention of IFMA.

For the Facility Management students, presentations associated with their Capstone/Thesis course: FMAN 499. This course is necessary and complies with College guidelines and IFMA Foundation Accreditation expectations for this degree. Many of the capstone projects that students execute deal with the larger community. Examples are studies and recommendations to make the campus safer and more user friendly, more sustainable and energy efficient, to foster a closer relationship between the Big Rapids community and the university. Many of these projects are of interest to members of the campus and Big Rapids community. These opportunities allow students to learn how their profession can have a positive impact on the community at large. Examples of these learning experiences are:

- Students from Professor Dilg's ARCH 204 course worked with Immanuel Lutheran Church of Big Rapids to analyze their existing facility relative to their long term needs as part of VISION 2015. Spring 2011.
- In 2009, the FMAN 499 Capstone Thesis course was structured under the umbrella title of *Crimson, Gold and Green*, and its focus was on finding ways to create a more environmentally sustainable campus at Ferris. Students developed a diverse array of projects that effectively demonstrated the range of options available to more efficiently manage resources. These topics included: replacement of lawns with drought-resistant prairie and forested landscapes; solar water heating; cogeneration; building controls; hybrid automotive fleet; and reducing light pollution. The success of these projects was evidenced when seven individuals / groups from the course were awarded prizes in the poster competition of the 2009 Michigan Energy Conference. Students receiving awards at the Energy Conference include Shane Keshwah, Josh Westhouse, Mark Yager, Jeff Baysarowich, David Zeeb, Megan Ferguson, Abby Buchin.
- Since 2008, Associate Professor Diane Nagelkirk and Assistant Professor Dane Johnson have taken a group of students to the annual AIA Michigan Design Retreat held at Camp Hayo-Went-Ha on Torch Lake in northern Michigan. The event is focused on a series of presentations by Michigan architects of their award-winning projects. Spending the weekend in rustic cabins, eating camp food and spending time with local professionals has proven to be an extremely valuable experience for the students, who are able to engage face-to-face with architects, designers and fellow students.

Students attending the retreat included the following:

- 2008 - Randy White, Mike Rensel, Eric Lovell, Patrick Kennedy, Aurora Temberg, Jeff Owens, Bradan King
 - 2009 - Kristen Kuk, Alex Putnam, Robert Ross
 - 2010 - Kate Post, Evan Weaver, Will Hinkley, Courtney Parks, Eric Miller, Michael Moy, Anthony Amato, Rachel Weller
- In 2008, 2009, and 2010 Associate Professor Diane Nagelkirk mentored architectural technology students in the USGBC Emerging Green Builder's Design Competition sponsored by the West Michigan Chapter of the US Green Building Council. Students were challenged to re-design existing buildings in the west Michigan area to a LEED Certification level. The USGBC's Natural Talent Design Competition provides applied learning experience in the principles of integrated design, sustainability, and innovation, all of which are components of the LEED Green Building Rating System. Student design teams came from Aquinas College, Lawrence Technological University, Andrews University, Kendall College of Art and Design, and Ferris State.
 - In 2008 the challenge focused on CompRenew, a computer recycling company in Grand Rapids.
 - One Ferris/Kendall team placed with an honorable mention.

- In 2009 the challenge focused on Brookside Elementary School, part of the Grand Rapids Public School District. Teams were challenged to design to a Platinum Level by applying the LEED-Existing Building or LEED- for Schools protocols.
 - Two Ferris' teams placed with a second place and an honorable mention.
 - In 2010 the challenge focused on Pilgrim Manor, a retirement community in Grand Rapids.
 - One Ferris' team placed with third place.
- During Spring Semester 2010 Gary Gerber advised three Architectural Technology students in the Michigan Skills Competition. Will Hinkley, Evan Weaver and Jordan Weber competed in an architectural design competition that involved designing a building utilizing software of the students' choice. Will Hinkley succeeded in continuing on to the national skills competition. The completion involved developing sketches and designing and documenting a residential project. Will, Evan and Jordan all chose to use Revit a building information modeling software.

American Institute of Architectural Students (AIAS):

The Ferris Chapter of the AIAS, a recognized RSO, focuses on providing a social experience that encourages students to bond while further exploring the field of architecture.

Chapter activities have focused on three main areas: fundraising, social and professional. The chapter has hosted fundraisers and local restaurants and coffee houses. Members have pumped gas at local service stations, for tips from customers. They have performed yard maintenance tasks for faculty and residents as well. To promote social interaction among peers, the students have taken ski trips to Cadillac, skating trips to Grand Rapids; they have hosted movie nights and potluck suppers in the studio; they have provided casual tutoring and mentoring to younger students; and hosted numerous lunches. For professional development, the chapter has taken trips to visit architectural firms in Grand Rapids; taken field trips to visit important architecture in Chicago and Detroit; and participated in AIAS events such as Midwest Quad Conferences in Carbondale, Illinois; Detroit; Indianapolis; and Milwaukee. In addition, students have attended the AIAS Forum, the national convention of the organization, in Denver, Boston, Minneapolis and Kansas City, among other cities.

Some of their activities include:

- Students worked with Professor Dilg on the programming and design for the new Band Shell for the City of Big Rapids in April 2006. This project was recognized as a Service Learning Project at the Lilly Conference on Teaching.
- Students worked with Professor Dilg in conjunction with Ministry Architecture and Len Rosenberg of Denver, Colorado on the design and construction of a BIM model for a new Women's Center in Angola, Africa in April 2010
- Students worked with elementary school children and Big Rapids City Planning officials to explore city planning in Box City; a part of Festival of the Arts in February 2011.

- Each spring, the Ferris AIAS (American Institute of Architecture Students) elects officers who will govern the chapter during the following year. Each summer, the Architectural Technology and Student Government join forces to financially support attendance of the incoming president and vice-president at the Grassroots Conference, sponsored by the national AIAS. The officers travel to Washington, DC, to AIA national headquarters and receive leadership training along with students from across the country.

Students attending the conference include the following:

- 2007 - Megan Satkowiak, Nathan Veeneman
- 2008 - Aurora Temberg, Jeff Owens
- 2009 - Jenny Coburn, Robert Ross
- 2010 - Evan Weaver, Will Hinkley

Ferris State Chapter of the International Facility Management Association (IFMA):

IFMA is another recognized RSO, that is tailored to students majoring in Facility Management. It is also an official chapter of IFMA. This group seeks to provide opportunities for students to explore their chosen profession through building tours, guest speakers, attending IFMA meetings, service work, and social activities.

A prime goal of the group is to fundraise for the trip to World Workplace, the annual convention of IFMA. Each year a number of students travel to this convention. During this program review cycle students have traveled to San Diego in 2006, New Orleans in 2007, Dallas in 2008, Orlando in 2009, and Atlanta in 2010. Fund raising has proven to be successful as evident in the following results. In 2006 the chapter paid for lodging for attending students. In 2007, 13 students were reimbursed \$61 each toward expenses. In 2008, 12 students were reimbursed \$108 each toward expenses. In 2009, 14 students were reimbursed \$107 for toward expenses. In 2010, 19 students were reimbursed \$25 each for expenses.

The chapter also has a relationship with the West MI IFMA Chapter. Students are permitted to attend their meetings and programs. The West MI Chapter has been financially supportive of student efforts. For example, in 2009 the West MI Chapter supported students in a successful LEED seminar held on the Ferris Campus. This seminar was presented by the US Green Buildings Council and was attended by professionals from throughout the region.

3.A.3.a. Employability of Students – Architectural Technology

Over 50% of the survey results for AT alumni are weighted to graduates prior to 1995. Most graduates reported “starting salaries” under \$30,000, and most graduates report “current salaries” in excess of \$60,000. It should also be noted that only 5 respondents, or 10%, ever worked in the architectural profession. Most work in fields related to architecture but more specific to their baccalaureate degree.

Based on information from the IRT Graduate Follow-Up Survey Report 2008-2009, the placement rate was 80% with the average starting salary of \$28,787. This is based on a response of 5 of 36 graduates, a response rate of 14%. The low response may be due to graduates continuing on to baccalaureate degrees and choosing to not respond to the AAS in AT survey. Some may have responded to the BS in FM survey.

The following information from the Architectural Technology Alumni Survey conducted for this program review reveals the following information.

Year Respondents Graduated from Architectural Technology Program

Year Graduated	Number	Percent
1991-1995	25	50
1996-2000	14	28
2001-2005	8	16
2006-2010	3	6

Forty two of the 50 respondents, or 84%, continued their education.

Professions in which AT Graduates Pursued Continued Education

Profession	Number	Percent
Facility Management	20	40
Construction Management	10	20
Master of Architecture	3	6
Master Business Administration	1	2

Current Area of Employment for AT Graduates

Profession	Number	Percent
Architecture	6	12
Construction Management	13	26
Facility Management	6	12
Other	18	36

3.A.3.b. Employability of Students – Facility Management

Salary Results from Alumni Survey:

The results of the alumni survey of Ferris Facility Management graduates are similar to the government statistics for such positions. The survey results for FM alumni are weighted to graduates since 2006; over 50% of respondents graduated during or after 2006. However, overall graduates reported “starting salaries” such that 10% started for more than \$50,000 per year and 50% started for more than \$40,000 per year. “Current salaries” reported by alumni are such that 25% earn in excess of \$60,000, with nearly 50% reporting “current salaries” in excess of \$50,000.

The following information from the Facility Management Alumni Survey conducted for this program review reveals the following information.

Year Respondents Graduated from Facility Management Program

Year Graduated	Number	Percent
1991-1995	7	9.3
1996-2000	11	14.7
2001-2005	14	18.7
2006-2010	43	57.3

It should be noted that 57% of the respondents graduated after 2005. Forty one, 55% of the 75 respondents did not continue their education. Of those who continued their education, 3 (4%) enrolled in an additional baccalaureate level degree, 4 (5%) enrolled in a Master’s level program, and 4 (5%) completed a Master’s level degree. Twenty two (29%) reported attending courses and seminars to develop new skills.

Professions in which FM Graduates Pursued Continued Education

Profession	Number	Percent
Master of Architecture	1	1.3
Master Business Administration	3	4
Other	3	4

Nearly 80% of respondents found employment in the Facility Management field. Eighty six percent found related employment within one year. Nearly 80% found related employment within six months. Forty five percent reported that they had found related employment by the time they graduated. It should also be noted that 80% remain in the FM profession.

Current Area of Employment for FM Graduates

Profession	Number	Percent
Facility Manager	16	21
Facilities – Project Management, Facility Planner, Space Planner	20	27
Facilities – Operations	4	5
Facilities - Staff	5	7
Construction Management	3	4
Consultant	1	1
Other	10	13

Based on information from the IRT Graduate Follow-Up Survey Report of 2008-2009, the placement rate was 88% with the average starting salary of \$47,227. This is based on a response of 8 of 26 BS graduates plus 8 students who earned certificates in FM, a response rate of 24%.

About one third of respondents used Career Services to find their first job and 13% were successful in finding their first job through Career Services. It should be noted that in the last two years the faculty has worked closely with Career Services to build student job seeking skills, make students aware of Career Service offerings, and to identify potential employers.

3.B.1. Enrollment – Architectural Technology and Facility Management

Anticipated Fall Enrollment:

Anticipated Enrollment Fall 2011 (Source: Program and Banner Data)

Degree Program	Admitted	Expected Total	Program Capacity
Architectural Technology – Year 1	72	50	60
Architectural Technology – Year 2	10	29	40
Facility Management – Year 3	23	21	25
Facility Management – Year 4	NA	23	25
Architecture & Sustainability – Year 3	15	11	20
Architecture & Sustainability – Year 4	NA	NA	NA
Totals		134	170

Notes:

- *The fourth year of the Architecture and Sustainability program will not be phased in until Fall 2012.*
- *The above data does not include pre-ARCH or pre-FMAN students. Typically this number ranges from 10-15 additional students.*

Enrollment History and Trends:

In the following two tables two methods are used to show enrollment in both programs. The first method, shown in the first table, utilizes information in the data provided by IRT. This information is somewhat confusing because students are listed as juniors and seniors within the associate level Architectural Technology degree program and as freshmen and sophomores within the Facility Management program, which only accepts junior and senior level students.

The second table uses information from Fall semester enrollment in primary architecture and facility management courses in each level of each curriculum to estimate enrollment. The program feels these numbers more accurately reflect actual enrollment.

Perhaps these discrepancies can be explained by students listed as juniors or seniors in the first table based on credit hours or financial aid purposes, or perhaps they simply do not complete curriculum change forms when they should. Additionally, there are some students who start the Facility Management program while still completing courses in the Architectural Technology degree.

It may be beneficial to review both tables, recognizing the benefits and shortcomings of each.

Enrollment since Last Program Review: (Source: FSU-Institutional Research & Testing)

Semester	Program	First Year	Second Year	Third Year	Fourth Year	Program Total	Dept Total	Annual SCH/FTEF
Fall 2005	AT	50	22	5	0	77		449.5
Fall 2005	FM	*	*	*	*	*	NA	398.88
Fall 2006	AT	53	44	5	0	102		425.79
Fall 2006	FM	3	4	11	25	43	145	351.68
Fall 2007	AT	37	50	18	2	107		449.95
Fall 2007	FM	0	2	12	24	38	145	442.41
Fall 2008	AT	30	33	15	1	82		413.98**
Fall 2008	FM	0	1	24	33	58	140	581.42**
Fall 2009	AT	24	29	9	2	64		351.52
Fall 2009	FM	0	3	16	40	59	123	539.77
Fall 2010	AT	15	19	6	2	42		*
Fall 2010	FM	0	2	19	33	54	96	*

*Statistics not provided by IRT.

**These SCH/FTEF's were shown by IRT as two separate numbers, one for Fall and one for Spring Semesters.

The numbers shown in this table represent the average of those two figures.

Note: In this table students listed as Juniors and Seniors within the AT program are added into the Second Year statistic. The AT program is a two year program...students listed in statistics as Junior or Senior are out of sequence and are most likely Second Year students within the program

Enrollment since Last Program Review: (Source: Program Banner Class List Data - SCH's from IRT)

Semester	First Year AT	Second Year AT	Third Year FM	Fourth Year FM	Total (Prg)	Total (IRT)	Difference	Fall ATFM SCH's
Fall 2005	58	17	21	13	109	-		260.74
Fall 2006	64	39	20	22	145	145		222.13
Fall 2007	52	51	26	19	148	145	+3	246.74
Fall 2008	47	29	28	26	130	140	-10	211.08
Fall 2009	39	29	29	29	126	123	+3	221.28
Fall 2010	31	24	24	29	108	96	+12	*

*Statistics not provided by IRT.

Student Credit Hour Production History since Last PTR (SCH/FTEF):

(Source: FSU Productivity Report Fall 2005-Spring 2010, Institutional Research and Testing)

Academic Year	University	CET	ATFM	AT	FM
2005-2006	455.71	358.88	434.45	449.50	398.88
2006-2007	443.06	335.50	403.80	425.79	351.68
2007-2008	450.88	343.32	448.04	449.95	442.41
2008-2009	448.62	353.05	479.04**	413.98**	585.92**
2009-2010	453.69	351.15	406.29	351.52	539.92

Note this table uses Annual figures.

**These SCH/FTEF's were shown by IRT as two separate numbers, one for Fall and one for Spring Semesters. The numbers shown in this table represent the average of those two figures.

Comment on Enrollment Trends for Architectural Technology:

Over the past five years the average enrollment in the AAS Architectural Technology program, which has a current program quota of 100, has been 85 (from a high of 107 in 2006-07 to a low of 69 in 2009-10).

For a number of years the Architectural Technology program has struggled to meet its quota. In the early part of this program review cycle, enrollment was near the quota. However, enrollment from 2008 on has decreased. The faculty believes there are several factors which affect this decrease in enrollment.

1. Surveys and studies indicate that students desire baccalaureate education, and although Ferris provides the opportunity to ladder into other programs to achieve a baccalaureate degree, students who wish to continue their education in architecture must leave the university. As such enrollment into the program has declined, and along with it graduation rates.
2. Prior to fall of 2010 and the offering of only an AAS degree in architecture, it was becoming more difficult to compete with community colleges; several of which across the state offer programs comparable to the AAS at significantly lower cost. Although the quality and reputation of the Ferris' AAS program remains high, the cost of tuition often played a greater role in deciding which college to attend. The ability to earn an associate degree at a community college at a much cheaper cost resulted in students enrolling in their local community college rather than coming to Ferris.
3. A large number of students, normally around a fourth, leave the program after the first or second semester of study. This is typical of architecture programs in general. Many students coming into architectural programs do not realize the dedication and commitment necessary to be successful in this profession. Also, some expect it to be more creative, while others expect it to be more engineering oriented.

4. In the last couple years, it is possible that the economic situation has exacerbated the above problems...since it is hard for a student to differentiate between a community college associate degree and a Ferris associate degree.

Over the years surveys were sent to architectural professionals, AT alumni, and current AT/FM students. The results of these surveys confirmed the need and interest for advanced architectural degrees at Ferris. In particular, architectural professionals have noted the absence of an architectural program in western Michigan.

As such a baccalaureate degree in architecture was proposed and implemented in the fall of 2010. The primary market for the proposed program are serious, academically qualified students who wish to receive a baccalaureate degree in architecture and/or become licensed architects. The implementation of this degree program will attract students who would otherwise leave west Michigan to obtain architectural education at institutions that were providing baccalaureate degrees.

Additionally, having a specific degree in architecture that focuses on the popular issue of sustainability should help make Ferris' program more marketable. Since the program has higher entry requirements, it is expected that a better prepared student will apply, thus reducing attrition.

Within the past year, the new program has received many enthusiastic inquiries and we anticipate this interest will continue with the result of increased enrollment. With the implementation of the new baccalaureate program in architecture, enrollment and retention will remain stable and reach the proposed quota of 140.

In conclusion, the implementation of a Bachelor of Science in Architecture and Sustainability will have a beneficial impact on university enrollment, retention and graduation rates, and consistent tuition revenue for the university. Due to the general popularity of architecture as a career choice for high school students, first year applications, admits and enrollment will be high. Likewise the option of enrolling in a baccalaureate degree, upon successful completion from the AAS program, will attract committed students with a clearer, long-term plan for their education; this higher quality student will result in higher retention and graduation rates. In addition to applicants from Ferris' AAS program the pool of candidates will also include transfer students from community colleges. Overall the expected number of applications for admission into the BS program will be high and competitive for a variety of reasons; uniqueness of program, location of university and low cost of tuition.

Comment on Enrollment Trends for Facility Management:

Prior to the current program review, the Facility Management program had never reached capacity. However, the cohorts graduating in May of 2010 and 2011 were each around 30, above the quota of 25. While enrollment remained below capacity in the Architectural

Technology degree program, the enrollment trend in the Facility Management program has been very positive.

Efforts to market the program to students at nearby community colleges have increased enrollment and changed the demographics of the facility management students. While in previous years nearly all students in the program came from Ferris' Architectural Technology program, now nearly half come from community colleges.

Other successes that helped to make this program more visible and thus boost enrollment have been a strong interest in graduates of the program by the General Services Administration of the US Federal Government, and continued recruiting by the government, the hospitality industry, and other organizations. In general the high rate of job placement for FM graduates, attractive starting salaries and potential for career success are other factors that have increased interest and enrollment in the FM program.

Lastly, as an accredited facility management program, the IFMA's (International Facility Management Association) Foundation, the accrediting body, lists and features the degree on its website. As students and professionals become more familiar with IFMA, Facility Management, and perhaps "Googling", the program is becoming less regional in nature. During this program review period, the program has graduated seven Canadian students and several students from diverse parts of the US.

The main challenge in the next few years will be to maintain and balance enrollment within the two baccalaureate level programs: Architecture and Sustainability and Facility Management. If properly marketed, it is believed that the two can be made stronger by their association and the new direction which emphasizes sustainability.

Based on enrollment trends in the Facility Management program over the past 5 years it is anticipated that enrollment in the FM program will remain high and stable. It is likely that 12-15 applicants will be graduates from Ferris' AT program and 12-15 students will transfer from other community colleges and universities. The FM program is one of only six recognized programs in the US that meets IFMA (International Facility Management Association) educational standards; as such it remains a highly regarded provider of FM education. In addition, stronger and re-directed marketing efforts over the past 5 years has increased the visibility of the program; as such transfer admits has increased substantially; the result has produced record high enrollment which exceeds the program quota of 50 (current 2008-2009 FM enrollment in the BS program is 58). Furthermore the favorable job outlook and a 100% job placement rate provide many opportunities for students. Attractive job positions and salaries are and will continue to be strong motivators for entry into the profession of facility management.

Number of Students Who Apply/Are Admitted/Enroll to Program Annually:

Annual applications for the Architectural Technology program range from 90 to 120. Of those who apply, 85% are admitted. The typical yield for enrollment is 60%.

Annual applications for the Facility Management program range from 25 to 35. Of those who apply, 90% are admitted. The typical yield for enrollment is 85%. Approximately 60% of FM applicants are internal, 40% are from external institutions.

Enrollment Goals:

- Increase enrollment in the Architectural Technology program to 90% of capacity.
- Increase retention in the AT program to 75-80% of entering class.
- Increase the quality of incoming students with the goal of increasing retention rates and facilitating timely graduation.
- Maintain Facility Management program at capacity of 50 (25 juniors and 25 seniors).
- Build enrollment in Architecture and Sustainability program to capacity. This program will be part of next program review cycle.
- Maintain FM Certificate program enrollment at 75-85% or higher of program capacity of 25. This program, while not an official part of program review, increases faculty productivity and improves visibility of Ferris as a Facility Management education provider.
- Increase the number of students entering FM minor degree program.

Enrollment Strategy:

1. Marketing and Recruitment:

- a) Develop current and engaging marketing materials.
 - Program brochures were developed and designed by a graphic designer for the AT and Architecture and Sustainability degree programs.
 - FM program brochure was previously designed and recently updated by Graphic Design program students.
 - Program specific website was previously designed by Graphic Design program students and has been edited to reflect updates and changes to the curriculum. It will continue to be updated and revised as necessary.
 - An architecture Facebook page for high school students has been developed. Goal is to highlight student activities and unique features of the programs.
- b) Contact high schools and community colleges with a strong potential for student recruitment.
 - Review data on enrollment rates for the past 5 years.
 - Continue statewide analysis of potential programs and contacts for recruitment through letters and personal visits, in order to establish and maintain active relationships.
 - Continue contact with current sources of high referral with mailings, telephone calls and personal visits.
 - Develop relationship with admitted students through personal letters and telephone call from AT faculty.

- Re institute faculty sponsored programs such as “Monday night Technology” for area-wide 7th and 8th graders; architecture BIM/CAD seminar for area-wide high school teachers.
- Continue visits to community colleges and selected high schools to promote programs.
- Pursue statewide analysis of potential programs and contacts for recruitment through letters and personal visits.
- Continue involvement and participation in all Dawg Day events.
- Continue faculty contact with admitted students to establish personal contact in the spring semester prior to expected enrollment.

2. Curriculum Enhancement and Growth:

- With the creation of the new BS degree and the enhancements made within the AAS degree, the potential for success of the architecture programs is very strong. In one year, student interest has increased measurably. In addition, the quality of the students has increased; students and their parents from high caliber, private high schools from around the state have made visits for the first time to our programs.
- The Architectural Technology program will be marketed primarily in its context with baccalaureate level programs. Benefits of curriculum will differentiate it from other associate level programs offered at community colleges.
- The new Architecture and Sustainability program will be marketed to existing students and community college students. In particular, the Small Town Studio, a visible space within Big Rapids to connect students, faculty and the community, will add visibility and provide hands on experiences for senior students while serving the community.
- Continue and enhance recruitment effort for the Facility Management program to existing students and community college students.
- Emphasize opportunities for internships and jobs at graduation.

Enrollment Accomplishments:

The Facility Management program has become a viable program. In Fall of 2003 only 4 students entered the program. By 2005, 24 students entered the program. In two of the five years of this program review cycle, the FM program enjoyed enrollment above capacity.

With the establishment of the new Architecture and Sustainability program, a more cohesive marketing plan can attract students with diverse interests to the program. Also, the “stigma” of not offering a baccalaureate architectural degree has been eliminated.

3.C. Program Capacity – Architectural Technology and Facility Management

Current program capacity is shown in the following table. Note that these capacities are those adopted by curriculum revisions approved in 2010.

The primary limiting factor to enrollment capacity is the number of faculty. Due to the nature of studio format courses, a small class size is essential for an effective learning environment that fully utilizes the critique methodology. The preferred size of studio courses ranges from 16-18 students.

Architecture and Facility Management Program Capacities

Program	Capacity
Architectural Technology – 1 st year	60
Architectural Technology – 2 nd year	40
Facility Management – 3 rd year	25
Facility Management – 4 th year	25
Facility Management Certificate	25 per cohort
Architecture and Sustainability	20
Architecture and Sustainability	20

Due to the merging of technology used within the studio space, the size of rooms limits the number of computer work stations. These work stations consist of work surfaces for hand sketching, model making, and computers.

For lecture classes, the limiting factor is often room size. While large rooms exist, ongoing conflicts with scheduling of large size lecture spaces that accommodate 30 students or more prevent opportunities for creative scheduling. In some instances, rather than scheduling 2 sections of 25 students, we would prefer to schedule 1 large section of 40-50 students. This would alleviate faculty overloads. Due to use and display of building material samples, etc. rooms in close proximity, preferably the 2nd floor of Swan are most desirable.

In conclusion, the program has seen a flip in enrollment during this program review period; the Facility Management program has grown to capacity, while the Architectural Technology program has seen a gradual reduction in the number of students. As was stated earlier, this issue and trend was identified by faculty many years ago. It is expected that with the implementation of the Architecture and Sustainability degree, enrollment in the Architectural Technology program will rebound and increase.

3.D.1. Retention and Graduation – Architectural Technology

The tables shown here provide various glimpses at enrollment, attrition, and graduation rates within the Architectural Technology program. The significance is discussed later in this section of the report.

Enrollment and Attrition Rates for Admitted Architectural Technology Students

(Source: Architectural Technology and Facility Management Programs)

Fall Semester Admitted	Quota for 1 st year (A)	# of 1 st year Enrolled Students (B)	% of 1 st year quota (B/A)	Quota For 2 nd year (C)	# of Returns after 1 st year (D)	% of 2 nd year quota (D/C)	Retention rate from 1 st to 2 nd year (D/B)
2005	64	58	91%	40	38	95%	65%
2006	64	64	100%	40	51	127%	80%
2007	64	52	81%	40	29	72%	56%
2008	64	47	73%	40	29	72%	62%
2009	60 *	39	65%	40	24	60%	61%
2010	60	31	52%	40	25	62%	80%

* Program quota was changed to reflect space, equipment and faculty constraints.

The following table shows attrition of FTIAC students, the most vulnerable group within the Architectural Technology and Facility Management program area.

Attrition and Graduation Rates for FTIAC Architectural Technology Students

(Source: FSU-Institutional Research & Testing- Fall 7 day counts)

Year Graduated	Number Enrolled	Number/% Enrolled 2 nd Year	Number/% Graduated in 2 Years	Number/% Graduated in 6 years
2005	32	20/63%	12/41%	17/53%
2006	26	12/46%	8/31%	13/50%
2007	36	28/78%	15/42%	23/64%*
2008	42	34/81%	20/48%	28/67%*
2009	34	25/74%	14/41%	15/44%*
2010	21	16/76%	8/38%	-

*indicates number graduated through Fall 2010. The asterisk * indicates that 6 years have not elapsed since this cohort enrolled.

The above table tracks graduation within Ferris State University, NOT JUST the Architectural Technology Program. Thus the number of students who graduate from the Architectural Technology Program within 2 years is probably higher, while the total number graduating from the program over the time period shown is probably lower as some students may have earned other degrees. The table below shows the results for how long it takes students to complete the program based on program exit surveys.

Time to Complete AT Degree Based on Exit Surveys

(Source: ATFM Program Exit Surveys and Institutional Testing and Research)

Graduation Year	Number of Graduates per IRT	Number Completing Survey	Number/Percent Graduating in Two Years
2005	28	18	15/83%
2006	17	15	11/73%
2007	24	18	15/83%
2008	36	39	25/64%
2009	36	27	18/67%
2010	22	22	16/73%

Generally students who continue into the second semester of the Architectural Technology program are likely to remain in the program and graduate. Those who remain in the program the second year are extremely likely to graduate and will probably go on to complete baccalaureate level degrees at Ferris, with Facility Management and Construction Management as the most likely choices. With the new baccalaureate degree in Architecture and Sustainability, it is even more likely that these students will remain at Ferris for four years.

The most critical semester for retention of FTIAC students, and students in general, is the first semester. This appears to be due to several factors:

- Low maturity levels.
- Poor academic preparation.
- Poor study/work ethic.
- Personal and “homesick” issues.
- Selected wrong program.. IE. thought architecture is more artistic or more engineering oriented.

In program exit surveys from 2006 -2008 students often indicated problems with math and technical courses as reasons why it took longer than two years to complete the degree. With advising of students into SLA courses as well as tutoring within the program, and perhaps due to changes with financial aid and the economy, the number one reason why students take longer than 2 years to complete the program is now “other” – which can be personal, financial, and other issues.

Some efforts made by the program area to aid in retention and timely graduation have been:

- Maintain quality instruction and faculty commitment to the program.
- Maintain relevant curriculum and sequencing of courses.
- Maintain consistent contact with students by faculty advisor through email and office visits...this begins in the spring semester prior to the semester the student is to be admitted.

- Host annual fall field trip for first year students to Grand Rapids architectural firms and the Meyer May house, designed by Frank Lloyd Wright.
- Host annual fall field trip for second year student to the Alden Dow Home and Studio in Midland.
- Provide and support opportunities for students to participate in activities with architectural students at other universities and to interact with practicing architects.
- Host annual fall student reception to welcome returning and new students, highlight upcoming program events and introduce student organizations and officers.
- Host annual spring student reception to recognize accomplishments of student organizations and academic achievements of individual students.
- Host annual weekend spring architectural trip to places such as: Chicago, Detroit, Columbus, Indiana.
- Travel to the Michigan AIAS Design Retreat in Torch Lake with a select group of AIAS students.
- Implementation of the new B.S. in Architecture and Sustainability degree which should attract students of better academic preparation as well as motivate higher levels of academic performance, thus increasing enrollment, retention, and graduation rates.
- Ongoing development of a program facilities to develop aesthetically distinctive studio classrooms that are consistent with student learning needs, simulate the appearance and function of a professional architectural studio, utilize innovative instructional delivery systems and enhance the professional quality of the program.
- Improve advising techniques for more consistent and accurate counseling.
- Administer program exit surveys to determine reasons for attrition.

3.D.2. Retention and Graduation – Facility Management

The following tables show various glimpses into the enrollment, retention, and graduation rates within the Facility Management program. Note that enrollment has increased during this academic program review period. Retention and graduation rates have remained high.

The following table shows that the retention rate is very high in the Facility Management program. This can be partially attributed to the higher maturity levels of the students since they enter the program at the junior level.

Retention Rate for Enrolled Facility Management Students

(Source: Architectural Technology and Facility Management Programs)

Fall Semester Admitted	Quota for 3rd year (A)	# of 3rd year Enrolled Students (B)	% of 3rd year quota (B/A)	Quota For 4th year (C)	# of Returns after 1 st year (D)	% of 4th year quota D/C	Retention rate D/B
2005	25	21	84%	25	22	88%	104%
2006	25	20	80%	25	18	72%	90%
2007	25	26	104%	25	26	104%	100%
2008	25	28	112%	25	29	116%	103%
2009	25	29	116%	25	29	116%	100%
2010	25	21	84%	25	21	84%	100%

The following table provides information on the length of time it takes students to complete the Facility Management program. Most students complete the program in two years. Reasons why students may not complete the program in two years include: not carrying a full load due to personal reasons such as family or work, not securing the required internship during the summer between junior and senior years, and academic reasons such as transferring into the program with insufficient general education or technical courses. The vast majority of the students who do not graduate in two years do complete their degrees within three years.

Completion Rates of Graduates for Facility Management Students

(Source: Architectural Technology and Facility Management Program. IRT numbers shown in italics.)

Class of:	<2 years	2 years	> 2 years	No Grad	Total # of Graduates	% that Graduate in 2 years.
2005	0	NA	NA	0	5	NA
2006	0	NA	NA	0	12	NA
2007	0	15	1	0	16	94%
2008	0	14	2	0	16	88%
2009	0	22	4	0	26	85%
2010	0	22	7	1	29	76%

Enrollment for Facility Management Program

(Source: Architectural Technology and Facility Management Programs – Banner)

Academic Year	Juniors	Seniors	Graduates
2005-2006	21	13	13
2006-2007	20	22	19
2007-2008	26	18	19
2008-2009	28	26	30
2009-2010	29	29	26
2010 Fall Only	21	29	NA

Retention within the B.S. in Facility Management program is virtually 100% as is illustrated in the table above. Ongoing goals and efforts are made, however, to retain students and assure student satisfaction with the program. These include:

- Maintain quality instruction and faculty commitment to the program.
- Maintain relevant curriculum and sequencing of courses.
- Maintain consistent contact with students by faculty advisor through email and office visits.
- Involve and provide opportunities for students to interact with facility management professionals through guest lecture series, involvement with professional organizations, and attendance at seminars.
- Host annual fall student reception to welcome new FM students, highlight upcoming program events and introduce student organizations and officers.
- Host annual spring student reception to recognize accomplishments of student organizations and academic achievements of individual students.
- Ongoing development of a program facilities to develop aesthetically distinctive studio classrooms that are consistent with student learning needs, simulate the appearance and function of a professional architectural studio, utilize innovative instructional delivery systems and enhance the professional quality of the program.

The Facility Management Exit Survey does not ask students how long it took them to complete the curriculum. However, virtually all students complete in two years. There have been two students who completed all coursework, but did not complete required internships in the Spring 2010 class, and thus did not graduate. This is very rare and probably due to the economy and the large number of students in the class of 2010. Occasionally there are students who require general education courses in order to complete their degrees. This may extend their time beyond 2 years.

3.E.1. Access – Architectural Technology and Facility Management

Students entering the AT program are generally traditional full-time students who are prepared to complete their coursework on the Big Rapids campus as full-time students.

Students entering the B.S. FM program are also typically full-time students, although increasingly more of them are non-traditional students based on age and past work and military experiences. However, these students are also prepared to complete their coursework on the Big Rapids campus as full-time students. Since some of these students commute from Grand Rapids, efforts are made to schedule courses on two to three days per week when possible.

Efforts to ensure that the program is accessible to these students include the offering of multiple sections (when enrollment justifies) of program courses between 8:00 am and 6:00 pm. In addition, the delivery of instruction accommodates different learning styles through a mix of lecture, visual aids, small-group projects and critical thinking activities. The use of

web enhanced courses also contributes to content accessibility, while faculty use availability through FerrisConnect or email ensures timely response and interaction with students.

Further, arrangements are made with programs offering support courses such as art, physics, HVACR, etc. for AT students; and management, HVACR, etc. for FM students, to ensure that students who register in a timely manner have access to the courses necessary to complete their degrees on schedule.

Advising is a critical part of ensuring access to the courses necessary for timely graduation. The advising process can help students plan a strategy to meet entry requirements, schedule prerequisite courses, and meet other requirements of program entry.

Due to strong demand for the online FM Certificate program and the desire of certificate students to complete the certificate in a timely manner, sections of courses in addition to those offered on the “normal” schedule, such as summer and a second course within a semester, are offered as faculty loads permit.

Increasing numbers of AT students as well as transfers to the FM program come from areas within a 60 mile radius of Grand Rapids. Perhaps a feasibility study regarding access to the program and the best location for each program to be offered: Big Rapids, Grand Rapids, is warranted. Throughout the past 15 years, interest and demand for the offering of the BS in FM and a BS in Architecture program has remained high and constant. The offering of these programs in a more metropolitan setting, versus a rural setting, has many favorable attributes; these include:

- Allowing student to live at home while attending Ferris.
- Allowing students to continue working while attending Ferris.
- More central location to a larger number of potential students.
- More central location to potential adjunct faculty.

3.F.1. Curriculum – Architectural Technology

Please refer to Appendix A1 for Curriculum Guide Sheets and course outlines.

Background and Introduction:

The architectural technology curriculum has evolved over the years. The degree was established in the 1950s to prepare architectural drafters. In the 1990s it evolved to focus on the use of computer aided drafting. Throughout this time, the curriculum grew to provide students with an understanding of the practice of architecture as well as the technologies of building, and an appreciation for the art and aesthetics of architecture. During this time, upon graduation, most graduates went directly to work.

As the architectural profession has evolved and cultural and social expectations for higher education have changed, the goals of students and needs of the profession have also changed. Most students now continue on to earn baccalaureate level degrees. The main degrees that students move on to are:

1. B.S. in Facility Management: This curriculum was implemented in 1989 and is part of the same program area as Architectural Technology. Graduates of this program work primarily as Property Managers and Facility Managers, ensuring the continued relevance of facilities in the public and private sector. Others work at architectural firms or continue on to earn Master of Architecture degrees.
2. B.S. in Construction Management: This curriculum is offered within the School of Built Environment, the same school as the Architectural Technology and Facility Management programs. Graduates of this program work primarily as Construction Managers.
3. B.S. in Interior Design at Kendall College of Art and Design in Grand Rapids.
4. Prior to fall of 2010 students, who leave Ferris, often chose to study architecture. The most common schools to which they transferred were Lawrence Technological University, the University of Michigan, and Ball State University. These students first earned a baccalaureate degree in architecture and then moved on to a Master of Architecture degree – the degree required for professional licensure in most states and provinces.

In order to better meet the needs of current students and to encourage them to earn their baccalaureate degrees at Ferris, a new baccalaureate degree option has been implemented; a B.S. in Architecture and Sustainability degree. It prepares students to work within architectural and design firms or to continue on to a Master of Architecture degree.

With this new degree option, students now have three baccalaureate level options within the School of Built Environment at Ferris, spanning the range of the building life cycle: 1) The B.S. in Architecture and Sustainability addresses the planning and design of facilities; 2) The B.S. in Construction Management addresses the construction process; 3) The B.S. in Facility Management addresses the management and coordination of the planning, design, construction, and ongoing care of the facility. The AAS in Architectural Technology provides a technological foundation for these baccalaureate curriculums.

To respond to the enhanced role of the Architectural Technology degree as a stepping stone to baccalaureate level study in the built environment, rather than higher level vocational education, the curriculum of the Architectural Technology degree has experienced major revisions during this program review cycle. Further minor adjustments are also in the process of development.

Major Changes in Curriculum:

The major changes in the Architectural Technology curriculum are:

1. The addition of two art courses: ARTS 101-Basic Art and ARTS 120-3D Design. This addition was necessary to develop hand sketching skills as well as artistic skills requested by the advisory committee.

2. To allow students to more easily meet math requirements of M Arch institutions, the check sheet has been changed to allow the option of MATH 116 or MATH 120.
3. The addition of PHYS 212. This will provide students with the required full year of physics should they apply to M Arch programs.
4. Changes in ARCH 244-Architectural History 1 and the addition of ARCH 245-Architectural History 2. Formerly ARCH 244 covered a survey of architectural history from pre-historic to 20th century and focused on Western Architecture. With the revision, which is also consistent with admission requirements to M Arch programs, the architectural history curriculum is split into two historic time periods, plus content has been added to make the curriculum less Euro-Centric.
5. Creation and addition of ARCH 246- 20th Century Architecture.
6. The studio sequence (ARCH 101-Architectural Graphics, ARCH 102-Architectural Digital Graphics, ARCH 203-Architectural Documentation, and ARCH 204-Architectural Detailing) has been revised in the following manner:
 - ARCH 101 has added the use of some digital processes. IE. Photoshop.
 - ARCH 102 has become the main course where students learn digital graphics – 2D and BIM (Building Information Modeling). Note: Formerly ARCH 109 was required in the first semester, along with ARCH 101. ARCH 109 focused on digital graphics. With the removal of digital graphics in the first semester, the revised curriculum allows students to focus solely on hand skills.
 - ARCH 203 and ARCH 204 will focus on the development of working drawings (construction documents). The curriculum will no longer focus on the development of a complete set of documents, but rather on the construction of “virtual” buildings from which drawings can be generated. Thus the focus will be on the technology of buildings.
7. The requirement of Architectural Electives has been removed from the AT program. This is due to other necessary courses being integrated into the associate level curriculum (art, physics, history).
8. It is anticipated that flexibility will be provided within this curriculum for students planning to major in Facility Management. Various courses will be recommended as substitutes for courses in the approved Architectural Technology curriculum. These include:
 - Only ARTS 101-Basic Art will be required reflecting the less “artistic” nature of facility management, but providing basic sketching graphic skills. As such ARTS 120 will be substituted with an architectural elective (see below).
 - An option of MATH 116 or MATH 120 will be offered. This will allow the expected level of math skills and also provide the prerequisite for PHYS 211.

- Only PHYS 211 will be required. As such PHYS 212 will be substituted with a science elective within the Facility Management curriculum which will allow students to choose an area that may be more relevant to their interests and also applicable to Facility Management.
- In place of ARTS 120 and PHYS 212, two Architectural Elective courses will be required to better prepare students for the Facility Management degree. These include: ARCH 216 – Professional Practice, ARCH 250-Systems Cost Estimating, ARCH 270-Building Information Modeling, CONM 211 Construction Quantity Estimating, CONM 222-Construction Administration. In the standard curriculum, Architectural Technology Electives are integrated into the third and fourth years of the new B.S. in Architecture and Sustainability curriculum.

Curricular Changes Anticipated or In Progress:

The main curricular changes anticipated include: Revision of course titles, description and content for ARCH 203 and ARCH 204 to build on the revisions made in ARCH 101 and ARCH 102. These changes have been submitted to CET Curriculum Committee for review and approval in fall of 2011.

Program Requirements:

The program requirements of the Architectural Technology curriculum are designed to provide students with academic and technical competencies to be successful in a career in the built environment. The associate level degree is designed to provide basic background for success in the baccalaureate level degree options.

In the case of the Architectural Technology/Architecture and Sustainability option, comparable curriculums were reviewed, especially expectations of colleges offering Master of Architecture degrees. The Master of Architecture degree is the only degree accredited by NAAB (National Association of Architectural Accrediting Boards). An MArch degree from a NAAB accredited institution is required for architectural licensure in most states and provinces.

In the case of the Architectural Technology/Facility Management option, Ferris' B.S. in Facility Management degree is accredited by the International Facility Management Association (IFMA). Thus the criteria necessary for re-accreditation were considered in the revision of the Architectural Technology program requirements.

Directed Electives:

There are no directed electives within the curriculum. The AAS in Architectural Technology degree as currently approved is designed to prepare students for entry into the B.S. in Architecture and Sustainability degree, which has both Architectural and General Education electives.

Students will be advised to substitute courses, when appropriate, if they are planning to pursue BS degrees in Facility Management or Construction Management.

General Education Courses:

The General Education courses required within the AAS in Architectural Technology degree are consistent with expectations for further architectural study. In order to prepare students to fully participate in their further degree requirements, there is little flexibility in the curriculum.

- ENGL 150/ENGL 250: These courses are part of Ferris' General Education requirements (Communication Competency) and most easily transfer to other institutions.
- COMM 105/COMM 121: These courses are also part of Ferris' General Education requirements (Communication Competency). Allowing for Public Speaking or Interpersonal Communication allows the students a choice. As practitioners of the built environment students will be required to speak to individuals as well as to groups.
- MATH 116 or MATH 120: Both are beyond Ferris' Quantitative Skills Competency level required for an Associate of Applied Science degree; both are prerequisites for PHYS 211.
- PHYS 211/PHYS 212: While both courses are not required for Ferris' Scientific Understanding requirement, PHYS 211 is a prerequisite to ARCH 223. PHYS 212 is part of typical undergraduate architectural curriculum. Also, the continuity between the two courses, suggests that PHYS 212 be placed in the associate level.
- SOCY 121: This course meets Ferris' Foundation and Social Awareness requirement. It also serves as a prerequisite to upper level Sociology courses dealing with Community Planning, which are part of the B.S. in Architecture and Sustainability program. In addition, sociology provides a fundamental understanding of behavior...an important skill when involved in designing spaces for people.
- ARTS 101/ARTS 102 (or ARCH 244): While only one of these courses is necessary to meet Ferris' Cultural Enrichment requirement, both are necessary to understand art and design in the complete manner necessary to move on to architectural design.

3.F.2. Curriculum – Facility Management

Please refer to Appendix A2 for Curriculum Guide Sheets and course outlines.

Background and Introduction:

The B.S. in Facility Management degree program is the second half of a 2+2 degree, the first being the AAS in Architectural Technology. The educational philosophy of the program is to provide a core of general education, business and management, architectural and building technology, and facility management coursework to provide graduates with the skills, knowledge, and abilities for employment in the growing field of facility management.

The program was implemented in 1989. With the adoption of semesters in 1993, the curriculum was revised to accommodate the new academic calendar. In 1997 a second revision to the curriculum was approved by the university.

The FM Program offers minor degree options, open to all students enrolled in baccalaureate or higher degrees at Ferris. They are Facility Operations Management and Facility Planning

Management. Students seeking minor degrees in Facility Management are accommodated within courses offered to Facility Management majors. Thus, separate sections are not necessary. See Appendix A2 for Curriculum Guide Sheets.

An online Certificate Program in Facility Management was implemented in Fall 2005. This curriculum replaces a certificate that was offered at the Grand Rapids Campus of Ferris, but suffered from enrollment issues. In the online format, the degree has been made accessible to a much broader market and has seen success. The course work included in this program consists of four courses:

- FMAN 321-Principles of Facility Management
- FMAN 322-Project Management
- FMAN 331-Facility Programming and the Design Process
- FMAN 451-Planning and Budgeting for Operations

Each course is 3 credit hours and it typically takes a student 4 semesters to complete the certificate. This includes the summer semester.

In 1996, the Facility Management Program applied for designation as an International Facility Management Association (IFMA) Recognized Program. In 2010, this designation was revised to an IFMA Accredited Program. IFMA is an organization consisting of over 19,000 facility managers in 78 countries (http://www.ifma.org/about_ifma/index.cfm) and is a major professional organization for facility managers. The application consists of a self-study of the program and verification that the program meets the academic standards established by IFMA. In the future, the more rigorous Re-Accreditation will include a site visit. Ferris' FM program was Re-Recognized in 2002 and 2008. The next visit will be for Re-Accreditation in 2015.

The accreditation process is managed by the IFMA Foundation, a non-profit organization formed to support IFMA's academic efforts which also include scholarships. Joe Samson, a Professor in the program is a member of the IFMA Foundation's Commission on Academic Affairs.

Other programs that are accredited as of January 2011 are:

Associate Level Programs:

- Community College of Philadelphia, Philadelphia, PA
- Temasek Polytechnic, Singapore

Bachelor Level Programs:

- Brigham Young University, Provo, UT
- Conestoga College, Kitchener, Ontario
- Cornell University, Ithaca, NY
- Wentworth Institute of Technology, Boston, MA

- FH Kufstein, Kufstein, Austria
- Hanze University, Groningen, The Netherlands
- NHTV Breda University of Applied Science, Breda, The Netherlands
- Saxion University of Applied Science, Deventer, The Netherlands

Master Level Programs:

- Georgia Institute of Technology, Atlanta, GA
- Pratt Institute, NYC, NY
- Rochester Institute of Technology, Rochester, NY
- Leeds Metropolitan University, Leeds, UK
- The Hong Kong Polytechnic University, Kowloon, Hong Kong
- The University of Sydney, Sydney, Australia

Curriculum Changes:

Since the last program review several changes were made to the curriculum. These include:

1. Removal of PSYC 326-Industrial/Organizational Psychology. This course was viewed as redundant to other content within the curriculum. It was adopted when the General Education requirements included a 300+ level Social Awareness course. It was removed to allow more flexibility in the curriculum.
2. Removal of FMAN 309-Computer Applications for Facility Management. There were several logistical problems with this course including: difficulties in getting Facility Management software to work; the long learning curve associated with Facility Management software; and the difficulty involved in developing a relevant database for use within the course. More importantly, there are many brands and types of software used in the practice of Facility Management. Thus regardless of the software used in the course, it was unlikely to be directly transferable or usable to make students employable. Also, most students were exposed to Facility Management software within their internship experiences.
3. Replaced ACCT 201-Principles of Accounting to MGMT 350-Tools for Decision Making. ACCT 201 was never an ideal course for this curriculum. Facility Managers do not need to know how to do accounting, but rather how to use accounting information in a managerial manner. With the development of MGMT 350, an ideal course was created for this curriculum.
4. Addition of a one credit hour course to help prepare students for FMAN 499-Capstone Assessment Thesis. The course FMAN 489-Capstone Research was developed for this purpose. One semester for FMAN 499, was found to be insufficient time for students to define, research, and execute the capstone assessment thesis.
5. Added a studio component to: FMAN 331 – Facility Programming and the Design Process, FMAN 431 – Principles of Space Planning, FMAN 432 – Principles of Interior

Architecture. These courses are now configured as 2 lecture hours plus 2 studio hours, rather than 3 lecture hours. Originally these courses had a studio component which was removed due to administrative pressure for efficiency. However, lacking a studio component made it very difficult to provide appropriate and adequate feedback to students during the development of course projects. The restructure of these courses has been successful in improving the results of the projects.

6. Changing the Scientific Understanding requirements from BIOL 111 to allow students to select from a list of Scientific Understanding electives. There are now four courses to choose from to satisfy this requirement:
 - BIOL 111-Environmental Biology
 - BIOL 116-Nature Study
 - GEOL 121-Physical Geology
 - GEOG 121-Weather and Climate

7. With the freeing of credit hours due to the above actions, and in a response to advisory board comments and student desire for flexibility in the curriculum to explore other topics related to management, a Management Elective requirement was introduced to the curriculum. Students select from the following four courses:
 - MGMT 302-Organizational Behavior
 - MGMT 305-Supervision and Leadership
 - MGMT 373-Human Resource Management
 - MGMT 447-Business Ethics and Social Responsibility

The main other changes to the curriculum have been to integrate the topic of sustainability into the existing courses.

Curriculum Changes Anticipated:

There are no Curriculum Changes anticipated at this time for the Facility Management Curriculum. The only changes anticipated are those brought about by changes in the AAS in Architectural Technology program described in section 3.F.1.

While most Facility Management students do not seek minor degrees or additional certificates, past students have earned dual degrees in Construction Management and Facility Management as well as minor degrees in Communications. In addition, some students have taken additional courses in Hospitality Management, with the goal of increasing their employability within that sector of Facility Management. Other students have continued on immediately to earn MBA degrees at Ferris or the online MBA from Ferris while embarking on their first Facility Management job.

In order to allow for a formal recognition of a student's additional study, the program is working with the Humanities Department to make their proposed Certificate in Sports Communication an option for FM students. If approved, this certificate would include

FMAN 331 as one of the four certificate courses. Many FM students express an interest in working within sports organizations.

Directed Electives:

Other than the Science and Management electives discussed above, there are no Directed Electives in the curriculum. There are specific directed General Education courses which fulfill program needs as well as General Education needs. These will be discussed in the next section.

With the above described revisions to the curriculum, the two free electives to satisfy the Cultural Enrichment requirement have been maintained.

General Education Courses:

The General Education courses required within the B.S. in Facility Management degree are consistent with expectations of the university and contribute to fulfilling the IFMA accreditation requirements to which the curriculum must conform. There is more flexibility within the Facility Management curriculum than in the Architectural Technology curriculum to meet General Education requirements. This is in part due to the curriculum being an upper level curriculum and that Facility Management, by its general nature, allows for exploration of various fields of study.

The following General Education Courses are typically satisfied within the student's associate level studies.

- ENGL 150/ENGL 250: These courses are part of Ferris' General Education requirements (Communication Competency) and most easily transfer to other institutions.
- COMM 105/COMM 121: These courses are also part of Ferris' General Education requirements (Communication Competency). Allowing for Public Speaking or Interpersonal Communication allows the students a choice. As practitioners of the built environment students will be required to speak to individuals as well as to groups.
- MATH 116 or 120: Are beyond Ferris' Quantitative Skills Competency level required for an Associate of Applied Science degree, either one are prerequisites for PHYS 211. PHYS 211: While there are five Scientific Understanding courses that Facility Management majors can choose from to fulfill the seven credit hour requirement, PHYS 211 is a preferred course and is typically taken by students in the AAS in Architectural Technology degree.
- SOCY 121: This course meets Ferris' Foundation and Social Awareness requirement. Sociology provides a fundamental understanding of behavior...an important skill when involved in designing spaces for people. A substitute course may be accepted for this course.
- ARTS 101 (or ARCH 244): While these are preferred Cultural Enrichment courses and are typically taken by students in the AAS in Architectural Technology curriculum, other Cultural Enrichment courses may be substituted.

The following General Education courses are typically completed during the B.S. in Facility Management curriculum:

- ENGL 311: This course meets Ferris' baccalaureate level Communication Competence requirement. It was selected to help students further develop their written communication skills.
- PHYS 211/BIOL 111/BIOL 116/GEOL 121/GEOG 121: The courses listed are the preferred Scientific Understanding electives. Students typically complete PHYS 211 in their first two years. If students transfer from another program, other courses that meet Ferris' Scientific Understanding requirement may be substituted.
- ECON 221/ECON 222: These two courses are part of the Facility Management curriculum and also satisfy Ferris' upper level Social Awareness requirement. The foundation course is typically completed prior to this curriculum. These economics courses also broaden the student's awareness of economics and its influence on Facility Management.
- Cultural Enrichment requirements are free electives. Typically one course is completed prior to this curriculum. The Global Consciousness requirement, and if necessary, the 200+ level requirement are typically met by one of these courses.

3.G. Quality of Instruction

Since the curriculum and goals are different for each degree and each degree has different employers and advisory board groups, individual surveys were developed, executed, and analyzed for each group and each degree. Thus, the results will be presented in individual sub-sections in this report.

3.G.1a. Perceptions of Quality of Instruction – Architectural Technology

As part of the Program Review process, surveys were designed to assess perceptions of Students, Alumni, Faculty, Employers, and Advisor Board members. Each survey addressed slightly different areas of interest.

- Faculty and Advisory Board members were surveyed on general measures of preparedness of incoming students as well as the general quality and preparedness of graduates for work and further study.
- Alumni, Employers, Faculty, and Advisory Board members were surveyed to address several categories of competencies that are required for entry-level work in the field of architectural technology as well as for successful performance in baccalaureate degree programs. Ten Competency Areas were identified: General Skills, Communication, Hand Graphics, Computer Graphics, Presentation Graphics, Contract Documents, Building Materials, Architectural History, Architectural Design, and Sustainability.
- Students, Faculty, and Advisory Board members were surveyed on issues associated with the support by the university for the program through provision of learning spaces, equipment and technology as well as support services such as tutoring, library resources, and career services.
- Faculty and Advisory Board members were surveyed on issues associated with administrative and financial support.

Perceptions of Student Quality:

The results of the surveys of Employers, Faculty, and Advisory Board members are presented in Section 2.3.A of this report. Detailed results may be found in the appendices.

In general, Faculty identified the preparedness of incoming students as marginal (2.33 on a 4 point scale). In past years with increased entry requirements, it should be noted that the academic quality of incoming students has improved. In many cases students are deficient in discipline and maturity to effectively apply themselves to learning.

Graduates are rated much higher. This may be in part due to attrition of weak students and increased commitment and maturity of remaining students. Employers and Advisory Board members rated the preparation as “Good” to “Excellent”. Faculty, rated students lower (average) than the Employers and Advisory Board members did.

Perceptions of Preparation of Students in Competency Areas:

As listed above, Alumni, Employers, Faculty, and Advisory Board members were surveyed regarding the preparation of graduates in ten competency areas. Results of the surveys are presented in Section 2.3.A of this report. Detailed results may be found in the appendices.

The following table illustrates the Mean rating for each competency as reported by each of the four groups surveyed.

Perceptions of Graduate Skills – Summary

(Mean Scores on a 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Alumni	Employer	Faculty	Advisory Board
General Skills	3.42	3.52	2.94	3.67
Communication	3.19	3.50	2.75	4.00
Hand Graphics	3.49	4.00	2.71	3.45
Computer Graphics	3.30	4.00	3.25	3.70
Presentation Graphics	3.25	3.55	2.78	3.27
Contract Documents	3.98	3.84	3.33	4.72
Building Materials	3.26	3.50	3.13	3.60
Architectural History	3.17	3.67	2.83	3.30
Architectural Design	3.18	4.00	2.72	3.33
Sustainability	3.14	3.33	2.92	3.80

As can be seen in the above table, in nearly all cases, Employers and Advisory Board members rated Graduate Skills the highest with “Good” to “Excellent”, while Faculty rated most skills as “Good”, or slightly below “Good”. Alumni, in most cases rate their preparation as “Good”. The survey indicates that graduates are in fact being adequately prepared.

Perceptions of Facilities, Equipment, Resources, and Support:

As listed above, Students, Faculty, and Advisory Board members were surveyed regarding the support of the learning process through provision of facilities, equipment, resources, and support. Results of the surveys are presented in Section 2.3.A of this report. Detailed results may be found in the appendices.

The results of the survey reveal that Advisory Board members rated these services as “Excellent”, perhaps because this is an area with which they have little familiarity. In most cases the Students and Faculty reported less favorable perceptions; rating most measures as “Good”. Notable exceptions were perceptions of the learning spaces and equipment provided for the program itself, where “Poor” ratings were indicated. Many of these spaces have not been significantly renovated for approximately 20 years. Many of the computers are out of date and incapable of running memory intensive software associated with the curriculum.

Perceptions of Administrative Support:

As listed above, Faculty and Advisory Board members were surveyed regarding the support of the administration for the program through provision of financial support, staffing, equipment, and teaching spaces. Results of the surveys are presented in Section 2.3.A of this report. Detailed results may be found in the appendices.

Again, Advisory Board perceptions differed markedly from Faculty perceptions. Again, this is probably due to limited knowledge of the actual situation in many of these areas. Advisory Board members rated support as “Excellent” in all areas, except “adequate support staff”, which was slightly lower...perhaps due to knowledge of: the reduction in release time and summer stipend when the College of Engineering Technology reorganized moved from Program Chairs to Program Coordinators; as well as the lack of a dedicated clerical support and the fact that clerical support is now in a different building.

3.G.1b. Perceptions of Quality of Instruction – Facility Management

As part of the Program Review process, surveys were designed to assess perceptions of Students, Alumni, Faculty, Employers, and Advisor Board members. Each survey addressed slightly different areas of interest.

- Faculty, Employers, and Advisory Board members were surveyed on general measures of preparedness of incoming students as well as the general quality and preparedness of graduates for work, further study, and lifelong learning.
- Alumni, Employers, Faculty, and Advisory Board members were surveyed to address several categories of competencies that are required for entry –level work in the field of facility management. Ten Competency Areas as defined by the International Facility Management Association Accreditation Standard were utilized. These include: Integrative and Problem Solving Skills, Leadership and Management, Operations and Maintenance, Planning and Project Management, Communication, Finance, Human and Environmental Factors, Quality Assessment and Innovation, Real Estate, and Technology.

- Students, Faculty, and Advisory Board members were surveyed on issues associated with the support by the university for the program through provision of learning spaces, equipment and technology as well as support services such as tutoring, library resources, and career services.
- Faculty and Advisory Board members were surveyed on issues associated with administrative and financial support.

Perceptions of Student Quality:

The results of the surveys of Employers, Faculty, and Advisory Board members are presented in Section 2.3.B of this report. Detailed results may be found in the appendices.

In general, Faculty identified the preparedness of incoming students as “Good” to “Excellent” (3.60 on a 4 point scale). Since this program has its entry point at the Junior year and requires a 2.5 GPA for admission, the academic competencies of incoming students is to some extent established.

Graduates were rated highly; “Good” to “Excellent” by Faculty and Advisory Board Members, and “Excellent” by Employers for all measures surveyed. This indicates that employers are satisfied with graduates in areas in addition to the actual academic competencies acquired through this degree program, such as ability to work independently, potential for promotion, and ability to learn new things.

Perceptions of Preparation of Students in Competency Areas:

As listed above, Alumni, Employers, Faculty, and Advisory Board members were surveyed regarding the preparation of graduates in ten competency areas. Results of the surveys are presented in Section 2.3.B of this report. Detailed results may be found in the appendices.

The following table illustrates the Mean rating for each competency as reported by each of the four groups surveyed.

Perceptions of Graduate Skills – Summary

(Mean Scores on a 1-4 scale: Not at all/Poor/Good/Excellent)

Measure	Alumni	Employer	Faculty	Advisory Board
Integrative and Problem Solving Skills	3.46	3.76	3.77	3.61
Leadership and Management	3.34	3.91	3.80	3.58
Operations and Maintenance	3.43	3.66	4.00	3.67
Planning and Project Management	3.37	3.88	3.84	3.67
Communication	3.34	3.85	3.68	3.74
Finance	3.08	3.79	3.50	3.33
Human and Environmental Factors	3.39	3.87	3.96	3.58
Quality Assessment and Innovation	3.35	3.85	3.80	3.26
Real Estate	2.84	4.19	3.13	3.82
Technology	3.49	3.84	4.00	3.56

As can be seen in the above table nearly all measures were rated at “Good” to “Excellent”. Employers and Faculty consistently rated the graduates highly, while Alumni consistently rated themselves lowest in each competency area. The survey indicates that graduates are in fact being adequately prepared.

Perceptions of Facilities, Equipment, Resources, and Support:

As listed above, Students, Faculty, and Advisory Board members were surveyed regarding the support of the learning process through provision of facilities, equipment, resources, and support. Detailed results of the surveys are presented in Section 2.3.B of this report. Detailed results may be found in the appendices.

The results of the survey reveal that Advisory Board members rated these services the highest of the three groups surveyed; “Good” to “Excellent”. In most cases the Students and Faculty reported similar perceptions; rating most measures as “Poor” to “Good”. Measures where there is notable dissatisfaction were associated with the teaching spaces, teaching equipment, and studio equipment. Many of these spaces have not been significantly renovated for approximately 20 years. Many of the computers are out of date and incapable of running memory intensive software associated with the curriculum. Transfer students from community colleges often compare and remark that the CC facilities were of higher quality and provided state of the art equipment.

Perceptions of Administrative Support:

As listed above, Faculty and Advisory Board members were surveyed regarding the support of the administration for the program through provision of financial support, staffing, equipment, and teaching spaces. Results of the surveys are presented in Section 2.3.B of this report. Detailed results may be found in the appendices.

Again, Advisory Board perceptions differed markedly from Faculty perceptions. Again, this is probably due to limited knowledge of the actual situation in many of these areas. Advisory Board members rated support as “Good” to “Excellent” in all areas. Faculty rated all measures as “Not at All” to “Poor”. Average ratings for all measures ranged from 1.8 to 2.2 on a four point scale.

Financial Resources, Teaching Spaces, and Equipment probably received low ratings from faculty due to reduced Supply and Equipment budgets, reduced availability of funding for updates to equipment and teaching spaces, culminating in the necessity of using limited S&E and Development funds to purchase computers for a studio. The faculty had planned to use these funds to develop spaces for the new Bachelor of Science in Architecture and Sustainability degree program.

Adequate Faculty probably received low ratings from faculty due to the loss of a faculty line and the prime dedicated FM position in 2003 and anticipation of difficulty in obtaining an additional faculty member to adequately staff the new Architecture and Sustainability degree program.

The Support Staff issue has been ongoing and has especially inhibited efforts to effectively manage day-to-day operations, communicate with potential students and execute marketing initiatives. See Section 3.L.

3.G.2. Department Efforts to Improve Learning Environment

The faculty within the program area strives to maintain and improve the environment to enhance student learning. This is accomplished through efforts in a variety of areas, with each contributing to learning effectiveness. These areas include:

Quality Teaching Spaces: Providing and maintaining quality teaching spaces is a critical ingredient to the success of the program area. This is especially important since the curriculum emphasizes the effect of the built environment on the ability of users to effectively utilize the space.

- Currently all classrooms and studios where lectures are held contain teaching stations with overhead projectors.
- Swan 111 has been updated with paint, carpet, and window shades. Efforts are made to provide up to date computer facilities to students. Due to minimal support from the university and college in recent years, it was necessary for the faculty to partially fund the replacement of student computers in Swan 212.
- Beginning fall of 2011 all junior and senior FM students will be required to have own laptop. This will allow for more flexibility of where classes are offered.
- Efforts are being made to acquire additional spaces to support the new B.S. in Architecture and Sustainability degree.
 - Swan 309 has been acquired for use as a digital media/model making space.
 - Swan 226 has been acquired and will function as a dedicated junior studio space.
 - Efforts to acquire an additional lecture space to facilitate scheduling the additional courses necessitated by the expanded curriculum in appropriate spaces – convenient to program resources.
 - Efforts to acquire a visible space in Big Rapids to house the Small Town Studio – an integral part of the B.S. in Architecture and Sustainability degree – providing opportunities for service learning and community interaction.
 - Efforts to acquire a large model shop are in progress. Ideally Swan 225, a room immediately adjacent to 226, would server this need.

Faculty/Student Interaction: Providing opportunities for students to interact with faculty outside of the classroom models commitment and further motivates students within the program. Some examples of how this is accomplished include:

- The annual Welcome Back Reception for all AT and FM students provides students with a chance to meet all faculty and learn about programs and student organizations.
- The annual Awards and Recognition Reception for all AT and FM students recognizes student accomplishments and service.
- Faculty involvement in student organizations.

- Dane Johnson is faculty advisor to the American Institute of Architectural Students (AIAS) FSU Chapter.
- Joe Samson is faculty advisor to the International Facility Management Association (IFMA) FSU Chapter.
- Mary Brayton is faculty advisor to the Women in Technology (WIC) FSU Chapter.
- Many faculty members provide opportunities for out of class interaction through Ferris Connect or email exchanges.
- Faculty and students have participated in professional activities.
- Dane Johnson and Diane Nagelkirk have organized students and accompanied them to the annual MI AIA Design Retreat at Torch Lake.
- Dane Johnson and Diane Nagelkirk have accompanied students on weekend trips to Detroit and Chicago to tour notable architecture.
- Diane Nagelkirk and Joe Samson have accompanied students annually to World Workplace – the convention of the International Facility Management Association.
- Mary Brayton has accompanied students to the annual CSI Expo in Grand Rapids.

Activity Related Learning: The studio environment, by its nature, encourages learning related activities. Individual and team activities are utilized. Most assignments and projects are activity based. For example, physical and digital models of buildings, reports and analysis of buildings, role playing, and presentations are common methods used. In addition, some outside competitions have been used as a course project.

- 2009 Michigan Energy Conference Poster Competition was used as an opportunity for Facility Management students engaged in their Capstone Thesis course—which focused on energy issues—to present their work to the entire campus community and leaders in energy research from across the state. The severe limitations of the poster contest forced students to carefully edit their work and present the essence of their project. This served as a rehearsal for their final public presentation of their work, during which time would be limited (therefore making editing invaluable). The results of the competition demonstrated the achievement of the students when seven of the ten prizes awarded went to students in the course, with monetary awards totaling more than \$2,000.
- USGBC Emerging Green Building competition was used as a class project during the spring semester of 2009.
- Box City is a national program designed to teach young people about their environment. The event brought together approximately 25 students age 5-11 with approximately 20 architectural technology and facility management students who took over Big Rapids City Hall and laid out a miniature version of Big Rapids and proceeded to populate it with scale models of buildings of all kinds. Each student was required to consult with city planning officials and obtain a building permit to construct specific buildings in specific locations. Once placed on the city, each student was granted a certificate of occupancy documenting their accomplishment. The event was held in March 2011 in conjunction with the Festival of the Arts.

Modeling a Professional Studio Environment: In order to prepare students for their role in built environment professions, it is important to emphasize and develop professionalism in students. This is accomplished in the following ways:

- The design and layout of studio spaces mimics that of professional architectural offices.
- Assignments are designed to mimic the work of professional projects.

Curriculum Review for Relevance: The faculty reviews curriculum for currency and relevance. This has resulted in the changes in the current Architectural Technology curriculum as well as the new B.S. in Architecture and Sustainability. The Facility Management curriculum is accredited by the IFMA Foundation. Curriculum in this program is modified to meet the changing expectations for accreditation.

3.G.3. Professional Development of Faculty to Improve Learning Environment

Mary Brayton, Professor

- WomenTech: Train-the-Trainer's Workshop- Presented by Donna Migram, IWITTS Executive Director
Emeryville, CA, June 28-29, 2010
- Academic Dishonesty: Defining, Detecting, Deterring – Facilitators Virginia Hines and Helen Woodman
Ferris State University
Big Rapids, MI, June 14 - 17, 2010
- Sound Healthcare 2010
Grand Rapids, MI , May 18, 2010
- Building Information Modeling Workshop – Facilitated by Bruce Dilg, Professor
College of Engineering Technology, Ferris State University
Big Rapids, MI, May 12-14, 2010
- 2010 Michigan Energy Conference
Big Rapids, MI, April 7 & 8, 2010
- Tegrity New Users Workshop - Facilitators: Kim Hancock and Kimn Carlton-Smith
Ferris State University, Big Rapids, MI,
September 25, October 16 and December 4, 2009
- "Why Are We Here: to Serve the Market or to Strengthen Democracy" by Dr. Art Chickering
Faculty Development Day Activities, Ferris State University
Big Rapids, MI, August 26, 2009
- Tegrity 2.0 Lecture Capture System by Dr. Kim Hancock, Professor
Faculty Development Day Activities, Ferris State University
Big Rapids, MI, August 26, 2009
- Ecobuild America2008
Anaheim, CA, May 19-22, 2008

- Introduction to BIM: People, Processes & Tools
BIM Implementation Strategies: Changes in your office Collaboration, Communication & Sustainability in Design, BIM and other Enablers of Process Change Second Generation; BIM: Emerging Scenarios and Values; BIM and the Evolution of Specifications; Applying BIM to Sustainable Building Design; BIM Best Practices: Case Studies, Expert Advice
- Ferris Connect training by Gloria Lukusa-Barnett
Ferris State University, May 13, 14 2008
- Michigan Energy Conference
Holiday Inn, Big Rapids, MI, April 11, 2008
- The Historical Architecture of Big Rapids by Dane Johnson AIA
Festival of the Arts, Big Rapids, MI, March 9, 2008
- Sleeping Bear National Lakeshore Park Service Internship
Empire, MI, Summer 2007
- AIA National Convention 2007
San Antonio, Texas, May 4-5, 2007
 - Bringing Green Roofs to Affordable Housing
 - Architectural Fabric Structures
 - Hit the 50% Reduction Mark Using Today's BIM Tools
- Green Building Rating System for Existing Buildings
Holiday Inn, Big Rapids, MI, April 20, 2007
- Neighborhood Design by Mark Cameron, ASLA
UICA, Grand Rapids, MI, September 1, 2006
- Multi-Cultural Modernism by Steven Ehrlich AIA
Calvin College, MI, April 6, 2006
- CSI Construction and Design Professional's Expo/06
Hudsonville, MI, March 23, 2006
- Facilities Management
Grand Rapids, M, January 25-26, 2006
- Multi-Cultural Modernism by Steven Ehrlich AIA
Calvin College, Grand Rapids, MI, April 6, 2006
- Facilities Management
Grand Rapids, MI, January 25-26, 2006

Gary Gerber, Associate Professor

- AIA Grand Valley - Sarah Susanka, AIA- Design Series Lecture - February 17, 2005
- Sketching Workshop with Paul Lasseau- April 1, 2005 Big Rapids MI
- AIA Grand Valley - Steven Ehrlich FAIA Multicultural Modernism Lecture - April 6, 2006
- USGBC - LEED Technical Review – April 14, 2005
- Grand Valley Metropolitan Council – Building Public Awareness About Great Communities – June 9, 2005
- AIA Grand Valley - Michael F. Kaufman, AIA - Grand Rapids J.W. Marriot Hotel – October 27, 2005
- Fred Pryor Seminars – Facilities Management Seminar - January 25, 2006

- Urban Land Institute – Basic Real Estate Development – Chicago IL May 2-3, 2006
- Grand Valley Metropolitan Council – Prospering Through Partnerships – June 8, 2006
- IFMA West Michigan – Dean T. Kashiwagi Ph.D., PE – How to Implement Best Value in Public & Private Sector – September 20, 2006
- AIA Grand Valley - Mark Cameron, AIA - Neighborhood Design Lecture - September 21, 2006
- AIA Grand Valley - Steve Faber and Marty Morgan - Cohousing Development - October 19, 2006
- AIA Grand Valley - Jan Gehl - Human Dimension in Urban Planning and Design - November 9, 2006
- Grand Valley Metropolitan Council –Growing Communities Conference - June 14 2007
- Architectural Record Continuing Ed – (Mis) Leading Green Materials – November 30, 2007
- AIA Michigan leadership retreat January 18-19, 2008 Traverse City, MI
- FSU Festival of the Arts - James Timberlake FAIA Lecture - February 4, 2008
- AIA Grand Valley – Tour of Grand Rapids Art Museum – February 8, 2008
- Ferris Connect training – February 11 & 13, 2008
- Architectural Record Continuing Ed – Architecture Hot and Cold – February 29, 2008
- Architectural Record Continuing Ed – Building Even Better Concrete – February 29, 2008
- Architectural Record Continuing Ed – The Case For Commissioning – March 31, 2008
- Architectural Record Continuing Ed - An Abandoned Airport Brownfield Takes Off – April 15, 2008
- Architectural Record Continuing Ed – Getting Aggressive About Passive Design – April 15, 2008
- Architectural Record Continuing Ed – Rapidly Renewable Materials Complex Calculus– April 15, 2008
- AIA Grand Valley - Haworth Corporate Headquarters Tour - May 7, 2008
- Kirk Blunck, FAIA Design Lecture – May 8, 2008
- Grand Valley Metro Council Annual Growing Communities Conference May 12, 2008
- AIA National Convention 2008 Boston MA – May 15 -17, 2008
- Designing Healthy Livable Communities Conference May 29, 2008 Lansing MI
- SUSTAINABILITY BY DESIGN: HAWORTH'S May 31, 2008 WORKSPACE CASE STUDY
- CSI Convention 2008 June 5-7, 2008 Las Vegas, NV
- Lilly North Conference September 18-21, 2008 Traverse City MI
- Intergrated Project Delivery October 1, 2008 AIA Grand Valley
- Precast Concrete Components October 2, 2008 AIA Grand Valley
- L. William Seidman Who's going to Help Michigan More? October 9, 2008 GVSU
- Urban Land Institute Real Estate Conference Grand Rapids, MI October 15-16, 2008
- Webinar on Certified Wood November 12, 2008
- COMMERCIAL BUILDING INSULATION APPLICATIONS FOR XPS
- High Performance Sheathings Designed for Today's Exterior Building Systems
- CONSTRUCTION PRACTICES; MOLD / MILDEW RESISANT SYSTEMS

- MANAGING RADIANT HEAT IN BUILDINGS
- The Challenges of Installing Large Format Porcelain Tile
- ADVANCED CERAMIC TILE METHODS, STANDARDS & MATERIALS
- Plainfield Township Training session on Formed Based Zoning
- AIA Michigan Leadership Retreat January 16-17, 2009 Traverse City MI
- ACOUSTICALLY ENHANCED GYPSUM BOARD FOR HIGH STC WALL PARTITIONS
- An Overview of Insulated Concrete Forms February 28, 2009
- CSI Construction and Design Professionals' Expo 2009
- Plainfield Township Training session on walkable communities March 31, 2009
- Design lecture on two local buildings winning design awards April 3, 2009
- Design lecture on two local buildings winning sustainable design awards April 17, 2009
- Introduction to under floor air delivery systems April 24, 2009
- City Flats Hotel Holland MI building tour April 28, 2009
- The New ADA Standards: What You Need to Know AIA Webinar May 1, 2009
- The Beauty of Zero: The Design of a Zero Energy Building AIA Webinar May 1, 2009
- Towards a Carbon Neutral Future: Making Dramatically Better Buildings Affordably
- Focus on Contemporary Architecture: Critical and New Opinions AIA Convention Webinar
- Positioning Michigan in an Era of Climate Change by Glen Le Roy May 7, 2009
- Plainfield Township Training on billboards & digital sign technology May 11, 2009
- Developing and Funding Trailways and Bike paths May 12, 2009
- The Triple Bottom Line: Balancing Economic, Environmental, and Social Change by Michigan Historic Preservation Network May 14, 2009
- Historic Preservation and Green Architecture: Friends or Foe? May 15, 2009
- The Green Side of Polished Concrete May 20, 2009
- Tour of Phillip Johnson's Glass House New Canaan, Connecticut May 23, 2009
- Tour of Frank Lloyd Wright's Guggenheim Museum May 24, 2009
- Grand Valley AIA Van Andel Institute Tour May 27, 2009
- Form Based Codes and New Urbanism May 29, 2009
- Grand Valley Metro Council Annual Growing Communities Conference June 5, 2009
- Building Tour of Cathedral Square June 23, 2009
- Urban Sprawl Lecture at Calvin College September 14, 2009
- Plainfield Township Training on billboards & digital sign technology September 14, 2009
- Understanding Solid Surface in Interiors September 25, 2009
- Helping Your Clients Create Healthy Indoor Air September 25, 2009
- Lecture on Cost Management at FSU by Gardiner and Theobald NYC September 29, 2009
- Design Think--Chad Gould lecture on MSU Dining Hall Design October 2, 2009
- PREVENTING MOISTURE-RELATED PROBLEMS IN RES FRAMING October 5, 2009
- An End in Sight for a Centuries-Old Building Project October 5, 2009
- From the Ground Up: The Complexities of Geothermal October 5, 2009
- Intrinsic Materials: Modernism, Sustainability and Fiber Cement Panels October 5, 2009
- LEED for Existing Buildings October 5, 2009
- Technologies for Energy Efficiency October 5, 2009

- Transparency: Literal and Sustainable October 5, 2009
- When the Whole Is Greater Than the Sum of Its Parts October 5, 2009
- Yes In My Backyard (Renewable District Energy) October 5, 2009
- Montpelier's shrunken state is fit for a president October 6, 2009
- Roofing Strategies Reach New Heights October 6, 2009
- Tall Buildings Push Limits by Stepping Up, Not Back October 6, 2009
- And the award for best sound effects goes to... October 7, 2009
- BIM Promotes Sustainability October 7, 2009
- BUILDINGS THAT BREATHE: THERMAL PROTECTION, MOISTURE PROOFING, AND HEALTHY AIR October 7, 2009
- Courting Nature in Design: The love of nature can be nurtured through architecture that conserves energy October 7, 2009
- Essential Zinc: Building For The Future October 7, 2009
- Model Behavior: Anticipating Great Design October 7, 2009
- Prefabrication's Green Promise October 7, 2009
- SLEEK SKYSCRAPER IN SAN FRANCISCO RAISES THE PROFILE October 7, 2009
- ENERGY MODELING FOR SUSTAINABILITY October 8, 2009
- Current Issues in Construction Law and Changes in LEED Requirements October 30, 2009
- Legal Issues with Building Information Modeling and Integrated Project Deliver November 5, 2009
- Design presentation on by Bryan Koehn senior designer at Progressive AE November 6, 2009
- Classic Labs-Ascribe-Grand Valley AIA Project Showcase November 20 2009
- TOTAL PASSIVE FIRE PROTECTION November 20 2009
- Is Brown the New Green? Urban Brownfields Make Way for Mixed-Use Communities December 3 2009
- AIA Michigan Leadership Retreat January 15-16 2010
- Update on contract documents and how to sell professional services January 29 2010
- Into Thin Air: While most structures are firmly rooted in the ground, some seem to float through February 1 2010
- Design presentation by Adam on Global Forex Trading's corporate headquarters February 5 2010
- Lumber by the Numbers -Discuss historic wood use patterns February 21 2010
- Precast Concrete Solutions - Integrated Design February 26 2010
- Introduction to Photoshop for Architecture March 19 2010
- Green Roof Specifications - Making it Right March 25 2010
- Ground Penetrating Radar March 25 2010
- Legal Risks and Responsibilities in Building Green March 25 2010
- Risk Drivers: Understanding the Dynamics of Risk in the A/E Industry April 29 2010
- Faculty BIM May 12-14 2010
- Avian Lightweight Boards May 28 2010
- Grand Valley Metro Council Annual Growing Communities Conference June 10 2010
- Great Teachers Seminar June 28-30 2010
- Training on Services Offered by Builders Exchange of West Michigan September 24 2010

Dane A. Johnson, Associate Professor

- Earned Master of Architecture Degree
Lawrence Technological University
Southfield, Michigan, 2009
- Enrolled in Master of Science in Career and Technical Education
Ferris State University
Big Rapids, Michigan, Expected 2012

Courses completed:

- EDUC 508 - Instruction of Exceptional Learners
- EDUC 540 -Educational Technology in the Classroom
- ECTE 510 - Evaluation in Career and Technical Education
- ECTE 504 - Curriculum Development in CTE
- EDUC 570 -Teaching and Learning Theories in the Classroom
- EDUC 601 -Curriculum Leadership and Development
- EDUC 518 -Diversity in the Classroom and Workplace
- ECTE 509 - Occupational Analysis and Needs Assessment
- EDUC 511 -Principles of Educational Evaluation and Research

Other academic activities:

- Michigan Historic Preservation Conference
Saugatuck, MI, May 19-20, 2011
Back to Life:
 - How Three Abandoned Buildings Became New Cultural Assets, 1.25 CEUs
 - The West Michigan Pike: Reinventing an Economy . . . Twice!, 1.25 CEUs
 - Michigan Modern: Its West Michigan Connections, 1.75 CEUs
 - Incentives for Successful Preservation Projects – Part I, 1.5 CEUs
 - The Patterns of Michigan, 1.25 CEUs
 - Preserving the Cultural Landscapes of Washington and Barnum Islands at Isle Royale National Park, 1.25 CEUs
 - High Definition Survey and the Benefits to Historic Preservation and Heritage Projects, 1.25 CEUs
- University of Michigan
Ann Arbor, March 26, 2011
 - Advancing Architectural Praxis Symposium
- Relearning² – Learning to Unlearn and Relearn
CEFPI Midwest Great Lakes Regional Conference
Grand Rapids, Michigan, May, 2010
- AIA Michigan Design Retreat
Torch Lake, Michigan, September, 2010, 2009, 2008
- LEED for Existing Buildings Seminar
United States Green Building Council
Big Rapids, Michigan, April, 2007

- Integrated Practice and the Twenty-First Century Curriculum, 2007 Teachers Seminar, Association of Collegiate Schools of Architecture Cranbrook Academy of Art, Bloomfield Hills, Michigan, June, 2007
- Visual Resources Association
 - Attended regional conferences at Michigan State University and Oberlin College
 - Attended national conferences in Miami Beach and Houston

Diane Nagelkirk, Associate Professor and Program Coordinator

- Earned Master of Architecture Degree
Lawrence Technological University
Southfield, Michigan, 2009
- Enrolled in Master of Science in Green Building
San Francisco Institute of Architecture
(pending conferring of degree in August of 2012)

Courses completed:

- GBDP 511 Past, Present, and Future of the Green Building Movement
- GBDP 512 Green Building Through Integrated Design
- GBDP 513 Advanced Practices in Ecological Design and Green Certification

Rockhurst University Continuing Ed Center
Grand Rapids, MI, January 31, February 1, 2005
Effective Project Management, 1.2 CEUs

IFMA World Workplace Conference

Philadelphia, Pennsylvania, October 23-25, 2005

- It's Your Move: How to Avoid Costly Relocation Problems 1 CEU
- Effective Change Management Strategies 1.5 CEUs
- Sustainability Leadership for Facility Managers 1.25 CEUs
- Universal Design in the Workplace 1.0 CEU
- Size Does Matter: Managing Large-Scale Projects 1.0 CEU
- Using Workplace Standards in Programming 1.0 CEU

AIA Grand Valley

Grand Rapids, MI, February 17, 2005

- Architecture Lecture: An Evening with Sarah Susanka

AIA Grand Valley

Grand Rapids, MI, April 6, 2006

- Architecture Lecture: Multicultural Modernism –The Architecture of Steven Ehrlich

Land Development Conference & Expo

Scottsdale, Arizona, November 2-4, 2005, 6 CEUs

Fred Pryor Seminars – Facilities Management – 1.2 CEUs

Grand Rapids, MI, January 25 & 26, 2006

Ferris State Summer University

May 23 & 24, 2006, .8 CEUs

Neocon '06 - World Exposition of Workplace Planning and Design

June 2006, 1.6 CEUs

IFMA World Workplace Conference

San Diego, California, October 9-10, 2006

- Virtual Facilities: A Look at FM Technologies of Today & Tomorrow, 1 CEU
- Prove It! Studies that Support Your Design Solution, 1.5 CEUs
- Creating a Positive Workplace Experience, 1.25 CEUs
- The Next Generation of FMs, 1 CEU

ACSA/AIA Cranbrook Educators Conference

Bloomfield Hills, Michigan, June 28 – July 1, 2007

- Ethics & Responsibility, 3 CEUs
- Practice & Criticism, 3.5 CEUs
- Research & Design, 4 CEUs
- Writing Team – Reports & Discussion, 7.5 CEUs

AIA Grand Valley Architecture Lecture – Hugh Jacobson, FAIA

Grand Rapids, MI, September 20, 2007

IFMA World Workplace Conference

New Orleans, Louisiana, October 25-26, 2007

- Workplace Hostility: Fact & Fiction, 1.5 CEUs
- BIM: Changing the Design & Construction Paradigm, 1 CEU
- Post-Occupancy Evaluation of Creative Companies, .15 CEU

Fred Pryor Seminars – Project Management/Microsoft Project, 1.2 CEUs

Grand Rapids, MI, March 17-18, 2008

AIA Michigan Design Retreat

Bellaire, MI, September 12-14, 2008

- Sustainability in Education Facilities, 1 CEU
- Architecture Adapts to Change, 1 CEU
- Design Makes a Point, 1 CEU
- Solar Energy and the Future of Housing Design, 1 CEU

IFMA World Workplace Conference

Dallas, Texas, October 15-17, 2008

- Understanding Water Use in Commercial Buildings, 1 CEU
- Managing Risks that Keep You Up a Night, 1.5 CEUs
- Looking Past Single-Impact Certifications, 1 CEU
- Making the Workplace a Reason to Stay, 1 CEU
- Generations @ Work: A Gen Y Perspective, 1 CEU

PACE University

Scottsdale, Arizona, May 7-8, 2009

- Practice Harmony: Design Your Practice, 1.4 CEUs

Michigan Historic Preservation Conference

Grand Rapids, MI, May 14-16, 2009

- Life Style Trends, Economics and Preservation, 1.25 CEUs
- Adaptive Use: Cost Savings vs. New Construction, 1 CEU

- Historic Buildings as Assets, 1.5 CEUs
- The Economics of Preservation & Development, 1.5 CEUs

Ferris State University

June 2, 2009

- Leadership Development of Department Heads & Chairs, .6 CEUs

Grand Valley State University

Grand Rapids, MI, June 25, 2009

- Energy Summit 2009, .6 CEUs

AIA Michigan Design Retreat

Bellaire, MI, September 19-20, 2009

IFMA World Workplace Conference

Orlando, Florida, October 7-9, 2009

- Existing Buildings: A Look at How Green Technology and Best Practices Have Changed the Future of Building Retrofits, 1 CEU
- Sustaining Sustainability: How to Create Long Term Sustainable Operation, 1 CEU
- Evaluating The Sustainability of Green Products, 1 CEU
- Two Shades of Green: Balancing Sustainability and Savings, 1 CEU

National Institute of Building Sciences

February 15, 2010

- WBDG01: The Integrated Design Process, 1.5 CES

Lynda.com

February 18, 2010

- Google SketchUp Essential Training, 2.0 CES

AIA Grand Valley Lunch and Learn

Grand Rapids, Michigan, March 19, 2010

- Introduction to Photoshop for Architecture, 2.0 CES

2010 CEFPI Midwest Regional Conference

Grand Rapids, Michigan, May 12-13, 2010, 4.0 CEUs

AIA Michigan Design Retreat

Bellaire, MI, September 17-19, 2010

- Sustainable Design in the Workplace, 1 CEU
- Designing with Nature in Creating Large Public Spaces, 1 CEU
- Sustainable Educational Spaces, 1 CEU
- Thank Sustainable in Personal Places, 1 CEU

IFMA World Workplace Conference

Atlanta, Georgia, October 26-29, 2010

- CAFM Systems: I Scream, You Scream, We All Scream for Credible Data!, 1 CEU
- Facility Management for Climate Change Adaptation, 1 CEU
- Begin With the End in Mind:
- Infusing FM Strategy Into Construction...the Rest of the Story (Case Study), 1 CEU
- Batteries Included: Lessons to Energize and Balance Your Life, 1 CEU

University of Michigan

Ann Arbor, March 26, 2011

- Advancing Architectural Praxis Symposium

Michigan Historic Preservation Conference

Saugatuck, MI, May 19-20, 2011

- Back to Life:
- How Three Abandoned Buildings Became New Cultural Assets, 1.25 CEUs
- The West Michigan Pike: Reinventing an Economy...Twice!, 1.25 CEUs
- Michigan Modern: Its West Michigan Connections, 1.75 CEUs
- Incentives for Successful Preservation Projects – Part I, 1.5 CEUs
- The Patterns of Michigan, 1.25 CEUs
- Preserving the Cultural Landscapes of Washington and Barnum Islands at Isle Royale National Park, 1.25 CEUs
- High Definition Survey and the Benefits to Historic Preservation and Heritage Projects, 1.25 CEUs

Joe M Samson, CFM, Professor

- CAFM Systems: "I Scream, You Scream, We All Scream for Credible Data; Susan Hensey, FAIA, David Stephenson, CFM, LEED AP.
IFMA World Workplace, Atlanta, GA (28 October, 2010, 1 hour)
- Facility Management for Climate Change Adaptation. Ying Hua, PhD.
IFMA World Workplace. Atlanta, GA (28 October, 2010, 1 hour)
- Begin With the End in Mind: Infusing FM Strategy Into Construction...the Rest of the Story(Case Study). Teena Shouse, CFM, IFMA Fellow, Bud Jeffress.
IFMA World Workplace. Atlanta, GA(28 October, 2010, 1 hour)
- Sustainable Energy Initiatives in the Public Sector: A Sonoma County Case Study. Jon Martens, CFM, IFMA Fellow.
IFMA World Workplace. Atlanta, GA(28 October, 2010, 1 hour)
- Batteries Included: Lessons to Energize and Balance Your Life. Linda Edgecombe.
IFMA World Workplace. Atlanta, GA(29 October 2010, 1 hour)
- New Kids on the Block: New Generations Changing Perceptions of Work and the Workplace. Brenda Groen, PhD, Xander Lub.
IFMA World Workplace. Atlanta, GA(29 October, 2010, 1 hour)
- Building Information Modeling Workshop. Bruce Dilg.
School of Built Environment. (12-14 May, 2010, 21 hours)
- Sustaining Sustainability: How to Create Long Term Sustainable Operations in Your Facility. Bill Conley CFM, LEED AP, IFMA Fellow and Laurie Gilmer PE, CFM, LEED AP.
IFMA World Workplace. Orlando, FL (8 October, 2009, 1 hour)
- Energy Management in Federal Facilities. Jennifer Hazelman.
IFMA World Workplace. Orlando, FL (8 October, 2009, 1 hour)
- Green Building Operations and Maintenance: The LEED Implementation Process.
USGBC, Big Rapids, MI (16 April, 2009, 7 hours)

- LEED for Existing Buildings (LEED-EB). Cheri Holman, LEED AP, Hurst Mechanical. IFMA Meeting program. Grand Rapids, MI (15 April 2009, 1 hour)
- Wellness in the Workplace; Katrina Hogan, Details. Steelcase University, IFMA Meeting program. Grand Rapids, MI (18 February, 2009, 1 hour)
- Understanding Water Use in Commercial Buildings; Rob Zimmerman. IFMA World Workplace. Dallas, TX (16 October, 2008, 1 hour)
- Elements of Sustainable Lighting; Steve McGuire. IFMA World Workplace. Dallas, TX (16 October, 2008, 1 hour)
- Generations @ Work: A Gen Y Perspective, IFMA World Workplace. Dallas, TX (17 October, 2008, 1 hour)
- Workplace Hostility: Fact and Fiction; Charles Carpenter. IFMA World Workplace. New Orleans, LA. (26 October, 2007, 1.5 hours)
- Building Information Modeling: Changing the Design and Construction Paradigm; Ethan Marsh, Lewis Goetz. IFMA World Workplace. New Orleans, LA. (25 October, 2007, 1 hour)
- Post-Occupancy Evaluations of Creative Companies: A Tool to Measure Design Impact on Business Success; Vicki Simons, Patrick Donnelly. IFMA World Workplace. New Orleans, LA. (26 October, 2007, 1 hour)
- Total Facility Commissioning; Sponsored by AIA, CSI, IFMA, ASHRAE. Hudsonville, MI (10 November 2006, 1.5 hours)
- Why Can't You Be Normal Like Me: How to Successfully Design Culture Into the Workspace; Carol Rickard-Brideau. IFMA World Workplace. San Diego, CA (9 October 2006, 1 hour)
- Prove It! Studies that Support Your Design Solution; Caren Martin and Denise Guerin, University of Minnesota. IFMA World Workplace. San Diego, CA (9 October 2006, 1.5 hours)
- Sizing Up Your Environmental Footprint and Walking the Walk; Ken Sidebottom, Johnson Controls. IFMA World Workplace. San Diego, CA (9 October 2006, 1.25 hours)
- In Pursuit of the Creative Workspace; Scott Francisco and Janet Fana. IFMA World Workplace. San Diego, CA (9 October 2006, 1hour)
- Realigning Your Facilities: Using a Discovery Process to Improve Workplace Effectiveness; Jonathan Pettit, Scott Kruse, John Crosby. IFMA World Workplace. San Diego, CA (10 October 2006, 1.25 hours)
- How to Implement Best Value in the Public and Private Sector; Dean T. Kashiwagi, PhD, PE, Arizona State University. West Michigan Chapter of IFMA. (20 September 2006, 2 hours)
- CEU Marathon Day. Construction Specifications Institute and Grand Valley American Institute of Architects. Grand Rapids, MI. (23 March, 2006)
- Climate Specific Design; Maria Spinu, PhD, Building Science Integration Manager, Du Pont. Review air barrier contribution to manage moisture loads in the building enclosure. (1.5HSW LU)

- Windows, Energy and Green Buildings; Aric Lavancher, CSI, CDT, Andersen Windows. Review the role of windows in building energy consumption and Green Building rating systems such as LEED and EnergyStar. (1.0 HSW LU)
- Advanced Fenestration Technology; Dennis Pelletier, FCSI, CCPR, Cabot Corporation. Class examines the considerations in daylighting and presents innovative opportunities to overcome design challenges. (1.0 HSW LU)
- Parking Structure Restoration; Mark DeClercq; Walker Parking Consultants. Assessment Planning and its benefits in effective budgeting for repairs and maintenance. (1.0 HSW LU)
- Benchmark This! Elevating the Value of Your Facility Department Through a Benchmarking Consortium; Jim Rice, Mitch Rabil. IFMA World Workplace. Philadelphia, PA (24 October 2005, 1.5 hours)
- Sustainability Leadership for Facility Managers; Mary Ferdig, Christopher Juniper. IFMA World Workplace. Philadelphia, PA (24 October 2005, 1.25 hours)
- Proforma for Sustainability; Alan Scott, Richard Manning. IFMA World Workplace. Philadelphia, PA (25 October 2005, 1 hour)
- Using Workplace Standards in Programming: A Case Study of Three Global Corporate Projects; Steven Parshall, Andrea Moeder. IFMA World Workplace. Philadelphia, PA (25 October 2005, 1hour)

3.G.4.a. Efforts to Increase Student/Professional Interaction – Architectural Technology

In addition to field trips and participation in activities with architectural professionals, guest speakers are often utilized in the classroom.

Professor Johnson is currently developing a lecture series to bring regional professional architects, planners, and environmentalists to the Ferris campus to speak with students about various aspects of the professions of the built environment. The inaugural lecture was held in March of 2011. In addition, Professor Nagelkirk and Professor Johnson have coordinated activities for students as part of the Architectural Technology Advisory Committee meetings in 2007, 2009 and 2010. Each of these activities gave students the opportunity to engage in a creative process with faculty members and committee members, who are professionals from around the state. The events were designed to give students a taste of professional practice and processes that they will face in their careers.

In March 2011, Professor Johnson coordinated a Box City event for the Festival of the Arts. This is a national program designed to teach young people about their environment. The event brought together approximately 25 students age 5-11 with approximately 20 architectural technology and facility management students who took over Big Rapids City Hall and laid out a miniature version of Big Rapids and proceeded to populate it with scale models of buildings of all kinds. Each student was required to consult with city planning officials and obtain a building permit to construct specific buildings in specific locations. Once placed on the city, each student was granted a certificate of occupancy documenting their accomplishment. The opportunity for the Ferris students to impart knowledge to

younger students, encourages their creativity, and demonstrates to city officials the work being done at Ferris was very valuable for the students and for the program.

In keeping with the methods of communication most used by students, Professor Johnson has created a separate Facebook profile specifically to communicate with students, which has proven to be a valuable tool. Facebook has proven useful in sending students information outside of class in a casual manner. Students can quickly be informed about a film or exhibition to lookout for or link to; they can be sent information about a certain building or location. If a media outlet like the *New York Times* posts an article of particular interest, it can be shared with students instantly. This has proven particularly valuable during the summer, when students are off campus, and such postings serve as gentle reminders not to forget what they have learned during the school year. Facebook has also proven to be an effective way of keeping in touch with alumni. If students become friends while at Ferris, they remain so once they have graduated. Occasional messages to them remind them that they are still valued by the institution once they have moved on.

Gary Gerber, as Continuing Education Director for the Grand Valley AIA since 2005, has worked to increase involvement of faculty and students with the Grand Valley AIA by keeping FSU faculty and students aware of upcoming events.

3.G.4.b. Efforts to Increase Student/Professional Interaction – Facility Management

Field trips and guest lecturers are also utilized in the Facility Management program. However, in this degree program several additional opportunities are available for student/professional interaction.

- Building Owners and Managers Association (BOMA): This group has provided a lecture series, typically three lectures per academic year since Fall of 2009. The chapter is based in Metro Detroit and has also established a Facebook group as well as offered to mentor students.
- International Facility Management Association (IFMA): While there is a student chapter of IFMA at FSU, students are also welcome at IFMA-West Michigan meetings and events.
- World Workplace: Approximately 75% of students travel to this annual convention of facility managers. The student chapter participates in fund raising activities to partially fund travel.
- Recruitment and Job Fair: Many organizations who interview and recruit facility management students also offer informational meetings for students. In the last few years these have included: UNICCO – a facility management consulting organization, the US State Department, the US General Services Administration, and several hotels.

3.G.5. Research to Improve Pedagogy

Various methods of presenting and learning materials are used to allow all students to better understand course content. For example, lecture, discussion, readings, problem solving, individual and team activities, and oral and visual presentations are used.

In both degree areas, current developments such as an aging population, global climate change, and evolving use of technology, are dramatically changing the professions. Sustainability and the use of Building Information Modeling require a more holistic approach to building design and operation.

3.G.6. Effect of 3.G.4 and 3.G.5 on Quality of Teaching and Learning

Efforts to improve the quality of teaching and learning help to stimulate both students and faculty. These efforts catalyze creativity and help faculty to make connections between coursework and the “real” world. They also help students to put their academic experience into a broader context of the profession and their future role within it.

Providing reinforcing experiences early on in the academic experience are critical to motivating and encouraging students to persevere in their academic formation. The Grand Rapids architectural firm field trip in the Fall Semester of first year is a key event in not only exposing students to architecture and the architectural profession, but to provide opportunities to interact with other students and faculty in a less structured environment. Similarly, field trips to office furniture manufacturers and guest lectures by facility managers serve a similar role for facility management students. Providing opportunities for cohorts of students to become a learning community enhances chances of student success.

The efforts of faculty to provide multiple ways for students to learn through lecture, studio, individual projects, group projects, FerrisConnect, use of email, etc. have served students well. Each student learns in an individual manner and the more ways to learn, the greater chance that he or she will find a combination of methods that work.

3.H. Composition and Quality of Faculty

Faculty:

Mary E. Brayton, Professor

Licensed Architect MI

AAS Arts, Grand Rapids Community College

AAS Ornamental Horticulture Technology, Ferris State University

BS Architecture, University of Michigan

M of Architecture, University of Michigan

Bruce C. Dilg, NCARB, Professor (half time since Fall 2010)

Licensed Architect MI/CO

BS Industrial Education, Bradley University

MS Occupational Education, Ferris State University

Gary Gerber, AIA, CSI, CDT, LEED AP, USGBC, Associate Professor

Licensed Architect MI

AAS Architectural Technology, Ferris State University

BS Architecture, University of Michigan

MBA, Grand Valley State University

Dane A Johnson, Associate Professor

Licensed Architect MI

Certified Historical Architect, US Department of the Interior

BS Architecture, Lawrence Technological University

B of Architecture, Lawrence Technological University

M of Architecture, Lawrence Technological University

MS Career and Technical Education, Ferris State University (anticipated 2012)

Paul W Long, AIA, NCARB, USGBC, Assistant Professor (since Spring 2011)

Licensed Architect CO

BS Architecture, University of Idaho

M of Architecture, University of Idaho

MS City Design and Social Science, London School of Economics

Diane L Nagelkirk, Associate Professor/Program Coordinator

Licensed Architect MI

BS Architecture, Lawrence Technological University

B of Architecture, Lawrence Technological University

M of Architecture, Lawrence Technological University

MS Green Building, San Francisco Institute of Architecture (pending August 2012)

Joe M Samson, CFM, Professor

Licensed Architect MI/OH

Certified Facility Manager(CFM) by IFMA (International Facility Management Association)

B of Architecture, Kent State University

M of Architecture, Kent State University

Promotions Since Last Program Review:

Mary Brayton, Professor

Promoted from Associate Professor to Professor; 2009

Bruce C. Dilg, NCARB, Professor (half time since Fall 2010)

Promoted from Associate Professor to Professor; 2008

Gary Gerber, AIA, CSI, CDT, LEED AP, USGBC, Associate Professor

Merit; 2011

Dane A Johnson, Associate Professor

Tenured; 2010

Promoted from Assistant to Associate Professor; 2011

Diane L. Nagelkirk, Associate Professor

Merit; 2005

Joe M Samson, CFM, Professor

Merit; 2011

Degrees Earned Since Last Program Review:

Mary Brayton, Professor

AAS in Ornamental Horticulture Technology; Ferris State University, 2008

Dane A Johnson, Assistant Professor

M of Architecture, with Distinction; Lawrence Technological University, 2009

Diane L Nagelkirk, Associate Professor/Program Coordinator

M of Architecture; Lawrence Technological University, 2009

Professional Activities Since Last Program Review:

Mary Brayton, Professor

PROFESSIONAL AFFILIATIONS

- Registered Architect, State of Michigan

PROFESSIONAL CONSULTATION

- Roberts Residence, Big Rapids, MI May 2010
- Gifford Cottage, Canada October 2005 – May 2006

ACADEMIC ACTIVITIES

- Completed coursework in Minor in Community Studies; Ferris State University, December 2009
- Member, University Committee on Discipline, F 2010 -
- Member, College of Engineering Technology Promotion Committee, 2010-2011
- Spaghetti Bridge – Authenticity Division, Ferris State University, March 19, 2010
- Member, College of Technology Curriculum Committee, 2008-2010
- Regional 14 & 15 MITES Competition, Architectural drafting entries; Mesick High School, Mesick MI, May 2, 2008
- Faculty Advisor – Registered Student Organization “Women in Technology” ; Ferris State University, August 2003 – present
- Judge - Structural Steel Teaching Sculpture Design Competition; Ferris State University, March 1, 2006
- Member, College of Technology Curriculum Committee, 2006/2007

Bruce C. Dilg, NCARB, Professor (half time since Fall 2010)

- Speaker at Eco-Build, Washington D.C.
- Speaker at Associated Building Contractors BIM BOOT CAMP
- Speaker at Associated Sub-Contractors meeting on BIM
- Attendance at AIA Technology in Architectural Practice conference
- Attendance at AIA conventions
- Attendance and presenter at Lilly Conference on Teaching in Higher Education
- Speaker at Ferris State University Energy Conference

- Designed and taught a Building Information Modeling course for faculty in the School of the Built Environment, worked with FSU Center for Teaching and Learning to provide incentives

Gary Gerber, AIA, CSI, CDT, LEED AP, USGBC, Associate Professor

PROFESSIONAL AFFILIATION

- Registered Architect, State of Michigan
- Certified LEED Professional
- Member, American Institute of Architects
- Member, Construction Specifications Institute
- Member, US Green Buildings Council

ACADEMIC ACTIVITIES

- American Institute of Architects (AIA) Grand Valley Continuing Education Director 2008-2011.
- Acts as liaison between FSU architecture students and the professional architectural community.
- Organizes continuing education credit programs for AIA members.
- Coordinates AIA guest speakers.
- Administers \$1000 scholarship for baccalaureate and master level architecture students.
- Participated in Michigan AIA Leadership Retreat in 2008, 2009, 2010.
- Networking event for AIA leadership, with Ferris represented along with the NAAB accredited architecture schools in Michigan.
- Member AIA Continuing Education Task Force.
- Spaghetti Bridge Competition -Authenticity Division Judge, Ferris State University, March 2005, 2006, 2007, 2008, 2009 and 2011.

PRESENTATIONS

- Lake Osceola State Bank Big Rapids Adaptive Re-use. Michigan Energy Conference 2010.
- Case Studies of Three Adaptive Re-use Projects in Big Rapids. Michigan Energy Conference 2011.
- Architecture Tours. Organized architectural tours for attendees at the Michigan Design Educators Conference. Annually 2005-2010.
- College of Engineering Technology Summer Camp. Developed and taught career exploration sessions for high school students to explore architecture and software. Four half day sessions. Summers 2005-2010.

Dane A Johnson, Associate Professor

PROFESSIONAL AFFILIATION

- Registered Architect, State of Michigan
- Certified Historical Architect, U.S. Department of Interior – 1990
- Member, Association of Licensed Architects
- Member, Council of Educational Facility Planners International
- Member, National Trust for Historic Preservation

PROFESSIONAL CONSULTATION

- York Guest House / Lacy-Landon Farmhouse Restoration, Oakland Township, Michigan, 2005-2008
- Garage / Carriage House Design, Cherry Hill Historic District, Grand Rapids, Michigan, 2009-present

ACADEMIC ACTIVITIES

- Member, Dean's Advisory Council, College of Engineering Technology, 2010-11
- Member, Curriculum Committee, School of the Built Environment, 2010-11
- Coordinator, AT Advisory Board Meeting, April 2010
- Member, Diversity Committee, Academic Senate, 2008-
- Secretary, Library/Archival/Historic Committee, Academic Senate, 2007-2008
- Faculty Advisor, American Institute of Architecture Students, 2006-present
- Departmental Liaison to FLITE, Architecture and Facility Management, 2006-
- Faculty Advisor, Design Competition of the USGBC West Michigan Chapter, 2008, 2009
- Team Leader, Design Charrette, AT Advisory Board Meeting, April 2007

PRESENTATIONS

- Coordinated the Box City event at the Festival of the Arts, which united local school children with Ferris students to reinvent the city of Big Rapids, 2011
- Presented the proposal for the Bachelor of Science in Architecture and Sustainability to the Ferris Academic Senate, 2009
- Big Rapids – Patterns of a Michigan Town; Ferris State University Festival of the Art; Big Rapids, Michigan, February, 2008

Diane L Nagelkirk, Associate Professor/Program Coordinator

PROFESSIONAL AFFILIATION

- Registered Architect, State of Michigan
- Member, Council of Educational Facility Planners International
- Member, National Trust for Historic Preservation

PROFESSIONAL CONSULTATION

- StoneCastle Dentistry – Historic Preservation
Heritage Hill Historic District, Grand Rapids, Michigan,
June – August 2009
- HHS – Interior Renovation
Grand Rapids, Michigan
July 2008
- Home Design of Residence for R. Rhupp
Grand Rapids, Michigan
September 2005
- Addition and Remodeling of Residence for J. Granger
Lansing, Michigan
May 2005

- Home Design of Residence for B. Teegardin
Hastings, Michigan
June – August 2004

ACADEMIC ACTIVITIES

- Department Chair, 2003-2010
- Program Coordinator, 2011 - current
- Faculty mentor and advisor for USGBC Student Design Competitions
- Lead faculty in creation and development of BS in Architecture and Sustainability
- Lead program advisor for prospective and current students
- Lead faculty in curriculum review, assessment and accreditation
- Member, CET Curriculum Committee, 2010-2011
- Member, Curriculum Committee, School of Built Environment, 2010-current
- Member, SBE Strategic Planning Committee, 2010-current
- Member, Dean's Advisory Council, College of Technology, 2008-09
- Chairperson, CET Marketing Office Selection Committee, 2008
- Member, CET Accreditation and Assessment Committee, 2007-current
- Member, CET Diversity Committee, 2007-current
- Chairperson, COT Marketing Committee, 2007-2008
- Member, CET Scholarship Committee, 2005-2010
- Member, COT Dean's Search Committee, 2005-2006
- Faculty Advisor, Design Competition of the USGBC West Michigan Chapter, 2008, 2009, 2010
- Member, FSU Dean's Search Committee, 2004-2005
- Member, FSU Global Consciousness Gen Ed Committee, 2001-current
- Member, AT/FM Strategic Plan Committee, 1990-current
- Chair, AT/FM Recruitment/Retention Committee, 1990-current
- Chair, AT/FM Baccalaureate/Masters Degree Committee, 2004-current
- Chair, AT/FM Advisory Board Planning Committee, 2003-current
- Member, AT/FM Studio Planning & Maintenance Committee, 1990-current
- Member, AT Program Review Committee, 1995-current
- Member, AT/FM Candidate Tenure Committee, 2006-current

PRESENTATIONS

- Ferris State University
Summer Educators' Teaching Academy
"AutoCAD & Architectural Applications", 2004 – 2010
- Ferris State University
Graphic Design Program
"Urban Sprawl & the McMansion", 2006, 2008

Joe M Samson, CFM, Professor

PROFESSIONAL AFFILIATION

- Registered Architect, States of Michigan and Ohio
- Certified Facility Manager, International Facility Management Association
- Member, International Facility Management Association
- Member, West MI Chapter International Facility Management Association

ACADEMIC ACTIVITIES

- Member, IFMA Academic Program Accreditation Committee Strategic Planning Task Force. (Summer '07 to present).
- Member, IFMA Foundation Academic Program Accreditation Committee. (January '07 to present).
- Visitation Committee: TCI College, New York. (September 2010)
- Chair: Brigham Young University Re-recognition. (Summer '08).
- Member: Conestoga College, Kitchener, Ontario Recognition Committee. (Summer '08).
- Mentor to resolve final issues for recognition: Conestoga College, Kitchener, Ontario Recognition Committee. (Summer '08).
- Member: BREDA University Recognition Committee. (Summer '07).
- Worked with BOMA (Building Owners and Managers Association) of Metro Detroit to establish a relationship with Facility Management students.
- BOMA members travelled to Ferris and presented three "Lunch and Learn" sessions.
- BOMA created professional Facebook page to communicate with students.
- BOMA created new students membership designation and Young Professionals sub-category to help students transition to careers.
- Chair, Architectural Technology and Facility Management Program Review. (Fall '10-Fall '11)
- Member 2010 Energy Conservation Task Force (November 2010 to March 2011)
- Faculty Advisor to FSU Student Chapter of International Facility Management Association. (1996-Present)
- Liaison for job placements and internships. (2006-present)
- Organized and Chaired FM Advisory Board meeting. (April 2010)
- Member CET Sabbatical Committee. (Fall '10-Spring '12)
- Member CET Search Committee Director School of Built Environment. (Spring 2010)
- Chair of Tenure Committee for Dane Johnson. (Fall 2006-Fall 2010)
- Member CET Promotion Committee. (2007-2010 Academic Years)
- Member department committee to develop degree proposal for BS in Architecture and Sustainability. (2008-2009 Academic year)
- Prepared documentation for successful re-accreditation of Bachelor of Science in Facility Management degree for International Facility Management Association with Diane Nagelkirk. (Summer 2008)
- Worked with Canadian government officials to gain approval of Ferris' Facility Management Internship program. (2008)
- Developed articulation agreement with Fachhochschule Kufstein Facility Management program in Kufstein, Austria. (2007)

- Member department committee to plan and implement revisions to FM curriculum. ('07-'08)
- Member Ferris Fulbright and International Scholar Group (Fall 2006-2008)
- Participated in Educator's Academy at FSU. (June 2006)
- Member COT Sabbatical Committee. (2006-2007 Academic Year)
- Member COT Associate Dean Search Committee. (Winter '06)

PRESENTATIONS AND PUBLICATIONS

- Interviewed for and quoted in "Smaller Budgets and Rising Costs Shape the Industry in 2011", *Buildings*; Janelle Penny and *Chris Olson*; January 2011.
- "Qualities of an Excellent Facility Manager"; Presented to General Services Administration Facility Management Staff at regional training session. Indianapolis, IN 29 April '10
- "Facilities Management – Then, Now & the Future"; Round Table Panel Member representing FM education; Presented to Southeastern Michigan IFMA. Southfield, MI 21 April '10
- "Evolution of American House Styles" ; Presented as part of Ferris State University Festival of the Arts; Big Rapids, MI 10 February '10
- "The Future of FM Belongs to Higher Education"; Co-presenter with Paula Behrens, Alana Dunhoff, Kevin Burr, Ying Hua, Cathy Roper, Carol Reznikoff and Nathan Wade at World Workplace; Dallas, TX October '08
- "New Blood: Career Paths in Facility Management:," Presented at Michigan Society of Hospital Engineers Annual Conference, Grand Rapids, MI. 27 September '07
- "World Workplace '06 Session Moderator"; Facilitated educational sessions at convention. "Why Can't You Be Normal Like Me: How to Successfully Design Culture into the Workspace." by Carol Rickard-Brideau. San Diego, CA October '06
- Guest Speaker, "SOCY 344: World Urban Sociology; for Tony Baker; FSU, Winter '06.
- "Forces That Shape Vernacular Architecture: The Wooden Churches of Slovakia", *Insider*, May 2006.

Faculty Workload:

Normal teaching loads follow the standards of the College of Engineering Technology and are 24 credits and/or 36 contact hours per year. On a yearly basis 1-3 faculty have been assigned overloads ranging from 1-4 credit hours.

Overload Assignments:

(Source: Architectural Technology and Facility Management Programs – Banner)

Semester	Faculty	Class	Overload Hours
Fall 2006	Bruce Dilg	ARCH 203	1 lecture hour
Spring 2007	Bruce Dilg	ARCH 110	1 lecture hour
Spring 2007	Gary Gerber	ARCH 110	2 lab hours
Fall 2007	Dane Johnson	FSUS 100	1 credit
Spring 2008	Dane Johnson	ARCH 290	2 credits
Fall 2008	Dane Johnson	FMAN 431 FMAN 490	3 credits 1 credit
Spring 2009	Dane Johnson	ARCH 290	1 credit
Fall 2009	Dane Johnson	FMAN 489	1 credit
Winter 2006	Diane Nagelkirk	ARCH 244	3 lecture hours
Fall 2006	Diane Nagelkirk	ARCH 241	3 lecture hours
Spring 2007	Diane Nagelkirk	FMAN 322 (online)	3 lecture hours
Fall 2007	Diane Nagelkirk	ARCH 203 231 ARCH 203 231	2 lecture hours 1 lab hour
Fall 2007	Diane Nagelkirk	ARCH 109	2 credit hours
Spring 2008	Diane Nagelkirk	Arch 115	2 credit hours
Spring 2008	Diane Nagelkirk	ARCH 204 231 ARCH 204 231 FMAN 322 001	2 lecture hours 2 lab hours 3 lecture hours
Spring 2008	Gary Gerber	ARCH 110	1 lab hour
Fall 2008	Diane Nagelkirk	ARCH 203	2 credit hours
Spring 2009	Diane Nagelkirk	ARCH 204 ARCH 204 FMAN 322	2 lecture hours 2 lab hours 3 lecture hours
Spring 2008	Joe Samson	ARCH 102	1 credit
Fall 2009	Joe Samson	FSUS 100	1 credit

Recruitment:

All recruiting and hiring of program faculty follows the University's Affirmative Action Plan and commitment to Equal Employment Opportunity. Recruitment goals and methods are used to attract large, diverse applicant pools that result in the selection and hiring of qualified, talented faculty. Positions are posted with various off-campus organizations

(publications and websites such as ASCA, AIA, IFMA, Grand Rapids Press, Journal of Higher Ed, etc.) that reach markets throughout the country and beyond.

In order to maximize interaction with applicants while adhering to the recruitment budget, the following process is followed.

- Application materials are reviewed by faculty and qualified applicants are ranked.
- Top ranking applicants are interviewed by all faculty via a conference call.
- Finalists, typically 3-4 are brought to campus where they tour campus, meet faculty and administrators, and present to the group.

Qualifications vary with the need of the program at the time of hire. The program seeks a faculty with diverse skills. However, specific skills may be sought to allow the faculty as a group to represent a more complete complement of skills. Specifically, the need to serve students in architectural as well as facility management disciplines is addressed.

Qualifications for a new faculty member teaching primarily architectural courses would include:

Required -

- Master of Architecture
- Minimum of 5 years professional architectural work experience
- Excellent interpersonal and communication skills

Preferred -

- Architectural Licensure
- Previous proven teaching experience or potential for teaching
- Ability to teach architectural and facility management content
- Academic experience
- Ability to contribute to program growth and support the university's mission

Qualifications for a new faculty member teaching primarily facility management courses might include:

Required -

- Master of Architecture, Engineering, Facility Management, Business Administration or related field
- Minimum of 5 years professional facility management work experience
- Excellent interpersonal and communication skills

Preferred -

- Certified Facility Manager
- Professional Architectural or Engineering licensure
- Ability to teach architectural and facility management content
- Previous proven teaching experience or potential for teaching
- Academic experience
- Ability to contribute to program growth and support the university's mission

Orientation:

In addition to the university activities during faculty orientation week prior to the Fall Semester, the program works closely with new faculty to ensure a smooth transition.

- Experienced faculty collaborates with the new faculty member in the planning of assigned courses.
- A mentor is assigned to guide the faculty member and advise him/her of university policies and procedures.
- The tenure process is explained and materials related to the tenure process are provided to the new faculty member. A tenure committee is formed to help guide the new faculty member through the tenure process.
- Formal and informal observations of the new faculty member are done on a semester basis. Feedback is provided to the new faculty member.

Reward Structure:

The reward structure of the program area follows the Promotion and Merit Policy of the College of Engineering Technology. Inconsistencies in the consideration and interpretation by the College Committee of applications for Promotion and Merit have been commented on by program faculty. In addition, a disconnect between classroom performance and contributions to the program beyond teaching and the actual award of promotion and merit is an inequity also noted by faculty.

The salary structure is competitive with mid levels of the architectural profession and is probably a neutral factor in recruiting architectural faculty. However, the salary structure creates an impediment to hiring more elite architects and higher paid facility managers. Minimal opportunities for increase in rank and salary can be an impediment to retaining faculty.

In the past there have been many opportunities for faculty to obtain funding for professional development. However, due to the current economic climate, this funding has been reduced. TIMME Grants are very difficult to obtain in recent years. The college has limited funding available for professional development. The program has also provided an allowance of up to \$1000 per academic year from S&E funds to assist faculty in obtaining continuing education credits or to simply enhance their skills. However, due to reduced S&E budgets and more urgent program needs, this allowance has been suspended.

Graduate Instruction:

NA

Adjunct Faculty:

Due to the poor performance and classroom results of past adjunct faculty, the use of adjuncts is avoided. The main pool of qualified adjunct faculty would come from Greater Grand Rapids. However, the ability to attract and hire qualified adjunct faculty willing to travel to Big Rapids at the adjunct salary rate is most difficult.

However, due to faculty sabbatical or high enrollment, it has been necessary to hire adjunct faculty. The following table illustrates the use of adjunct faculty during the current program review cycle.

Adjunct Faculty (Source: *Architectural Technology and Facility Management Programs – Banner*)

Semester	Course	Credit Hours	Adjunct Name	Reason
Winter 2005	FMAN 322	3	Wayne Veneklasen	High enrollment
Fall 2005	ARCH 109	3	Joe Roman	High enrollment
Spring 2007	FMAN 390	2	Wayne Veneklasen	High enrollment
Fall 2007	ARCH 101	3	Mary Margaret Munski	Replacement for Mary Brayton during sabbatical leave
	ARCH 101	3		
	ARCH 109	3		
Fall 2007	ARCH 109	3	Karen Simmon	Replacement for Mary Brayton during sabbatical leave
Spring 2008	ARCH 115	3	Mary Margaret Munski	Replacement for Mary Brayton during sabbatical leave
	FMAN 432	3		
	FMAN 499	3		
Spring 2008	FMAN 390	3	Scott Hinkley	High enrollment
Fall 2008	ARCH 109	3	Karen Simmon	Replacement for Gary Gerber during sabbatical leave
Fall 2008	FMAN 441	3	Ray Holland	Replacement for Gary Gerber during sabbatical leave
Fall 2008	FMAN 321	3	Scott Hinkley	High enrollment

3.I. Assessment and Evaluation

Much of the requested information for this portion will be conveyed through Trac Dat Reports; however in spite of our best efforts to have information edited and corrected by Trac Dat administrators, there are still many errors listed within the ARCH Courses fields and the AAS in Architectural Technology fields. Therefore some information within the Trac Dat reports is not valid or current.

3.I.1.a: Architectural Technology Program and Course Learning Outcomes:

Program Learning Outcomes for the AT program have been developed and written in response to: 1) the Mission and objectives of the program, and 2) student performance criteria as defined by the National Architectural Accrediting Board (NAAB).

The Mission of the Architectural Technology Associate degree program is to provide students with a foundation of architectural concepts, skills and values necessary to continue education for advanced degrees in programs related to the built environment or enter the

employment market at an entry-level position in architecture and professions related to the built environment. As such, program learning outcomes focus on teaching and providing relevant, employability skills.

The National Architectural Accrediting Board (NAAB) is the sole agency authorized to accredit US Master of Architecture degree programs; AAS and BS degrees are not accredited, however the curriculum of these degrees must include the suggested NAAB curriculum. The curriculum of a NAAB-accredited program includes general studies, professional studies, and electives, which together comprise a liberal education in architecture. The curriculum ensures that graduates will be technically competent, critical thinkers who are capable of defining multiple career paths within a changing societal context. More specifically, the NAAB requires an accredited program to produce graduates who: are competent in a range of intellectual, spatial, technical, and interpersonal skills; understand the historical, socio-cultural, and environmental context of architecture; are able to solve architectural design problems, including the integration of technical systems and health and safety requirements; and comprehend architects' roles and responsibilities in society.

NAAB student performance criteria is organized into 3 Realms

- Realm A: Critical Thinking and Representation. Within this realm there are 11 student performance criteria. We have addressed 6 of the 11 at either an understanding or ability level.
- Realm B: Integrated Building Practices, Technical Skills and Knowledge. Within this realm there are 12 student performance criteria. We have addressed 5 of the 12 at either an understanding or ability level.
- Realm C: Leadership and Practice. Within this realm there are 9 student performance criteria. We have addressed 2 of the 9 at either an understanding or ability level.

To this end, assessment and student learning outcomes for the AAS in Architectural Technology program that measure the fulfillment of the program mission statement and NAAB criteria include:

1. Critical Thinking (Realm A) - Student demonstration of the ability to think effectively and develop critical thinking skills partnered with vocational readiness.
2. Professional Standards (Realm C) - Create and present conceptual and technical graphic information that complies with the standards of architectural practice.
3. Visual Communication (Realm A) - Use appropriate representational media, such as traditional graphic and digital technology skills, that comply with the standards of architectural practice.
4. Technical Documentation (Realm A) – Produce technically clear drawings and prepare models illustrating the assembly of materials, systems, and components of building design.
5. Fundamental Design Skills (Realm A) – Demonstrate effective use of basic architectural design principles.

6. History (Realm A) – Demonstrate an understanding of the historical traditions of western and non-western architecture.
7. Building Materials and Assemblies (Realm B) – Understand the basic principles utilized in the appropriate selection of construction materials, components, and assemblies, based on inherent characteristics and performance, including their environmental impact and reuse.
8. Building Envelope Systems (Realm B) – Understand the basic principles involved in the appropriate application of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, moisture transfer, durability and energy and material resources.
9. Sustainability (Realm B) – Demonstrate understanding of design and detail strategies that reduce the environmental impact of construction and operation of buildings.
10. Environmental Systems (Realm B) – Understand principles of environmental systems' design such as embodied energy, active and passive heating and cooling, indoor air quality, solar orientation; include the use of appropriate performance assessment tools.
11. Structural Systems (Realm B) – Understand basic principles of structural behavior in withstanding gravity and lateral forces.
12. Effective communication (Realm A) – Student demonstration of professional techniques of oral, written and graphic communication.
13. Professionalism (Realm C) – Student demonstration of ability to successfully continue their education or find employment.

3.1.1.b: Architectural Technology Program Assessment Measurement/Mechanisms:

Prior to the implementation of Trac Dat the following assessment methods were utilized:

- Annual Faculty SAI's. Results are reviewed by the Dean of the CET and the Director of School and forwarded to the individual faculty member. Individual faculty members review and consider marginal scores and comments and make adjustments as necessary.
- Annual Student Exit Survey. For the past 15 years a program specific survey has been distributed to the graduating class for program assessment and relevancy. Appendix E1 of this report contains the survey and results for the graduating class of 2010. Results are reviewed by faculty and when appropriate student suggestions and concerns are implemented.
- Exit Survey. Surveys are distributed to students who choose to withdraw from the program. The purpose of this survey is to determine the reason for withdrawal and any connection and relevancy to program instruction and/or curriculum.
- Student focus groups. A focus group discussion, developed and facilitated by department chair/program coordinator, with 2nd year students is held in April of each year. Results of focus group discussion are compiled and reviewed by faculty the following fall and when appropriate student suggestions and concerns are implemented.
- Annual AT Advisory Committee. Program goals and achievements are reviewed along with professional trends and needs to assure program relevancy. Advisory

committee input in terms of the changing demands within the architectural profession results in ongoing redefinition of curricular relevancy and flow. In addition, advisory comments regarding the need for an accredited architectural program in west Michigan resulted in the implementation of an advanced BS degree in architecture.

- Review of Course Outlines. Every two to three years the relevancy of course content is reviewed for relevancy of cross-integration and flow from first year to second year courses.

With the implementation of Trac Dat, program outcomes have been written and course outlines have been re-written to include Student Learning Outcomes. Both Program Outcomes and Course Outcomes were written and intended to: 1) measure something useful and meaningful and 2) focus on what students will learn and be able to demonstrate. Relevant action verbs from the Cognitive Domain categories of knowledge, comprehension, application, analysis, synthesis and evaluation were used in order to measure and observe overt behavior. In order to determine awareness, competency or mastery of the knowledge, techniques, skills, etc. a variety of criterion for success measures were used including tests, projects, portfolios, internships, and oral and written performance. The success rates and the expected minimal student performance level increases each year as follows: 75% for first year students and 80% for second year students.

Refer to Appendix D1a for Trac Dat **Assessment Plan Report** of Program Outcomes and Means of Assessment.

Refer to Appendix D1b for Trac Dat **Unit Course Assessment Report – Four Column** of Course Outcomes, Means of Assessment, Assessment Method Category, Criteria for Success, and Results for the following courses:

- ARCH101, ARCH 102, ARCH 112, ARCH 115, ARCH 203, ARCH 204, ARCH 216, ARCH 223, ARCH 241, ARCH 244, ARCH 245, ARCH 250, ARCH 270, ARCH 285

3.1.1.c: Architectural Technology Assessment Results:

Application of assessment results includes:

- Annual review of successes and failures is used to evaluate course content for relevancy and flow.
- Annual review of program objectives and mission statement to address changing demands of the architectural profession results in on-going assessment and updating of course outcomes and units of instruction.
- Faculty involvement in professional associations, consulting, and pedagogical research, results in ongoing program curricular review and redefinition.

Most recently the above actions have resulted in the implementation of a Minor Curriculum Change which realized the following:

- A new curriculum that responds more closely to NAAB performance standards.

- A new curriculum that responds to technology trends with 1) the removal of old drafting skills and the addition of higher level digital skills, 2) less emphasis on AutoCAD and more emphasis on Revit (BIM).
- A new curriculum that embraces current industry trends of sustainability and collaborative project delivery methods.
- A new curriculum that emphasizes critical thinking and independent student exploration.

3.1.1.d: Architectural Technology Curriculum Map:

Refer to Appendix D1c for Trac Dat **Curriculum Map**.

3.1.2.a: Facility Management Program and Course Learning Outcomes:

Program Learning Outcomes for the FM program have been developed and written in response to: 1) the Mission and objectives of the program, and 2) student performance criteria as defined by the International Facility Management Association (IFMA).

The mission of the Bachelor of Science in Facility Management degree program is to be a nationally recognized program that provides students with a foundation of concepts, skills and values to effectively begin the practice of facility management. The program also seeks to instill the value of life-long learning. As such, program learning outcomes focus on teaching and providing relevant, employable skills.

The International Facility Management Association (IFMA) is the sole agency authorized to accredit Associate, Baccalaureate and Master of Facility Management degree programs. The curriculum of an IFMA accredited program is based upon areas of competency as identified by IFMA. A Baccalaureate level program is expected to address all competency areas. Each accredited program may choose to emphasize various competencies over others and it is acceptable to address some competency areas at an awareness level. Ferris' Baccalaureate program was re-accredited in 2008 for a 6 year period; the maximum.

There are ten principle areas around which the curriculum is organized. These are: Leadership and Management (Professional Practice), Operations and Maintenance, Planning and Project Management, Communication, Finance, Human and Environmental Factors, Quality Assessment and Innovation (Research and Analytical Methods), Real Estate, Technology, Integrative and Problem Solving Skills (Capstone Course).

To this end, assessment and student learning outcomes for the BS in Facility Management program that measure the fulfillment of the program mission statement and IFMA criteria include:

1. Critical Thinking - Student demonstration of the ability to think effectively and develop critical thinking skills partnered with vocational readiness.
2. Professional Standards - Understand the core competencies developed by IFMA (International Facility Management Association); students will integrate these competencies in a management-based approach to facilities.

3. Analytical Thinking - Think analytically and apply research generated knowledge and quantitative tools to analyze, manage and carry out research.
4. Effective Communication – Use a variety of media to communicate effectively with diverse audiences.
5. Leadership and Management – Understand organizational, managerial, ethical and legal principles for the delivery of facility management services.
6. History – Understand the history of facility management, corporate culture, organizational frameworks, management and leadership, legal issues, personnel management, contracts and contract documents, and regulatory and legal issues.
7. Operation and Maintenance – Understand and integrate concepts of how a facility, its people, equipment and operations are serviced and maintained.
8. Planning and Project Management – Understand and develop facility plans and space forecasting; manage programming and design; manage construction and relocation; develop techniques and procedures for analyzing, planning, programming, specifying, equipping, occupying and evaluating facilities; understand principles of project management, forming and managing the project team, budgets and project estimating, procurements, interior design, codes, regulations and standards.
9. Human and Environmental Factors – Understand and integrate concepts concerning relationships between the physical work environment, social, psychological and physiological needs of the users. Understand and integrate concepts concerning safe, humane and functional work environments in the context of sustainable ecological practices.
10. Finance – Understand accounting, financial and economic principles and procedures in order to manage the finances of the facility function.
11. Real Estate – Understand acquisition, leasing and disposal of property; real estate marketing and market analysis; feasibility analysis; taxation; real estate finance; site evaluation and selection; regulations and incentives.
12. Internship – Engage in and complete the FM internship program.
13. Professionalism – Students will be successful in finding employment and/or continuing their education; graduates will be successful in obtaining the CFM (Certified Facility Manager) credential.

3.1.2.b: Facility Management Program Assessment Measurement/Mechanisms:

Prior to the implementation of Trac Dat the following assessment methods were utilized:

- Annual Faculty SAI's. Results are reviewed by the Dean of the CET and the Director of School and forwarded to the individual faculty member. Individual faculty members review and consider marginal scores and comments and make adjustments as necessary.
- Annual Student Exit Survey. For the past 15 years a program specific survey has been distributed to the graduating class for program assessment and relevancy. Appendix E2 of this report contains the survey and results for the graduating class of 2010. Results are reviewed by faculty and when appropriate student suggestions and concerns are implemented.

- Student focus groups. A focus group discussion, developed and facilitated by department chair/program coordinator, with 4th year students is held in April of each year. Results of focus group discussion are compiled and reviewed by faculty the following fall and when appropriate student suggestions and concerns are implemented.
- Annual FM Advisory Committee. Program goals and achievements are reviewed along with professional trends and needs to assure program relevancy. Advisory committee input in terms of the changing demands within the facility management profession results in ongoing redefinition of curricular relevancy and flow.
- Review of Course Outlines. Every two to three years the relevancy of course content is reviewed for relevancy of cross-integration and flow from first year to second year courses.

With the implementation of Trac Dat, program outcomes have been written and course outlines have been re-written to include Student Learning Outcomes. Both Program Outcomes and Course Outcomes were written and intended to: 1) measure something useful and meaningful and 2) focus on what students will learn and be able to demonstrate. Relevant action verbs from the Cognitive Domain categories of knowledge, comprehension, application, analysis, synthesis and evaluation were used in order to measure and observe overt behavior. In order to determine awareness, competency or mastery of the knowledge, techniques, skills, etc. a variety of criterion for success measures were used including tests, projects, portfolios, internships, and oral and written performance. The expectation for success rates and minimal student performance level increases each year as follows: 85% for third year students, and 90% for fourth year students.

Refer to Appendix D2a for Trac Dat **Assessment Plan Report** of Program Outcomes and Means of Assessment.

Refer to Appendix D2b for Trac Dat **Unit Course Assessment Report – Four Column** of Course Outcomes, Means of Assessment, Assessment Method Category, Criteria for Success, and Results for the following courses:

- FMAN 321, FMAN 322, FMAN 331, FMAN 393, FMAN 431, FMAN 432, FMAN 441, FMAN 451, FMAN 489, FMAN 499

3.1.2.c: Facility Management Assessment Results:

Application of assessment results includes:

- Annual review of successes and failures is used to evaluate course content for relevancy and flow.
- Annual review of program objectives and mission statement to address changing demands of the facility management profession results in on-going review and updating of course outcomes and units of instruction.
- Faculty involvement in professional associations, consulting, and pedagogical research, results in ongoing program curricular review and redefinition.

Most recently the above actions have resulted in the implementation of a Minor Curriculum Change which realized the following:

- A new curriculum that responds more closely to IFMA performance standards.
- A new curriculum that embraces current industry trends of sustainability, security and collaborative project delivery methods.
- A new curriculum that emphasizes critical thinking and independent student exploration.

3.I.2.d: Facility Management Curriculum Map:

Refer to Appendix D2c for Trac Dat **Curriculum Map**.

3.J. Service to non-Majors

The Architecture and Facility Management program serves non-majors in various courses:

General Education Course:

ARCH 244: Historical Development of Western Architecture

- This course is a cultural enrichment elective that draws a large number of students from all colleges and programs. In the past, one section of 30 students is offered in Fall Semester and two sections of 30 students in Spring Semester. With the curriculum revisions, it is planned that two sections of 30 students will be offered in Fall Semester only. Dependent on faculty loads, additional sections of this course may be offered.

The quality and contributions of non-major students enhance the academic experience for all students. In addition, many non-majors have discovered an interest in architecture and become majors.

Non-General Education Courses:

ARCH 110: Computer Graphics in Architecture/HVACR

- This course is taught for the HVACR program. Two to three sections of this course with approximately 16 students per section are offered annually.

FMAN 321: Principles of Facility Management

- A separate section of this course is offered each Fall Semester for students in the Recreation and Leadership Management program in the College of Education. This is a required course for these students. Typically 20-25 students enroll.

The two Minor Degree options; Facility Operations Management and Facility Planning Management, were originally developed as an effort to provide non-majors with basic Facility Management background. These degrees continue to be offered. Students in the Minor Degree option are, with the possible exception of FMAN 321, taught in sections with students majoring in Facility Management. Students in any major may earn this degree.

However, most are students who previously earned AAS in Architectural Technology degrees, with most majoring in Construction Management or HVACR.

The following courses are taught by Architecture and Facility Management faculty and are part of these Minor degrees.

- ARCH 112: Methods and Materials of Construction
- ARCH 115: Interior and Exterior Materials
- FMAN 321: Principles of Facility Management
- FMAN 322: Project Management
- FMAN 331: Facility Programming and the Design Process
- FMAN 441: Property Development and Planning
- FMAN 451: Planning and Budgeting for Operations

The Architecture and Facility Management Program plans to maintain the current level of service courses.

3.K. Degree Program Cost and Productivity Data *(Source: FSU-Institutional Research & Testing; Productivity Report Fall 2005-Spring 2010)*

The Architecture and Facility Management programs showed an overall productivity of 406.29 SCH/FTEF for the academic year 2009-2010. This compares very favorably with the University Average of 453.69 SCH/FTEF and the College of Engineering Technology Average of 351.15 SCH/FTEF. The program was ranked 8th among the 24 program areas listed in the report.

College SCH/FTEF's ranged from 259.84 for Kendall College of Art and Design to 581.87 for the College of Business. Program SCH/FTEF's ranged from 219.06 for Design Studies to 736.94 for Physical Sciences.

When considering course prefixes, ARCH course prefixes averaged an SCH/FTEF of 351.52 (111th among the 163 reported prefixes) while FMAN (49th among the 163 reported prefixes) course prefixes average an SCH/FTEF of 539.77.

These differences in efficiency reflect class size and the percentage of courses that are studio or lab format. Thus the Architecture prefixes with a higher percentage of studio format courses are by nature less efficient than the Facility Management courses, which are predominantly of a lecture format. This rationale (class format) can also be extended to the program area's efficiency within the college and the university as a whole.

The following tables reflect the productivity of both programs during this academic program review period.

Productivity for Architectural Technology Program (Prefix ARCH)

(Source: FSU-Institutional Research & Testing; Productivity Report Fall 2005-Spring 2010)

Year	Student Credit Hours				Full Time Equated Faculty				SCH/FTE			
	Su	Fall	Sp	F+S (a)	Su	Fall	Sp	Avg F+S (b)	Su	Fall	Sp	F+S (a+b)
2005-2006	0	871	759	1630	0	3.29	3.96	3.63	-	264.66	191.6	449.5
2006-2007	0	1445	944	2089	0	5.45	4.37	4.91	-	210.23	216.22	425.79
2007-2008	20	1074	1022	2096	.17	4.43	4.89	4.66	117.65	242.62	209	449.9
2008-2009	0	864	692	1556	0	4.69	3.01	3.85	-	184.22	229.76	404.16
2009-2010	0	842	599	1441	0	4.67	3.53	4.1	-	180.32	169.73	351.52

Productivity for Facility Management Program (Prefix FMAN)

(Source: FSU-Institutional Research & Testing; Productivity Report Fall 2005-Spring 2010)

Year	Student Credit Hours				Full Time Equated Faculty				SCH/FTE			
	Su	Fall	Sp	F+S (a)	Su	Fall	Sp	Avg F+S (b)	Su	Fall	Sp	F+S (a+b)
2005-2006	44	300	312	612	.31	1.2	1.87	1.53	141.94	250	166.97	398.88
2006-2007	116	366	362	728	.92	1.36	2.78	2.07	126.09	269.9	130.02	351.68
2007-2008	76	339	360	699	.67	1.3	1.86	1.58	113.43	260.77	193.55	442.41
2008-2009	141	565	474	1039	.92	2.08	1.51	1.8	153.26	271.63	314.28	577.22
2009-2010	107	524	384	908	.92	1.5	1.86	1.68	116.3	348.52	206.35	539.77

Ferris' Office of Institutional Research also provided Degree Cost Data for the 2007-2008 academic year. The program cost per credit hour for the Architectural Technology degree was \$194.70 during that academic year. For Facility Management it was \$227.79.

3.L. Administrative Effectiveness

Administrative and Clerical Support:

The faculty of the Architecture and Facility Management program area has the following concerns regarding administrative and clerical support:

- Lack of vision and continuity at the CET Dean's level since 1993. The inability of the university to effectively recruit and retain an effective and qualified dean with an

understanding of academic issues as well as issues relevant to the schools and programs comprising the CET has compromised the effectiveness of the college as a whole; minimizing its ability to react to changes in the various program areas as well as the needs of potential and enrolled students. This has led to:

- An emphasis on stewardship of the CET, rather than a vision, plan, and implementation of change.
- A lack of understanding of what all programs are about. This is especially true for the Architecture and Facility Management Program Area. The very change of the name of the college, from a more inclusive and general College of Technology, to a less inclusive College of Engineering Technology demonstrates this disconnect.
- Ineffective marketing at the college level...jumping into communication and advertising without adequate market research.
- An emphasis on short term numbers instead of long term viability.
- The necessity of program areas to “do for themselves” rather than look to the CET for program support. (While this is a good thing in many ways, it also contributes to the weakening and ineffectiveness of the college.)
- While the School structure is still in its implementation, it is believed that the synergies between the program areas, especially in the School of Built Environment will be very beneficial in the future.
- An unfortunate side effect of the implementation of the School structure has been the reduction of release time and resources for program specific administration; specifically the change from Program Chairs to Program Coordinators.
 - The change has included an increase in academic course load for the Program Coordinator from 25% per semester to 75% per semester, and a decrease in summer stipend from \$15,000 to \$5,000.
 - The goal was to shift administrative duties to the School Director; however there are limitations to the activities that can be facilitated outside the program area. In short the majority of program activities are more efficiently and effectively administered by the chair or program coordinator than by the School or College. Examples include: review and development of curriculum, recruiting, scheduling, development of marketing materials, maintenance of website information, representation at various university/college/school committees, communicating with and meeting with prospective students and parents, involvement with advisory committees, accreditation and program reviews, hiring of faculty, assessment and Trac Dat, etc.
 - There is a need for a person to have the time and resources to be an effective “face” to the university community, students, high schools and community colleges, recruited students, etc. With the increase in teaching load, the program coordinator has minimal time to serve this role. As such, important recruiting and retention activities have decreased.
 - There are many activities that enhance the program that are most effectively done in summer. The contact and encouragement of admitted students over the summer is crucial to fall enrollment; other important functions include: marketing efforts,

- fund raising, partnerships with industry, visits to prospective MArch programs for articulation agreements, etc.
- The Architecture and Facility Management Program Area has suffered from a lack of clerical support since and prior to the last program review. Indeed the situation has gotten worse.
 - At the time of the last program review, the program area received 50% of a clerical position to support its needs. For several years a secretary was present in the office for only 2 ½ days/week. This was deemed as inadequate.
 - From 2003 to 2010, a variety of administrative decisions have resulted in the program enduring 7 different secretaries. The ability to create and maintain continuity and flow of office tasks and program area policies and procedures is impossible. The constant change results in inefficiency and frustration. Faculty are most concerned that this has had a negative impact on both recruitment and retention and has not served our students well.
 - At present, two clerical persons are shared within the School of Built Environment; SBE programs include the Construction Management Program area, the HVACR Program area, the Architecture Program area, and the Facility Management Program area. Thus four administrative entities share two clerical persons...the net effect being that the Architecture and Facility Management Program areas still have 50% (or less) of a clerical position to meet its needs. Previously these two secretaries served as the sole HVAC secretary and the sole Construction Management secretary. They now add responsibilities for the Architecture and Facility Management program area as well as for the School of Built Environment.
 - Due to the reorganization of the CET, the School of Built Environment is housed primarily in the Granger Building; the School office, the CM and HVACR program offices, and the two clerical secretaries are located in Granger. But, the Architecture and Facility Management Program Area remains in the Swan Building along with the Architecture and FM program office. Thus the clerical staff is in the Granger Building. Prior to the reorganization the Architecture and FM had 50% of a clerical position; that individual sat within the program office area. In August of 2010 with the hiring of the new Director for the School of CEEMS, the 50% clerical position was shifted to the role of secretary to the new CEEMS Director. The secretary work station is located adjacent to the ATFM Program Coordinator's office. She serves, at best, the role of a receptionist ATFM for the ATFM program.
 - In effect, the Program Coordinator or faculty pick up much of the clerical load, this reduces their focus on academic duties and student needs and retention activities.
 - The lack of clerical support was commented on in the 2008 Re-Accreditation of the Facility Management degree and nearly resulted in a reduced accreditation period.
 - With the addition and current implementation of the new B.S. in Architecture and Sustainability degree, the program area has concern that it does not possess adequate Administrative and Clerical support to effectively manage the three degrees offered (AAS in Architectural Technology, B.S. in Architecture and Sustainability, B.S. in Facility

Management). Solutions to remedy the situation and concerns could include a combination of the following:

- An increase in release time and summer commitment for the Program Coordinator.
- Implementation of two Program Coordinators (one for the Architecture program area and one for the Facility Management program area).
- A dedicated clerical support position located adjacent to the Program Coordinator within the Swan Building ATFM office.

Despite the above issues and concerns, the program area is run in an effective manner. The Program Coordinator has been proactive in identifying needs of the program and delegating tasks to ensure timely completion. However, this is a short term fix. On a long term basis, faculty must refocus on academic and teaching issues, updating skills and courses, and advising of students in order to allow the programs to remain relevant and current.

Class and Teaching Schedules:

Program class and teaching schedules are prepared by the Program Coordinator. Block schedules are developed and used to ensure that class sizes are evenly balanced and guarantee that students will successfully complete the required semester courses. The intent is to maximize room utilization and build student schedules that are flexible and distribute classes evenly throughout the day and week.

In addition, coordinating with other program areas that we serve (HVACR, Leadership and Recreation Management), or are served by (Construction Management, Art, Arts and Sciences, Management) are of prime consideration when developing schedules.

A secondary consideration, especially within the Facility Management program, is to accommodate students who commute from Grand Rapids. These students often have family and other personal connections in Grand Rapids and choose to reside there after completing their first two years at Grand Rapids Community College. This can be done by scheduling program level classes (junior and senior), on the same day to minimize the number of days these students must travel to Big Rapids.

Lastly, considerations are given to provide options for students who may be out of sequence due to missing prerequisite courses for transfer students, or poor performance in a particular semester.

The biggest challenge is securing of a large lecture room to optimize scheduling and increase productivity.

Section 4: Facilities and Equipment

Section 4. Facilities and Equipment

4.A. Instructional Environment

The Architecture and Facility Management Program Mission Statements match Ferris' mission of preparing students for careers. This endeavor is supported by the instructional environment that the program strives to maintain and enhance; an environment that supports learning while mirroring the environment of a professional office or studio.

Since both programs utilize a variety of class formats: traditional classroom, hand drafting, model building, digital drafting, and informal meeting and group study areas; the program spaces are designed to accommodate the diverse learning activities which they support.

The following table presents the characteristics of the spaces assigned to this program area.

Summary of Spaces Assigned to Architecture and Facility Management Program Area

Space	Cap.	Use	Teaching Equipment	Condition	HVAC	Finishes	Other
Swan 111	32	Lecture	Computer, Projector, Screen, Whiteboard	Good	Heat and AC	Painted CMU walls, lay in ceiling with dimmable fluorescent lighting, carpet, double pane operable windows.	Shelves for reference materials, Lecture seating.
Swan 111 was originally dedicated to the Facility Management program. While it is still primarily used for FM classes, it is occasionally used for architecture courses as well as other college and university wide courses (English, Surveying, etc).							
Swan 202	32	Lecture	Computer, Projector, Screen, Whiteboard	Good	Heat only	Painted CMU walls, lay in ceiling with dimmable fluorescent lighting, carpet, single pane operable windows.	Shelves for construction material display, Lecture seating, cabinets with sink.
Swan 202 is used for various lecture classes, but is specifically designed for construction materials courses due to installed models of construction framing systems, storage for construction materials, and adjacency to Swan 202A, a storage room.							
Swan 202Aa	NA	Storage	NA	Fair	Heat only	Painted CMU walls, lay in ceiling with fluorescent lighting, carpet, single pane operable windows.	Shelves for storage of construction materials, student work, repair tools, etc.

Swan 202A is a storage area located between Swan 202 and Swan 203.							
Swan 203	20	Lecture & Studio	Computer, Projector, Screen, Whiteboard	Fair	Heat only	Painted CMU and drywall walls, lay in ceiling with fluorescent lighting, carpet, single pane operable windows.	Lockers, drawing files, cabinets with sink, Lecture seating, hand drafting stations.
Swan 203 is used for classes that feature hand drafting and model building. A lecture area is located near the front of the class, and the drafting stations (drafting tables/reference tables) are located away from the lecture area.							
Swan 205	22	Lecture & Studio	Computer, Projector, Screen, Whiteboard, tack surface.	Good	Heat Window AC Units	Painted CMU and drywall walls, lay in ceiling with dimmable pendant mounted indirect fluorescent lighting, and recessed dimmable incandescent lighting, single pane operable windows.	Drawing files, Lecture seating, digital drafting stations, cabinets.
Swan 205 was renovated in 2005 as a donation from John Wheeler of Rockford Construction. It is typically used for upper level studios in both Architectural Technology and Facility Management. The combination lecture and studio area is ideal for these courses.							
Swan 208	NA	Printing Plotting	Printer, Plotter	Good	Heat only	Painted CMU and drywall walls, lay in ceiling with fluorescent lighting, carpet.	Drawing files, recycling bins, shelves.
Swan 208 is shared as a printing and plotting station for all academic computers used by students in the program. It is accessible from Swan 205 and Swan 212.							
Swan 208A	NA	Group Work, Reference	Whiteboard, bookshelves.	Fair	Heat only	Painted CMU and drywall walls, lay in ceiling with fluorescent lighting, carpet, single pane operable windows.	Lounge seating, tables, bookshelves.
Classes are not scheduled in Swan 208A. It is used as an informal meeting area for students for independent and group study. It also is supplied with some material samples, reference materials, and journals.							
Swan 212	20	Lecture Studio	Computer, Projector, Screen, Whiteboard.	Fair	Heat Window AC Units	Painted CMU and drywall walls, lay in ceiling with dimmable fluorescent lighting, single	Drawing files, Lecture seating, digital drafting stations, cabinets with sink.

						pane operable windows.	
Swan 212 is used as a digital drafting studio for various courses. The combination lecture and studio area is ideal for these courses.							
Swan 307	Varies	Studio	NA	Fair	Heat only	Painted CMU and drywall walls, lay in ceiling with fluorescent lighting, single pane operable windows.	Plotters, Laser cutter, butcher block tables for model building
Swan 307 was added to the program area in 2010. It has been outfitted with equipment to be used primarily by students in the upper level Architecture and Sustainability program.							

Space Needs:

While this section of the report is dedicated specifically to the Instructional Environment, the faculty believes that the entirety of spaces assigned to the program affect the effectiveness of program efforts. This is especially true in a curriculum which focuses on teaching students how to provide clients with spaces that support the mission of their organizations.

Thus, the spaces assigned to the Architecture and Facility Management Program Area are lacking in the following areas:

1. **Thermal Comfort:** Most teaching spaces do not have air conditioning. It is hot and unpleasant for students to focus and produce detailed work the first few weeks of Fall Semester. In the spaces that do have window air conditioning units, the noise is distracting. Swan 111, the only room with central air conditioning, is very cold winter and summer and attempts to regulate comfortable temperatures have been unsuccessful.
2. **Poor Spatial Adjacencies:** Effective organizations have their spaces arranged in a manner that promotes interaction and communication, as well as creating a “home space” that physically defines that organization.
 - The Architecture and Facility Management Program Area is part of the School of Built Environment. However, the School of Built Environment is located in the Granger Building, while the Architecture and Facility Management Program Area is located in Swan Building – approximately ¼ mile to the south. Better adjacency with the School of Built Environment would enhance cross discipline communication and innovation efforts.
 - The physical area assigned to the Architecture and Facility Management Program Area is physically obsolete and obviously dated in comparison to the Granger Building. This may send a subtle message to students regarding the status of the program.
 - Within the Swan Building, spaces are located on three different floors; most classrooms are on the second floor, Swan 111 on the first floor, program offices and digital model room are on the third floor.
 - The program offices are shared with the School of Design and Manufacturing. In fact the secretary from this school serves as a receptionist to the Architecture and

Sustainability Program office. The program secretarial support is located in Granger Building with the School of Built Environment.

- The faculty offices are in Johnson Hall, a building near the Swan Building. In effect, program faculty are not adjacent to program students and teaching spaces, the program coordinator, or other peers in the School of Built Environment.
3. Outdated Furnishings: While Swan 205 features comfortable and cohesive furnishings due to the 2005 donation by Rockford Construction, the other spaces feature a less cohesive design. The program has repurposed, repaired, and creatively reused furnishings in these rooms. Thus, most could benefit from a facelift that would also serve to recruit and retain students; since many incoming students indicate that their high school spaces were more up to date, attractive and effective learning environments.
 4. Lack of a Large Lecture Space: The largest teaching spaces dedicated to the program are Swan 202 (32 students) and Swan 111 (32 students). A large lecture space for history (ARCH 244) and materials (ARCH 112, ARCH 115) courses, would improve the efficiency of the program. If a large lecture space were consistently available, fewer sections of these courses would need to be offered.

In addition to the above issues that impact learning, other factors that impact student attentiveness and learning are: poor ergonomics, uncomfortable seating, broken equipment and computer hardware, uncomfortable interior temperatures, and dreary aesthetics. A program that teaches and stresses design excellence should model this value which it is trying to instill in its students.

Projected Needs:

In addition to the above mentioned deficiencies in the current spaces, the following spaces are needed to support the new B.S. in Architecture and Sustainability degree.

1. Digital Media Center: A separate, controlled area that would house a pay-to-print service is needed to meet project presentation needs.
2. Model Building Studio: Swan 307 is currently being developed for this purpose. However, it requires some aesthetic updating.
3. An Additional Lecture Space: Since more courses will be taught when the new degree is fully implemented, more space is required. Ideally a large lecture space (approximately 50-60 students) would benefit the program. Then one of the existing smaller lecture spaces could be used for the smaller sized classes of the new degree.
4. Junior Studio: Swan 226 has been assigned as the dedicated, junior studio.
5. Small Town Studio: Part of the proposal for the new B.S. in Architecture and Sustainability curriculum was the establishment of a "Small Town Studio". This studio would be a visible place within the community of Big Rapids, preferably near the downtown area, where students could interact with the community and participate in service learning projects.

4.B. Computer Access and Availability

Student Computers:

Computers for student use are located in Swan 205 and Swan 212. These studios are used for both Architecture and Facility Management classes. When classes are not in session students can work in these rooms on a first come, first served basis. Typically, there are adequate computers for students during these free times. The program also hires studio monitors to enable the studios to be open limited evening and weekend hours.

In addition, students often use computers in FLITE or Granger Buildings.

Increasingly students come to Ferris with their own computers. This has reduced the demand on computers outside of classes.

The computers in Swan 212 were purchased in Fall 2010 to replace old computers that were unable to process current software needs. Due to lack of funding from the university or college these computers were purchased with program funds. The computers in Swan 205 are 5 years old. They function adequately. However, with standard computing requirements for architectural software moving from digital drafting to digital modeling, they will be obsolete shortly. Hopefully, a better mechanism will be found to replace these computers.

The support personnel do not believe a specific policy is in place regarding the replacement of computers. However, the following describes the replacement and reallocation process as they understand it.

On a yearly basis all computers deployed to faculty and staff for the entire campus are reviewed. Based on age, warranty status, available budget, and/or other parameters specifications are determined to identify computers that are to be replaced.

The computers purchased for replacement of those that have been determined are beyond their service life are considered based on the software load for all users on campus.

There is not a replacement process for classroom teaching space or lab spaces. These are done as departmental funds are available or as a case is made to allocate funding for replacement.

TAC does perform replacement/upgrades to some equipment with computers displaced from elsewhere on campus on a case by case basis for any of the customer types you referenced.

The program feels that the university and college should take a leadership role in ensuring that state of the art computers are available to students and faculty.

Other technical resources include:

- Scanner in Swan 203
- An 11x17 black and white printer in Swan 208.
- (2) 36" color plotters in Swan 208.

- A 48" wide color plotter in Swan 307.
- A laser cutter (for model making) in Swan 307.

Adequacy of Resources:

Due to limited resources available for computer replacement from the university and reduced Perkins Funds, the program struggles to provide adequate and technically functional computers and output devices.

As a response to this problem, the program requested university permission for a Program Area Computer Plan. This would require upper level students (3rd and 4th year) to purchase laptops meeting specifications determined by Ferris' Computer Technology Services and based on program software demands.

The program also requested approval for implementation of a student digital resource fee. This fee would provide funding for printers and plotters, as well as supplies such as paper, toner, etc. With the launching of the new BS in Architecture and Sustainability program and the restructuring of the Associate in Architectural Technology, the requirement for students to produce professional projects, design portfolios, design presentation boards and architectural models has increased. The student fee would be used to support these student services and related supplies.

As a program and profession that relies on producing graphic representations and models of architectural designs and construction drawings, it is imperative that these amenities are available for our students. Competing institutions and architecture programs charge students per item for such supplies. In addition, these services are only available in larger metropolitan areas such as Grand Rapids and Detroit. As such, the program has a greater responsibility to provide these services and supplies for our students. In order to help offset the growing costs of providing plotting and printing services for our students our goal was to implement a student fee effective Fall semester 2011. The student fee would be used for consumables such as: 8 ½"x11" printer paper, 11"x17" printer paper, large format plotter paper, printer and plotter cartridges, cutting mats, Borco cover for drawing boards, parallel bars for drawing boards and miscellaneous classroom supplies such as tape, glue, spray mount, and staples. Additionally the fee will be used to support ongoing maintenance and purchase of output hardware for student use. Our current annual cost for such items is approximately \$3000 for paper and cartridges, \$750 for maintenance, \$2000 for cutting mats, Borco and parallel bars. These costs will increase with the introduction of the B.S. in Architecture and Sustainability degree.

The fee structure we wish to implement is a fee/class configuration. The classes listed below are the most extensive in terms of drawing studio use and digital output use. Such a structure would result in one fee/semester for each student, with the exception of senior Facility Management students – they would not pay a fee during their fall semester. Because students enrolled in these classes are also enrolled in other ATFM courses, and can use printing resources as needed, they would benefit from a single resource fee.

Studio classes include: ARCH 101, ARCH 102, ARCH 203, ARCH 204, ARCH 341, ARCH 342, ARCH 441, and ARCH 499.

The university has denied permission to establish these fees. The reputation and effectiveness of the program depends in part on its ability to provide its students with current technologies. Lacking a timely replacement program for computers and other technical resources and being denied the ability to raise these funds independently, the Program Area fears for its ability to keep up with the changes in the technologies used by the architectural and facility management professions.

Software:

A broad array of software is utilized by the programs.

- Digital drawing software such as AutoCAD, REVIT and SketchUp are used by all programs.
- Increasingly, software, such as PhotoShop and Illustrator, are used to digitally enhance hand and digitally generated drawings.
- Technical software is also utilized to estimate materials, write specifications, and monitor and/or model buildings.
- Courses increasingly use FerrisConnect to enhance the delivery of program material.

Ferris Connect:

The use of FerrisConnect has made the online Certificate in Facility Management possible. This certificate is for practicing facility managers wishing to improve their facility management skills. It has allowed the program to reach people throughout the world.

FerrisConnect has also been adopted by faculty to enhance current face to face courses. Lectures, study guides, assignments, etc. are now available to students through FerrisConnect for many program courses. This reduces paper and printing costs and also provides students with better quality supplemental materials for courses as well as opportunities for feedback between class meetings.

Computer Support:

Courses and training offered through FCTL have enabled faculty to embrace the new technologies including FerrisConnect. Other funding has allowed faculty to update skills for program specific software. Perhaps the biggest challenge for faculty is the constant updating of software and the need to become truly proficient in various software techniques.

The support staff that installs and maintains the program area's computer equipment is well trained and responsive to student and faculty needs.

Considering the age of most program computers, Ferris' Computer Technology Services has worked hard and successfully provided support for the program's computers and software.

4.C. Other Instructional Technology

The main requirements for teaching and learning are discussed in previous sections. However, the following would further enhance teaching and learning:

- Smart teaching stations with the ability to project pages from books, etc within a classroom setting and provide the ability to print or download notes from the whiteboards.
- To increase the size of digital storage for students and faculty.
- To coordinate information in Banner/FerrisConnect, etc. to minimize the need to redundantly enter data such as grades, office hours, etc.
- To proactively access faculty computer requirements based on software and processing needs. It is imperative that faculty have access to the software used in the classroom. This requires computers that can operate this software.
- The success of the BS in Architecture and Sustainability degree will be partially dependent upon the ability of graduates to enter NAAB accredited Master of Architecture programs. The ability to submit professional portfolios is an important component of the admission process to these programs. The ability to generate and plot 3D models of architectural designs would enhance the quality of student portfolios.

4.D.1 Library Resources

The following identifies the Library Resources relevant to the Architecture and Facility Management Programs.

Print resources:

- FLITE has a collection of print books to support the program, and also has books to support other programs in the College of Engineering Technology. Books are purchased each year for the program.
- FLITE has 1893 titles in the general collection that are classified as books with the subject Architecture, using the Library of Congress Classification System.
- FLITE participates in MeLCat, a statewide catalog and book delivery system, which gives FLITE patrons unmediated and unlimited access to the print book collections of most Michigan libraries, including major academic collections. FLITE also provides Interlibrary Loan services, without additional charge, for print books that are not available at FLITE or through MeLCat.

E-book resources:

FLITE maintains a subscription to the ebrary Academic Complete collection, which contains over 50,000 ebooks relevant to all academic disciplines, including Architecture.

Journal Subscriptions:

FLITE maintains individual journal subscriptions to the following titles:

Architect
Architectural Digest
Architectural Index
Architectural Record
Building

Dwell
Environmental Design & Construction
Facility Management Journal
House Beautiful
Interior Design
Metropolis
Taunton's Fine Homebuilding
Urban Land

Database and Electronic subscriptions:

Avery Index to Architectural Periodicals
International Building Codes

Other relevant resources:

FLITE maintains the following general database subscriptions and journal package subscriptions that include content specifically relevant to the program as well as content of general relevance:

Wiley Blackwell Journal package
Springer Journal package
Science Direct Freedom Collection journal package

Wilson OmniFile with Full Text

Lexis Nexis Academic Universe
ABI Inform
JSTOR
Gale Academic Onefile
Applied Science and Technology Abstracts

4.D.2 Library Service and Instructional Resources

A librarian is assigned as Library Liaison to the program. This librarian assists with collection development, requests purchase of books and other resources, and is available to provide bibliographic instruction to inform students what resources are available and show how to use them.

Services available include:

Resources:

- Unmediated & unlimited access to print book collections of libraries across Michigan through MelCat.
- Traditional Interlibrary Loan access to journal and book collections throughout the US.
- Books and other materials purchased upon request by FLITE as budget allows.
- Library electronic resources are available via the library proxy server and can be accessed from off-campus.

Instruction:

- Library instruction is available upon request to cover use of the library and relevant resources and databases.
- First-year students in FSUS spend one class period in the library and get an Introduction to the library and a library tour.
- Students can request a one-on-one (or group) consultation with a librarian for reference and research assistance.

In-library resources and services:

- A Reference Librarian is assigned to the Oval Information Desk from 9 am to 10 pm Mon-Thurs, 9 am to 6 pm Friday, 12 pm to 5 pm Saturday and 1 pm to 10 pm Sunday. This librarian can be contacted in person, by telephone, or using chat software.
- Library study rooms can be checked out for 4 hours, on a first-come, first-serve basis. These rooms include rooms large enough for group work and rooms with AV equipment. FLITE also has laptops for students to check out for 4 hours.
- Computers are available at FLITE on a first-come, first-serve basis. A group of computers on the 2nd floor is designated for students from the College of Business and the College of Engineering Technology and are loaded with software specific to those programs. The same software is available in FLITE's extended hours study area.
- FLITE has 4 Instruction studios equipped with computers for students as well as an Instructor Station. These studios can be reserved through a convenient on-line system. On demand, these studios can also be opened for student use when all other computers in the library are in use.
- FLITE also has seminar rooms which include an Instruction Station and convenient seating and wireless options for attendees. These can be reserved through a convenient on-line system and are also available for student group and RSO meetings.
- Faculty can put print resources on print reserve, so students can check out items for a limited time for in-library use; an electronic reserve system is also available.
- FLITE provides an extended hours study area that is open extended hours for student use. After the first few weeks of classes in each semester, the extended hours study area is open continuously from 1 pm Sunday afternoon through midnight Friday night, and from noon to midnight on Saturday. The extended hours study areas provides computers with all available library software, a printer and a copier, study rooms and study tables, and a vending area with a microwave and adjacent bathroom facilities.
- An Adaptive Technologies lab is housed at FLITE for use by students who require such assistance.
- Students who have assignments or extra academic activities that require poster presentations or other graphic materials can contact Media Production, a department of FLITE, for assistance in the design, development and creation of posters and other media-related resources.
- Library tutorials, research guides, and other material are available to assist students in using and finding library resources

4.D.3 Library Budget Allocation

FLITE has a designated budget for books and other non-continuing resources. This is specifically designated for the program, plus there is money designated to support other related programs (like construction) in the College of Engineering Technology.

The amounts spent over the last 4 years and amount designated for FY11 (Academic year 2010-2011) specifically for books for the program are as follows:

Academic Year 2006-2007	\$3148.75
Academic Year 2007-2008	\$2528.55
Academic Year 2008-2009	\$1844.20
Academic Year 2009-2010	\$2915.88
Academic Year 2010-2011	\$2000.00 (budgeted)

FLITE does not have a specific budget allocation for the program to cover continuing resources (Journals, database subscriptions, etc.) See above for a list of resources available. At no point since 2006 has any faculty request for resources gone unfulfilled by FLITE. All collection development suggestions have been compiled by Professor Dane Johnson who serves as the faculty liaison to FLITE, and channels all faculty requests to Fran Rosen, the liaison for the College of Engineering Technology.

Section 5: Conclusions

Section 5. Conclusions

5.A. Relationship to FSU Mission

The mission of Ferris State University is: "Ferris State University prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-oriented, broad-based education, Ferris serves our rapidly changing global economy and society." (Source: <http://www.ferris.edu/htmls/ferrisfaq/mission.htm>)

The Architecture and Facility Management program area supports this mission by preparing students for various roles within occupations and professions related to the Built Environment. The program area also seeks to develop an ethic of responsibility for the social and environmental well being of the community.

The Associate of Applied Science in Architectural Technology's Mission is "to provide students with a foundation of architectural concepts, skills and values necessary to continue education for advanced degrees in programs related to the built environment or enter the employment market at an entry level position in architecture and professions related to the built environment".

The Bachelor of Science in Facility Management's Mission is "to be a nationally recognized program that provides students with a foundation of concepts, skills and values to effectively begin the practice of facility management; and instills the value of lifelong learning".

The Bachelor of Science in Architecture and Sustainability's Mission is "to prepare students for innovative practice in the design professions and stewardship of their communities. The program seeks to provide a holistic, quality education in architecture; to promote excellence in architectural practice, sustainability, and preservation; and demonstrate engagement with community planning. The program also seeks to instill the value of life-long learning".

As noted earlier, the addition of the Bachelor of Science in Architecture and Sustainability degree (first graduating class will be May 2013) allows graduates of the associate degree to remain at Ferris and earn a degree in one of the three major areas associated with the creation and maintenance of facilities: Planning and Design - Bachelor of Science in Architecture and Sustainability, Construction – Bachelor of Science in Construction Management, Facility Operation and Management – Bachelor of Science in Facility Management.

These career oriented programs directly support Ferris' mission by preparing students to immediately contribute to their professions and society in general and to recognize the importance and necessity of lifelong learning.

5.B. Program Visibility and Distinctiveness

The degree programs offered within the Architecture and Facility Management program area are unique and distinct from other offerings within the state. Some of the distinctive features of these programs are: 1) that the AAS in Architectural Technology directly ladders into three baccalaureate degree options: Architecture and Sustainability, Facility Management, and

Construction Management; 2) that the faculty holds practical experience since all faculty teaching within the program are licensed architects and former or current practitioners in the profession; 3) that the primary facility management faculty member has worked within the Facility Management profession, is a Certified Facility Manager (CFM), as well as a licensed architect; 4) that the curricula for all degrees offered in this program area have been enriched in the relatively new field of sustainability by association with the newly developed BS in Architecture and Sustainability degree.

Since each of the degree programs addressed in this program review is unique, a separate section for each degree follows.

5.B.1. Program Visibility and Distinctiveness – Architectural Technology

As noted in the Mission Statement, a primary role of the AAS in AT is to prepare students for entry into baccalaureate degree programs. As the program continues to evolve, the role of preparing students to enter the workforce continues to diminish. The program provides a foundation of skills necessary for further education within the programs to which these students progress and provides the technical skills valued by future employers. Students in baccalaureate degree programs also recognize the value of the strong foundation provided by this program. See results of employer, alumni, and faculty surveys.

Since its inception in the 1950s the AT program has taught hands-on practical skills. The program continues this tradition and focuses on how buildings work and how architects practice. As such the program, in comparison to other state baccalaureate program, is unique in that the architectural practice is emphasized.

Another desirable marketing feature is that upon graduation, and after 2-years of study, students have several career options to pursue. Two-years of study is the ideal number of years for students to gain an understanding of which path they prefer. Prospective students and parents appreciate knowing that only 2 years of time will be devoted prior to a commitment to a baccalaureate program. In 2 years students gain a better sense of the path that fits them the best.

5.B.2. Program Visibility and Distinctiveness – Facility Management

Like similar baccalaureate programs in the country, Ferris' Facility Management program prepares graduates to enter the workforce. It is unique in its emphasis on the planning and construction aspects of the profession. Its architectural emphasis is unique in preparing students to enter master level programs in business or architecture. This architectural foundation is recognized by Faculty, Alumni, Employers, and the IFMA Foundation, which accredits the program, as a key asset of this curriculum.

The program continues to be internationally recognized for producing graduates who possess the necessary entry level skills to be effective and successful employees. Survey results indicate that employers value the technical and practice-oriented skills students acquire along with their critical thinking and problem-solving skills.

Program distinction includes:

- Continuous provision of quality education that is responsive to student and employer needs successfully competes with other programs accredited by the IFMA Foundation.
- One of five baccalaureate level facility management programs in North America, and one of nine in the world accredited by the IFMA Foundation. (Source: <http://www.ifmafoundation.org/scholarships/degree.cfm>)
- Continued successful summer internship program. This program offers the student a rich and rewarding experience and enhances program recognition and respect. A summer internship is required for graduation.
- Successful student scholarship program both locally and nationally.
 - One to three students annually receive IFMA Foundation Scholarships for academic achievement and professional engagement.
 - The West Michigan Chapter of IFMA offers an annual scholarship for academic achievement and professional engagement.
 - The Michigan Society of Hospital Engineers (MiSHE) offers a scholarship to a student interning at a MiSHE member hospital.
- Increased recruitment by the General Services Administration of the US, US State Department, Public Works Canada, and various hotels validate the abilities of graduates.
- All courses in the curriculum qualify for Certified Facility Manager (CFM) maintenance points. The CFM is a designation awarded by IFMA to recognize individuals who possess the competencies which IFMA identifies as being central to being a facility manager. Competency is assessed through an examination which practitioners are eligible for after meeting a combination of education and work requirements. The CFM is renewed every 3 years and it is necessary to earn maintenance points in various areas during each 3 year time period.
- A large percentage of graduates successfully complete the IFMA CFM exam, regarded as the industry standard for ensuring the knowledge and abilities of practicing facility managers.

5.C. Program Value

In addition to educating students to meet the needs of various professions associated with the built environment, the program area serves other programs within the College of Engineering Technology and the University.

- The AAS in Architectural Technology ladders into the BS in Facility Management or the BS in Construction Management.
- The AAS in Architectural Technology ladders into the Bachelor of Arts in Interior Design at Kendall College of Art and Design in Grand Rapids.
- The program area provides a service course to the HVAC program (ARCH 110).
- The program area provides a service course to the Leadership and Recreation Management program (FMAN 321).
- The program area provides a university-wide service course that meets General Education requirements for three Cultural Enrichment credits (ARCH 244).

- The program area offers two Minor degree options, Facility Planning or Facility Operations, which are appropriate for non-Facility Management majors.
- An online certificate in Facility Management is open to persons with the equivalence of two years' of post-secondary education and some facility management experience.

Students within the programs are also involved with professional organizations that bring recognition to the university through community service efforts and involvement with their respective professions.

- An active American Institute of Architecture Students Chapter (AIAS) connects students with architectural professionals through guest speakers, field trips and building tours, association with the Grand Valley Chapter of the AIA, and national AIAS events.
- An active International Facility Management Association Student Chapter (IFMA) connects students with facility management professionals through guest speakers, field trips and building tours, association with the West MI IFMA Chapter, and national events such as World Workplace – the annual convention of the facility management profession.
- BOMA, the Building Owners and Managers Association, has offered students membership through the MI Chapter. They have also provided mentoring through Facebook as well as a lecture series.
- The FSU Chapter of Women in Technology (WIT), which is open to female students within the College of Engineering Technology has many members from the Architecture and Facility Management program area. This student group has benefited from the involvement of Mary Brayton, a program area faculty member, as their advisor.

The availability of various scholarships reflects the relevance and value of these degree programs:

- Gerber Scholarship (amount varies between \$2000 - \$3000) for second year Architectural Technology students pursuing further architectural studies.
- James B Shane Scholarship (\$750) for first year Architectural Technology students continuing to the second year of study.
- Harry Larson Memorial Endowed Scholarship (amount varies) for junior or senior level students in facility and construction management.
- International Facility Management Association (IFMA) Foundation Scholarships (\$1,500 minimum and include registration, transportation, and lodging at World Workplace) for students in Facility Management and related fields.
- Kathy Pruden Memorial Scholarship – West Michigan IFMA Chapter (\$1,500) for Facility Management majors.
- Grand Valley AIA Scholarship (\$1,000) for students of architecture in baccalaureate and NAAB accredited programs.
- The Michigan Society of Hospital Engineers (MiSHE) offers a scholarship (\$1500) to a student interning at a MiSHE member hospital.

5.D. Enrollment

Since the factors discussed in this section are unique to each degree, a separate section will be used to discuss enrollment in each degree program.

5.D.1. Enrollment – Architectural Technology

Enrollment has decreased for the Architectural Technology program, from a high of 107 in 2007 to a low of 42 (55 per program data) in 2010, over the time period addressed in this program review. In fact, the enrollment figures shown for 2006 and 2007 in Section 3.A.1 are actually very high compared to historic enrollment figures. Total enrollment in the program for the time period addressed in the previous program review cycle ranged from a low of 68 in 2002 to a high of 85 in 2001.

Program capacity and quotas for the AAS in AT is 100 students; 60 first year students and 40 second year students. Throughout the past 5 years, the average enrollment/quota ratio has been 79.

Retaining first year students has traditionally been a challenge for architecture and architectural technology programs. Students who enroll in such programs often discover, during their first year, that architecture is not a proper fit or realize they are not academically prepared to perform at the required level. Architecture and architectural technology programs are rigorous and time consuming. Many students become disillusioned with the rigors and transfer to other curricula.

A further challenge for Ferris' program is that the AAS in Architectural Technology is not easily differentiated from the much less costly offerings of local community colleges. This became an especially important factor in the economic recession of the latter part of the decade.

While the AAS in Architectural Technology degree laddered into baccalaureate level degrees in related fields like Facility Management and Construction Management, the lack of a baccalaureate level architectural degree inhibited recruitment efforts. This was especially true for those who sought architecture professions.

With the addition of the new BS in Architecture and Sustainability the faculty is confident that enrollment and retention will increase. The current recruitment season has seen stronger and more academically prepared students choosing Ferris' architectural curriculum. This should lead to higher enrollment, higher rates of retention, and higher graduation rates.

5.D.2. Enrollment – Facility Management

Enrollment has increased for the Facility Management program, from a low of 38 in 2007 to a high of 59 in 2009, over the time period addressed in this program review. In fact, the enrollment figures shown for 2008 and 2009 in Section 3.A.1 are actually the highest historic enrollment for this program. Total enrollment in the program for the time period addressed in the previous program review cycle ranged from a low of 4 in 2003 to a high of 15 in 2002. The

average enrollment for the program during this program review period is slightly over 100% of the quota.

Program capacity and quotas for the BS in FM is 50 students; 25 third year students and 25 fourth year students. Throughout the past 5 years, the average enrollment/quota ratio has been 50.

The faculty credits the higher enrollment in this program to several factors. First, with the loss of a faculty member in 2003, the program was reorganized to involve all but one program area faculty. This helped to promote Facility Management as a logical career route based on Architectural Technology. Second, more effective recruiting of Facility Management students, ongoing high job placement rates, and competitive salaries, even through the recession, helped reinforce that Facility Management is a strong career choice. Third, efforts by the Program Coordinator to consistently recruit at community colleges have been successful in raising the number of students transferring into the program.

It is anticipated that there will be more challenges to maintaining enrollment over the next two years. First, the relatively small architectural technology cohorts of 2009 and 2010 offer fewer architectural technology students who can ladder into this program. Second, the new BS in Architecture and Sustainability degree will attract many architectural technology students who may have chosen Facility Management in its absence. Third, the lingering effects of the recession will also reduce the number of students who can go away to college.

The faculty expects that long term the enrollment in all degree options within the Architecture and Facility Management program area will stabilize at quota levels. The new BS in Architecture and Sustainability degree will attract serious students to the AAS in Architectural Technology and will provide a more appropriate baccalaureate level degree for architecturally creative students. Facility Management will be a choice for those truly interested in facility management careers. Thus higher quality students and a larger student pool will benefit both programs.

Since the introduction of the online Certificate in Facility Management in 2005, the need for an online IFMA Accredited BS in Facility Management has been apparent. While this would be a worthwhile and needed endeavor, additional faculty would be required to develop, maintain, and teach this curriculum. Many of the courses that are prerequisite to the Facility Management curriculum, such as computer aided drafting and building information modeling, are not easily taught via distance learning. Also, many of the courses that comprise the degree are offerings from other departments. Since the IFMA Foundation requires a separate process to accredit online degrees, a separate accreditation process would be required.

5.E. Characteristics, Quality and Employability of Students

Since the factors discussed in this section are unique to each degree, a separate section will be used to discuss the qualities of graduates of each degree program.

5.E.1. Characteristics, Quality and Employability of Students – Architectural Technology

During their two years of study in Ferris' Architectural Technology program students mature in attitude, work ethic, and focus. Very few students currently seek employment upon graduation from this program, but instead continue to earn baccalaureate degrees in fields associated with the built environment.

Eighty percent of those who seek to earn an additional degree remain at Ferris, with 51% of respondents indicating that they earned a BS in Facility Management and 24% indicating that they earned a BS in Construction Management. Other popular degrees are Interior Design, often at Kendall; and NAAB (National Architecture Accrediting Board) accredited degrees in architecture. Note: A Master of Architecture degree from a NAAB accredited program is required to be eligible for licensure in most states and provinces.

Section 2.3 indicates that graduates are satisfied with their AT education and believe it was an excellent preparation for continued study as well as for the workplace. This section also indicates that employers are satisfied with the architectural skills of graduates. In particular, the comprehensive understanding of buildings and the building process is valued by employers.

With the introduction of the BS in Architecture and Sustainability option, it is believed that more graduates of this program will stay at Ferris and earn baccalaureate degrees through the School of Built Environment.

In conclusion, Ferris' Architectural Technology graduates possess strong technical and problem solving skills that serve as a strong foundation for continuing education and future career success.

5.E.2. Characteristics, Quality and Employability of Students – Facility Management

While in previous years most students who entered the BS in Facility Management program came directly from Ferris' AAS in Architectural Technology degree program, at this time approximately half of the students in the Facility Management program transfer to Ferris from community colleges such as Grand Rapids Community College and Lansing Community College. However, several students have also transferred to Ferris from Humber College in Ontario, as well as from various out of state institutions.

Another trend has been that more students are coming to Ferris specifically for a degree in Facility Management. In previous years most students came to Ferris intent on becoming architects and later decided to pursue a facility management career. Often this was because students found they were not suited to architectural professions for various reasons such as the time and rigor required to become architectural professionals or that they discovered facility management and were drawn to this option.

In Section 2.3 alumni and employers report that they are very satisfied with the preparation of Ferris graduates for careers in facility management. In particular, they appreciate the broad based education and emphasis on building systems.

Seventy seven percent of alums report working within the field of Facility Management within 6 months of graduation. Eighty three percent report that they are currently working in the facility management profession. Fifty five percent report living in Michigan. Alums also report working in a variety of economic sectors, with approximately one fourth working in the governmental sector. This is probably due to current recruitment efforts by governmental agencies.

Alums also report continuing their education in some manner. Few obtain additional degrees such as MBAs, but the majority continues their education in some manner.

Salaries of alums vary by experience and the industry in which they work. The reported salaries average less than those reported through the US Department of Labor. But it should be noted that the majority of respondents tended to be relatively recent graduates of the program.

In conclusion, Ferris' Facility Management graduates possess strong technical, management, and people skills; skills that help them obtain an entry level job and provide a base to grow professionally toward their career goals.

5.F. Quality of Curriculum and Instruction

The curriculum offered through the three degree programs housed in the Architecture and Facility Management program area provide students with practical skills as well as theoretical knowledge of how buildings work, how they are designed and documented, as well as how they are run and adapted to meet the needs of their users. The AAS in Architectural Technology provides a solid foundation focusing on building and design theory as well as providing students with the technical means of communicating architecture. The new BS in Architecture and Sustainability degree allows students who are focused on architectural design an opportunity to explore the role of architecture and its relationship to the natural and social environments. The BS in Facility Management prepares students to mesh architecture, business and management into a unique career that focuses on providing appropriate facilities for organizations to grow and prosper.

The program area has grown and adapted to meet the current needs of students as well as architecturally related professions. Originally a program dealing primarily with pencil and paper drafting, the AAS in Architectural Technology now addresses the critical thinking associated with; the process of building, the technology of building, and the technical skills such as computer aided drafting and building information modeling.

The Facility Management curriculum was first offered in the early 1990s as a baccalaureate option for architectural technology students. While many facility management curriculums have been offered at various institutions, few have endured and achieved success. The success of Ferris' curriculum can to some extent be credited to the process by which it was conceived and implemented. The International Facility Management Association (IFMA) developed and periodically redefines areas of competency for facility managers. Ferris' curriculum is based on

these competency areas and periodically modified to address changes identified by the faculty, advisory board members, and other facility management professionals. Thus, the curriculum is not based solely on theory, but has also evolved from the benefit of practice.

The new BS in Architecture and Sustainability degree will commence in Fall 2011 with the first class of third year students. It was developed to address the increased interest in the relationship between the built and natural environments and will allow students with architectural talents the opportunity to further develop those abilities while preparing for entry into the workforce or admittance to a Master of Architecture program.

In general the curriculum, content, and instructional methods are satisfactory as reported by students, alumni, employers, advisory board members and faculty in Section 2 of this report. It is expected that as the new BS in Architecture and Sustainability degree is further developed and implemented, that sustainability concepts and theories will further permeate all courses in all three of the degrees offered.

Student comments indicate that all faculty members are knowledgeable and skillful architects and/or facility managers. There are concerns regarding individual faculty members that include: inability to effectively communicate material and poor organization. Others are concerned that more faculty with facility management backgrounds would enhance the facility management program.

5.G. Composition and Quality of Faculty

To date all faculty members are licensed architects, with one faculty member also being a Certified Facility Manager. All members have been or are currently practicing architecture and bring a real world perspective to the classroom. All are involved in professional organizations and strive to remain current with the latest technological and practice oriented developments. In addition to professional expertise, maintaining current and relevant teaching and learning methodologies is valued and demonstrated through participation in continuing education on an annual basis.

With the retirement of one faculty member, who is currently half time, after Fall 2011, the program area intends to hire a new faculty member that will complement the skills and professional interests of current faculty members. The department seeks to hire individuals who are committed to teaching, dedicated to academia, and able to enhance our vision of providing relevant architectural and facility management education.