STUDENT LEARNING ASSESSMENT REPORT

PROGRAM: BS Information Technology (IT)

SUBMITTED BY: Diane Murphy
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EXECUTIVE SUMMARY

Marymount's Information technology (IT) program offers a solid foundation of knowledge across the system life cycle — defining requirements, developing software, administering and securing a computer network, and successfully managing IT projects. The curriculum addresses hardware, software, databases, networks, security, quality assurance, and project management. Students will focus in one of the following specialty areas:

- Applied IT — for students who wish to study computers in the context of an application area, such as biology, education, or graphic design
- Computer Science — for students who would like to design and build software products or design and build complex, secure networks
- Data Science - for students who wish to develop knowledge, skills, and abilities to collect, store, find, and interpret "big data"
- Forensic Computing — for students who wish to investigate computer crimes and prepare evidence for use in a court of law
- Health IT — for students who aim to work in the health care industry, using technology to improve patient care
- Information Systems — for students who wish to design support networks, provide technical support to system users, and design and manage websites, usually in a business context
- Interactive Media — for students who would like to design websites using audio and video components
- Networking and Cybersecurity — for students who wish to specialize in network administration and the protection of today's computer systems.

Learning Outcome	Year of Last Assessment	Assessed This Year	Year of Next Planned Assessment
Build a broad knowledge of information technology, allowing students to function as IT professionals who can successfully analyze problems and implement IT solutions to these problems both in an internship and in a job after graduation.	2012-2013		2015-2016
Build specific skills in a segment of the information technology field (such as software testing) allowing students to compete successfully for internships and entry-level jobs and to work effectively in these areas.	**2011-2012**	**XX**	
Become proficient in at least one programing language, but be able to learn additional programing languages based on a knowledge of programming principles, and participate in programming competitions	2012-2013		2015-2016
Become proficient in a variety of skills such as computer repair, computer networking, database design, and cybersecurity through a combination of theoretical knowledge and hands-on experiences sufficient to obtain industry certifications.	2012-2013		2015-2016
Conduct a capstone project that includes research in a an aspect of information technology (hardware, software, data, or information security) and apply that research to a current information technology concern for businesses or society in general; compose and construct written documents and give presentations articulating business needs, identifying solutions, and considering decision implications, with arguments backed by data.	**2011-2012**	**XX**	
Compose and construct written documents and give presentations articulating business needs, identifying solutions, and considering decision implications with arguments backed up by data.	**2011-2012**	**XX**	
Work successfully in a team environment both as a team leader and as a participant of a team, and communicate effectively with team members who do not have a technical background.	2013-2014		
Conduct themselves as responsible professionals and global citizens who are aware of ethical issues and societal needs and who can determine the most ethical response to common dilemmas in the field.	2013-2014		

Possess the knowledge and skills required to pursue life-long learning, including advanced degrees in areas relating to information technology and to adapt to an ever-changing, global technological and business environment.	2013-2014		

The Marymount IT programs continue to grow and attract more students, particularly from community college. Many new students are coming because of high levels of satisfaction of our existing students and alums. In 2014-15, S IT was the third largest undergraduate program with some 180 students in spring 2014. The percentage for all assessments was raised to 80% to reflect the quality requirements for all students.

The first learning outcome assessed was the ability to develop skills to obtain good internships and jobs. Students did find internships and jobs while at the university. Students were confident in their skills including writing and other soft skills. This helped them apply and win positions. To increase the confidence in obtaining a job on graduation, we will increase our focus on finding and promoting opportunities through our alums, adjuncts, and business contacts. We with teach students to network and give them networking opportunities in the IT seminars (IT223, IT323 and IT423). Writing remains a focus and we will continue to reinforce this in the writing intensive course s(IT210, IT355 and IT489) as well as the development of a writing portfolio in the senior seminar, IT489

The second outcome assesses was the ability to conduct self-paced research as part of the IT capstone course. The proposal writing process has improved since the last assessment in 2011-2012 and now meets the 80% standard. The research report, and the student's confidence in doing research, however, did not meet the standard, with about 25% of students leaving the university lacking confidence in their research abilities. The IT Capstone Project, is not entirely successful and anecdotal evidence seems to indicate that many students are not interacting with their subject matter expert early in the process. In fall 2015, we will begin to survey the subject matter experts to determine the degree of interaction and try to correlate this with success in the project. If there is a correlation, we will work at improving this interaction.

The third learning outcome assessed was the student's ability to communicate effectively, both orally and in writing. By the end of their program of studies, students' behavior met the standard for both written and spoken communication. However, they do not meet required standards in the second year of the program. There was considerable improvement in the IT210 results over the 2011-2012 school year. Therefore, we did make some progress. Writing intensive courses are included in the program and this, together with the addition of the annual seminars, improved the writing and research skills of IT students once students have been exposed to the entire sequence of courses. Of particular concern is the large number of transfer students in the program who have not benefited from Marymount's composition program. There are four professors in the department who have taken the Writing Intensive Workshop and they continue to work together to improve the writing outcomes for each of their courses. We need to work on a transition plan for these students.

Describe how the program's outcomes support Marymount's mission, strategic plan, and relevant school plan:

The BS in Information Technology program is fully compliant with the mission of Marymount University and the outcomes are based on both the foundation in arts and sciences (needed for a well-rounded education) and career preparation (broad IT knowledge, specialized knowledge, and specific skill proficiency leading to certifications and life-long learning). The program recognizes the new job skills required in the profession and offers specialized courses (e.g., cybersecurity, mobile app development, software testing, health information technology) to increase each student's success in getting a good internship, first job, and ultimately a career in the field. These job skills are matched with current industry certifications such as A+, Net+, and Security+ from CompTIA, ITIL, and the Certified Software Tester (CSTE) from the QAI Global Institute. The program also includes “soft” skills that are commonly requested by today’s employers (communication skills, problem solving, writing proficiency, and the ability to work in teams). Finally, it recognizes the changing nature of the IT field and hence the need for life-long learning.

President hank has articulated his "vision" for the university. The items in the vision statement that apply specifically to the undergraduate IT program include:

Academic Excellence

- Emphasize inquiry learning at all levels and provide students and faculty with opportunities for research collaboration.
- Ensure a personalized education through small classes and faculty/student collaboration.
- Integrate an emphasis on ethics throughout the curriculum.
- Encourage cross-disciplinary collaboration.

Inquiry learning is a key in the IT program and all professors (full-time and part-time) are encouraged to use classroom time, in part, for hands-on application of the subject matter through individual and group assignments. Students are also encouraged to develop their skills outside the classroom through membership of clubs such as the Cybersecurity Society, the UPE Honors Society, The Cyber Competition Group, the ISACA Student Group, and the Mobile App Development Special Interest Group. Hands-on self-learning outside the classroom is also facilitated by the ability for students to acquire software for use on their own machines through the department’s Dreamspark license (access to Microsoft software for free) or through open source software recommended by faculty. The department has focused more on research for the past two years and was able to offer paid research opportunities under one of the NSF grants to two senior-level students. Both these students presented their work at the April 2015 Student Research Conference. In addition, two students were hired to support the three Summer Technology Institutes, which were offered for middle and high school students this summer in the fields of mobile app. development and cybersecurity.

We constantly evaluate the subject matter covered in the program to ensure that we match the knowledge and skills required in the current work place, including new models such as the Department of Labor Competency Models (Information Technology and Cybersecurity), the National Initiative for Cybersecurity Education (NICE) framework, and the ABET Information Technology accreditation standard.

Ethics is central to several courses beginning in the freshman year, both business ethics and IT professional ethics. Cross-disciplinary collaboration is encouraged and both Graphic Design majors and Mathematics majors have IT courses in their programs providing opportunities

for students to work across disciplines. The IT students also have at least three courses in combination with other students in the SBA, enabling them to get a solid business background before entering the workplace. These common courses also provide opportunities for students to do group work with students outside their discipline.

Community Engagement

- Make its facilities and expertise available to support and serve the community.
- Instill in its students and the entire University community a commitment to giving back through good citizenship, civic engagement, and volunteer service.
- Actively engage Marymount alumni in serving current students and creating a strong network of support for one another.

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IT is now essential to all organizations and IT students are encouraged to serve the community through their own individual activities, jointly through club activities, and as assigned on projects in various classes such as in IT125, Web Development, or in their capstone project IT489, IT Capstone Project. We have now fully implemented the series of IT seminars (sophomore, junior, and senior) each semester, which provide an environment for volunteer opportunities, discussion, guest speakers, and the introduction of new technology. Students are encouraged to do projects that support the campus, particularly in Cybersecurity Education Month (October) and in Computer Science Week (the first week of December). Students are encouraged to attend SBA social events and to participate in events with outside speakers. IT faculty and students also participate in a continuing education program for seniors at the Falls Church Community Center. In May 2015, we provided five 3-hour sessions in a series entitled “Using the Internet Safely”. This was highly successful and faculty and students will provide an additional series of 3 sessions on using mobile apps for seniors in November 2015.

We have a close relationship with IT alumni, particularly those that have graduated over the past ten years. Several Marymount alumni act as tutors for the difficult IT courses such as IT230, Advanced JAVA Programming, and IT370, Computer Forensics. In addition, the IT alumni remain in close contact with the faculty and regularly attend events such as seminars, networking events, and participate in the honors society, UPE, events. These alumni notify us of job opportunities and internships in their workplaces and visit campus to participate in networking events. They are a primary source of jobs for our students.

One of our initiatives in the past two year was to encourage students to attend professional meetings in the Arlington area. We have associated with two major professional organizations, ISSA and ISACA. 5 – 8 faculty and students and faculty attend the monthly ISSA cybersecurity meetings and this has resulted in a Marymount student receiving an ISSA scholarship. Marymount will host the December 2015 monthly meeting, bringing about 100 cybersecurity professionals to the university. We have also developed a relationship with ISACA who generously sponsored one of the Cybersecurity Society events, providing speakers, food/drinks, and a door prize. ISACA has just authorized an official

Student Chapter here at Marymount. In Spring 2015, we developed a relationship with NANOG and have acquired "scholarships" to attend a conference in Montreal, Canada in Fall 2015, all expenses paid. Four students will participate in this together with a faculty member.

Student Profile

- Achieve improved gender balance
- Enroll and serve a geographically, racially, ethnically, and religiously diverse student body

One of the main concerns in the IT education field is the lack of underrepresented minorities (including women, African-Americans, Hispanics). Most computer science and IT programs at other universities have fewer than 10% female participation. Marymount has close to 25% female students and has a good representation of African-Americans and Hispanic students. Many of these students are transfer students from the Northern Virginia Community College system with which we have good relations at the faculty level. The program also includes a number of international students and several athletes. The program supports many veterans, many of whom come in as transfer students. The IT faculty is active in recruiting underrepresented minorities to Marymount, working closely with Arlington Public schools, Bishop O'Connell High School, and the Marshall Academy in Fairfax County, for example. The summer institutes were another mechanism for this with some 75 students coming to campus in July 2015.

We ran our second global IT event in March 2015 and several undergraduate students came on the trip to Estonia and Finland. They are still talking about it!!

Provide a brief description of the assessment process used including strengths, challenges and planned improvements and provide evidence of the existence of a culture of continuous improvement based on assessment:

In 2014-15, the assessment process was successful and undergraduate faculty responses (full-time and part-time) were complete. There was an issue getting internship information from Career Services, which limited our ability to use internship feedback in our outcomes assessments.

Outcome assessment techniques were discussed early at a department meeting of undergraduate faculty. The plans from the previous assessment were discussed, and plans put in place to focus on both teamwork and ethical decision making in the designated courses. Outcomes and their measurement for the 2014-15 outcomes assessment were discussed and data collection requirements identified.

A number of other initiatives were also identified as part of our continuous improvement process including revising scheduling to meet the additional number of working students, the development of a new specialty in application security, and the need for a specific mobile application course for spring 2015.

Describe how the program implemented its planned improvements from last year:

Outcome	Planned Improvement	Update *(Indicate when, where, and how planned improvement was completed. If planned improvement was not completed, please provide explanation.)*
Work successfully in a team environment both as a team leader and as a participant of a team, and communicate effectively with team members who do not have a technical background.	Teamwork will be emphasized each semester in one or more IT courses and in the planned three one-credit seminars that have recently been added to the IT curriculum (sophomore, junior, and senior year). A survey will be made of all IT and MSC courses to identify the individual team work activities in each.	The courses in the program were inventoried to identify which courses included some aspect of formal teamwork. It was found that 11 out of 17 courses (65%) involved at least one group project. In 3 of these courses, students work with other business students and so get experience at communicating with non-technical people. A unit on how to work effectively on a team was added to the sophomore and junior seminars (one emphasizing team membership, the second involving team leadership).
Conduct themselves as responsible professionals and global citizens who are aware of ethical issues and societal needs and who can determine the most ethical response to common ethical dilemmas in the field.	Ethics will be more formally emphasized in two introductory IT classes, IT110, Information Technology in the Global Age and IT120, Cybersecurity Principles, as well as in the three IT seminars (IT223, IT323, and IT423). This will provide a greater opportunity to discuss ethics in the context of the information technology field, particularly in cybersecurity. There will be an increased focus on understanding the rationale for an ethical decision.	An inquiry learning activity, emphasizing making ethical decisions was added to IT120, Cybersecurity Principles, a freshman course for all students. Discussion of ethical dilemmas as well as differentiating between facts and opinions, are also added to the junior and senior seminars.
Acquire the knowledge and skills required to pursue life-long learning, including advanced degrees in areas relating to information technology and to adapt to an ever-changing, global technological and business environment.	More emphasis will be placed on the need for certifications and some “study groups” will be formed around the certification process. More Marymount University groups and events are being planned with a series of workshops beginning in Fall 2014.	Faculty worked with the Cybersecurity Society, to hold additional out-of-classroom sessions to support certifications, The initial focus was on the Certified Ethical hacker (CEH) certification. Other student organizations were planned and will come live in the 2015-16 academic year. This is in part possible because of the increasing

		number of students in the program (180 in spring 2015).

Provide a response to last year's University Assessment Committee review of the program's learning assessment report:

The review of last year's assessment report by the University Assessment Committee was generally positive, with six of the critical areas being met and one partially met. One measure (students going to graduate school) was considered only partially met because of the technique used. This outcome will be measured differently next time it is assessed.

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Outcomes and Past Assessment

Learning Outcome 1:

Build specific skills in a segment of the information technology field (such as software testing) allowing students to compete successfully for internships and entry-level jobs and to work effectively in these areas.

Is this outcome being reexamined? X☐ Yes ☐ No

When assessed in 2011-12, students were confident in their ability to find a job and succeed in a job in their field based on the results from the Graduating Student Survey. Most students were able to find good internships in a very competitive work environment, although they did have to spend more time using personal contacts and networking to identify such opportunities. Several were able to convert these internships to full-time jobs. Since that time, the information technology field has changed, with new technologies and new jobs being created, particularly in the areas of cybersecurity and data science. To meet these needs, two new specialties were developed: Networking and Cybersecurity in 2012 and Data Science in 2014.

Assessment Activity

Outcome Measures *Explain how student learning will be measured and indicate whether it is direct or indirect.*	**Performance Standard** *Define and explain acceptable level of student performance.*	**Data Collection** *Discuss the data collected and student population*	**Analysis** *1) Describe the analysis process. 2) Present the findings of the analysis including the numbers participating and deemed acceptable.*
Direct: Written communication is one of the most desired capabilities for an IT professional. This outcome measures a student's ability to develop a quality white paper on a specific topic assigned by the instructor. (Course: IT355,	80% of students achieve a score of 30 or more (moderately successful to very successful) on the rubric for the white paper. The maximum score is 40	This is a writing intensive course and the students submit draft and final versions of the papers. The papers are reviewed using Rubric 1 (see appendix) and mimic the review process in a work environment.	Of the 60 students in the class in the academic year (fall, spring, and summer), 19 were very successful (score between 35 and 40) and 30 were moderately successful (scored between 30 and 34). The number of students passing the outcome was therefore 81.7%. The standard was met.

Software Testing, Documentation and Quality Assurance)			
Indirect: The number of students who obtained a position (internship, coop, or job) in the cybersecurity field after completing the Spring 2015 culminating course in the networking and cybersecurity specialty (IT390, Cybersecurity, Attack and Defend).	80% of students who were looking for a position in the cybersecurity field were able to get such a position in a reasonable timeframe.	Students who completed the class responded to a survey from the Program Director in June 2015.	Of the 14 students in the class, 12 responded to the survey (the other 2 were not in the job market at this stage). 3 were already employed in the field and expected to get a promotion based on their degrees being completed. 1 student obtained a coop at the Defense Intelligence Agency and a second obtained an internship at the FBI. A third student reported a summer job with a commercial cybersecurity organization. 3 students reported finding permanent jobs within 4 weeks of graduation in companies such as Freddie Mac and Booz Allen. 1 student went on to study cybersecurity in graduate school. 83% of students were active in the field within 4 weeks of graduation. The standard was met.
Indirect: From the Graduating Student Survey, each student felt that they could find a job and succeed in a job in the field.	80% of all students feel that that can find a job and succeed in a job in their field	Results are taken from the 2014-15 Graduating Student Survey prepared by the Office of Planning and Institutional Effectiveness.	80% of IT students felt that they could find a job and 80% felt that they could succeed in that job. The sample size was 30 students. Students did meet the 80% standard in this area. However, the rate was considerably lower than the2011-2012 survey where the rate was 93.3%. It is thought that this reflects the concerns over the economy and the changing field of IT.

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Interpretation of Results

Extent this learning outcome has been achieved by students *(Use both direct and indirect measure results)***:**

IT students were generally confident in their ability to find jobs, and those specializing in Networking and Cybersecurity were able to effectively find good jobs in the "hot" area of cybersecurity. Writing, often a discriminator in job selection, continues to be stressed in the program.

Program strengths and opportunities for improvement relative to assessment of outcome:

The job results support our approach of providing students with both a broad education in information technology, but allowing them to specialize in fields that are needed in the workforce. It is important that we continue to introduce specialties, which provide entry into jobs that are in demand as the information technology field grows.

The addition of the IT seminars (IT223, IT323, and IT423) has helped students understand the importance of technical and non-technical skills (such as writing and presentations) in the workplace and to focus on the skills that differentiate them when searching for a good job in the workplace. Most students taking the IT355 course had taken either the IT323 or IT423 IT seminars in the previous semester. This has helped them focus more on the soft skills and not just on being "techies".

Discuss planned curricular or program improvements for this year based on assessment of outcome:

We will propose a new specialty in Application Security to meet the increasing workforce demand in the cybersecurity area. Although network security is a major part of the workforce, and will continue to be so, other parts of cybersecurity are being developed and application security will open up many new possibilities for employment in government and industry.

To increase the confidence in obtaining a job on graduation, we will increase our focus on finding and promoting opportunities through our alums, adjuncts, and business contacts. We with teach students to network and give them networking opportunities in the IT seminars (IT223, IT323 and IT423).

Writing remains a focus and we will continue to reinforce this in the writing intensive courses (IT210, IT355 and IT489) as well as the development of a writing portfolio in the senior seminar, IT489.

Learning Outcome 2: **Conduct a capstone project that includes research in a an aspect of information technology (hardware, software, data, or information security) and apply that research to a current information technology concern for businesses or society in general; compose and construct written documents and give presentations articulating business needs, identifying solutions, and considering decision implications, with arguments backed by data.**

Is this outcome being reexamined? X ☐ Yes ☐ No

If yes, give a brief summary of previous results (including trends) and any changes made to the program.

While in 2011-12 students rated higher on their ability to do research in the Graduating Student Survey, they did not meet the requirement for successful completion of the research proposal or the research project report. Since that time, we have added persuasive writing to the IT355 course and have tried to emphasize research on a specific project in the three IT seminars.

Assessment Activity

Outcome Measures *Explain how student learning will be measured and indicate whether it is direct or indirect.*	**Performance Standard** *Define and explain acceptable level of student performance.*	**Data Collection** *Discuss the data collected and student population*	**Analysis** *1) Describe the analysis process. 2) Present the findings of the analysis including the numbers participating and deemed acceptable.*
Direct: Ability of student to select a topic and effectively prepare a proposal in IT489, IT Capstone Project , course.	80% of students meet the academic standard of 27 out if 35 (80%) in the rubric used to evaluate the proposal for IT489, IT Capstone Project.	Data was collected from the common rubric developed by all professors who supervise student in the capstone course, see Rubric 2.	Of the 60 students in the class in the academic year (fall, spring, and summer), 18 were very successful (score between 35 and 40) and 39 were moderately successful (scored between 30 and 34). The number of students passing the outcome was therefore 80%. The standard was met.
Direct: Ability of the students to successfully complete the selected project	80% of students meet the academic standard of 52 out if 64 (81%) in the rubric used to assess the product (report and presentation) for IT489, IT Capstone Project.	Each project (report and presentation) was assessed by two professors, using the Rubric 3 in the attachment.	Only 24 of the 60 students (70%) got 54 or more when the scores from the two professors were added together. The standard was NOT met.

Indirect: Confidence of students in their ability of students to conduct research.	80% of students are confident in their ability to conduct research to support a position.	Results from the 2014-15 Graduating Student Survey – Evaluation of Preparation conducted by the Office of Planning and Institutional Effectiveness	According to the survey results. 73.3% of the 30 recipients felt their ability to conduct research was good or excellent The standard was NOT met.

Interpretation of Results

Extent this learning outcome has been achieved by students *(Use both direct and indirect measure results)***:**

The proposal writing process has improved and now meets the standard. The research report, and the student's confidence in doing research, however, did not meet the standard, with about 25% of students leaving the university lacking confidence in their research abilities.

Program strengths and opportunities for improvement relative to assessment of outcome:

It is believed that adding the persuasive writing components (the white paper and the research proposal) to the previous writing intensive course (IT355) helped students to prepare better proposals. However, students do not seem to be successful in independent research to support a position, even in a subject selected by them.

Discuss planned curricular or program improvements for this year based on assessment of outcome:

IT489, the IT Capstone Project, is essentially an experiential learning activity with students initiating interaction with their designated subject matter expert. Anecdotal evidence seems to indicate that many students are not interacting with their subject matter expert early in the process, and this is impacting their ability to research their topic effectively. In fall 2015, we will begin to survey the subject matter experts to determine the degree of interaction and try to correlate this with success in the project. If there is a correlation, we will work at improving this interaction.

Learning Outcome 3: **Compose and construct written documents and give presentations articulating business needs, identifying solutions, and considering decision implications with arguments backed up by data.**

Is this outcome being reexamined? X☐ Yes ☐ No

If yes, give a brief summary of previous results (including trends) and any changes made to the program.

In the last assessment of this learning objective (2011-12), by the end of their program of studies, students' behavior met the standard for both written and spoken communication. However, they do not meet required standards in the second year of the program.

We have been preparing our freshman students for writing assignments in an earlier courses (particularly IT120); however, many of the transfer students start with IT120, Software Engineering, as this writing intensive course is not transferable. The syllabus has been changed to allow for a short writing assignment to be submitted and evaluated before the first major writing assignment.

Assessment Activity

Outcome Measures *Explain how student learning will be measured and indicate whether it is direct or indirect.*	**Performance Standard** *Define and explain acceptable level of student performance.*	**Data Collection** *Discuss the data collected and student population*	**Analysis** *1) Describe the analysis process. 2) Present the findings of the analysis including the numbers participating and deemed acceptable.*
Direct: IT210, Software Engineering, is the first writing intensive course in the program. Students prepare a requirements document for a small application and this is rated by the professor who has attended the required "Writing Intensive Workshop."	80% of students receive a good or excellent rating (greater than 8 out of 10) on their first major writing assignment, a requirements analysis.	Data is taken from the assignments posted on Blackboard together with the critical evaluation by the instructor. The draft and final documents are both posted and the score of the final document is in the range 1 through 10,	There were 60 students in total (41 in fall 2014, in 2 sections taught by different professors, and 19 students in Spring 2015). Of these only 42 (68.3%) met the great or excellent rating on their first major writing assignment in this course, even after detailed comments from the instructor. The standard was NOT met; however, there was an improvement from the previous outcomes assessment in 2011-12 (57%).

Indirect: An internship supervisor rates an intern as possessing the skills of written and spoken communication necessary to succeed professionally	80% of all supervisors of IT interns answered that they agree or strongly agree to the questions "The intern possess the skills in written communication necessary to succeed professionally" and "The intern possess the skills of spoken communication necessary to succeed professionally".	Data is taken from the Internship Program Semester Reports. The data is from the supervisor evaluation of the students on 1. Written communication and 2) oral communication	There were 14 IT students taking an internship in Fall 2014, 8 in Spring 2015 and 16 in Summer 2015 (total 37 students). All students successfully passed the internship. The results showed that 82% of the internships received an agree or strongly agree rating on the supervisor evaluation for oral communication and 92% for written communication.. Surprisingly, written results were better than verbal results. This standard was met.
Indirect: From Graduating Student Survey, ensure that students feel confident about their ability to develop written documents and oral presentation.	80% of students believe that they will make good or excellent written arguments and oral presentations.	Results of the Graduating Student Survey for 2014-15 were prepared by the Office of Planning and Institutional Effectiveness.	86.7% of students rated their ability to deliver a coherent written argument as great or excellent while 83.3% of students rated great or excellent their ability to deliver a coherent oral presentation. The standard was met.

Interpretation of Results

Extent this learning outcome has been achieved by students *(Use both direct and indirect measure results)***:**
By the end of their program of studies, students' behavior met the standard for both written and spoken communication. However, they do not meet required standards in the second year of the program. There was considerable improvement in the IT210 results over the 2011-2012 school year. Therefore, we did make some progress.

Program strengths and opportunities for improvement relative to assessment of outcome:
Writing intensive courses are included in the program (one in the sophomore, one in the junior year, and one in the final year). This has, together with the addition of the annual seminars, improved the writing and research skills of IT students once students have been exposed to the entire sequence of courses. Of particular concern is the large number of transfer students in the program who have not benefited from Marymount's composition program.

Discuss planned curricular or program improvements <u>for this year based on assessment of outcome:</u>

There are four professors in the department who have taken the Writing Intensive Workshop and they continue to work together to improve the writing outcomes for each of their courses. We need to work on a transition plan for these students.

In the internship ,it was surprising that verbal skills were evaluated by supervisors as lower than written skills. A study will be made of verbal skills development throughout the program and an examination of where additional practice of verbal skills can be added.

Appendices

1. *Rubric for IT355, Software Testing, Documentation and Quality Assurance, Requirements Specification*

Achievement	Wgt	Not Complete 0	Minimal 1	Limited 2	Satisfactory 3	Exemplary 4
Conformance to Standards	1	No standard used	Standard cited but not followed	Standard cited but not followed in detail	Standard cited and followed for the most part	Standard cited and followed exactly
Overall Description	1	No overall description present	Short (one or two sentences) at a very high level	Present but does not adequately cover the entire scope of the project	Covers the entire scope of the project but not expressed	Complete and well written
Specific Requirements	5	No specific requirements listed	Requirements are listed at a very high level and lack specificity	Specific requirements are present but does not adequately cover the entire scope of the project	Covers all the specific requirements but not expressed well	Complete, all requirements specified, and well written
Expression	1	No significant text	Very difficult to understand	Hard to follow or poor word choices	Mostly easy to read and understand	Clear and concise
Tone	.5	No significant text	Tone not appropriate for technical writing	Tone somewhat unprofessional	Mostly professional tone	Tone is consistently professional
Organization	1	No significant text	Very hard to find information	Information difficult to locate	Can find information with slight effort	All information is easy to find and important points stand out
Layout	.5	No significant text	Layout makes it harder to understand and use the document	Layout is inconsistent or not visually appealing or supportive	Layout is reasonable, consistent and generally helpful	Layout is attractive, consistent, and helps guide the reader
Late Submission	-10	No submission	More than one week late	One week late	Within 48 hours of due date	Within 24 hours

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2. Rubric for Research Proposal in IT489

Criterion	Substantially Developed (4)	Moderately Developed (3)	Minimally Developed (2)	Inadequate (1)	Not submitted (0)
1. Quality of problem/question	Has a clearly stated question	Has defined the question somewhat but not complete	Has identified a broad area but no clear focus for a semester length project	Topic identified is too broad to provide a basis for the project	No submission or untimely submission
2. Project Plan (including schedule)	Identifies each step of the project together with the timelines	Identifies steps but does not include realistic timelines	Identifies steps but does not include any timelines	Does not adequately define steps	No submission or untimely submission
3. Literature Coverage	Effectively defines the type and source of literature required	Defines the type of literature required for the project and not the source	Defines some of the literature required for the project	Does not identify literature coverage in any detail	No submission or untimely submission
4. Likely Outcome	Defines the likely outcome of the project in detail	Defines the likely outcome of the project in some detail	Defines some the likely outcome of the project but not in any detail	Does not defines the likely outcome of the project in any detail	No submission or untimely submission
5. Knowledge being applied	Defines the knowledge gained in the program and used in the project in detail	Defines the knowledge gained in the program but incomplete	Defines some of the knowledge gained in the program in some detail	Project plan does not define the knowledge gained in the program that is used	No submission or untimely submission
6. Risk factors	Defines all of the risk factors associated with the project	Defines some of the risk factors associated with the project	Defines a small number of the risk factors associated with the project	Does not adequately defines all of the risk factors associated with the project	No submission or untimely submission
7. Writing Style	Very well written and well organized	Reasonably well written and well organized	A few issues in the writing and/or the organization	Poorly written and organized	No submission or untimely submission

TOTAL: _____/_____

3. Rubric for IT489 It Capstone Project

Criteria	Does Not Meet Expectations (1)	Proficient (2	Very Good (3)	Outstanding (4)
1. Problem/Question	Student(s) relied on teacher-generated project or developed a topic requiring little creative thought.	Student(s) constructed a project that lends itself to readily available results	Student(s) posed a focused project involving them in challenging research.	Student(s) posed a thoughtful, creative project that engaged them in challenging research.
2. Information Seeking/Selecting and Evaluating	Student(s) did not gather any information that shows significant research activity.	Student(s) gathered information from a limited range of sources and displays minimal effort in selecting quality resources	Student(s) gathered information from a variety of relevant sources--print and electronic	Student(s) gathered information from a variety of quality electronic and print sources, including appropriate library databases. Primary sources were included.
3. Analysis	Student(s) conclusions simply restated information. Conclusions were not supported by evidence.	Student(s) conclusions could be supported by stronger evidence. Analysis could be deeper.	Student (s) product shows good effort was made in analyzing the evidence collected	Student(s) carefully analyzed the information collected and drew appropriate conclusions supported by evidence.
4. Synthesis	Student(s) work is not logically or effectively structured	Student(s) could have put greater effort into organizing the product	Student(s) logically organized the product and made good connections among ideas	Student(s) developed appropriate structure for communing results, incorporating a variety of quality sources. Information is logically organized with smooth transitions.
5. Documentation	Student(s) clearly plagiarized materials.	Student(s) need to use greater care in documenting sources. Documentation was poorly constructed or absent.	Student(s) documented sources with some care, Sources are cited. Few errors noted.	Student(s) documented all sources, including visuals, sounds, and animations. Sources are properly cited. Documentation is error-free.
6. Presentation	Student(s) showed little evidence of thoughtful research. Product does not	Student(s) needs to work on communicating more effectively	Student(s) effectively communicated the results of research.	Student(s) effectively used appropriate presentation tools to convey their conclusions and

	effectively communicate research findings.			demonstrated thorough, effective research techniques.
7. Grammar and Spelling	Substantial number of errors	Few errors	Errors do not interfere with meaning	Error free
8. Timeliness	Submitted three or more days late	Submitted two days late	Submitted one day late	Submitted on time
Total				