

**Eastern West Virginia
Community & Technical College**

Program Review

**Information Technology
Associate in Applied Science**

Fall 2017

Approved by Assessment: 6/12/18

Approved by LOT: 6/19/2018

Approved by Cabinet: 7/10/2018

Approved by Board of Governors: 9/19/18

Institution: Eastern West Virginia Community and Technical College
Program (Degree and Title): Information Technology, Associate in Applied Science

Program Overview

Created in 2009, the Associate in Applied Science Degree for the Information Technology Program originated from existing Information Technology courses offered through Eastern and WVExcite. Expectations suggest students achieving this degree will be able to better satisfy the needs of employers within the local area. Prior to 2009, Eastern assisted five students to successfully complete the brokered WVExcite program. Those students secured employment within the field of Information Technology. The partnership with WVExcite, the experience of offering IT courses, the needs of local employers, and the success of IT graduates provided an opportunity for the college to create a broad based IT program.

Local employers helped to foster the development of the Information Technology program. The goals of the program are to give students the skills to work in information technology positions and to respond effectively to the needs of employers. Graduates of the program will be fully prepared to perform the duties of IT professionals.

Graduates with an Associate Degree in Information Technology are able to gain national employment in a variety of diverse businesses and organizations. This program addresses an unmet labor need for many local businesses and organizations. These businesses include food processing, cabinet manufacturing, healthcare, banking, educational institutions, high tech companies, and other service organizations.

Please see program description in Appendix I

Synopses of significant findings, including findings of external reviewer(s):

Significant features of the Information Technology program include its customized, broad based curriculum. The employers' needs serve as the basis of the curriculum. Another significant feature is its flexibility for expansion through utilization of program elective courses. Currently, the program requires students to select an elective programming language and four IT electives from a defined list of courses. Adding new courses to the list of electives that are associated with the program takes place contingent upon employers' requests for certain skill sets. The availability of new skill sets afford a better response to the needs of employers. This flexibility allows the expansion of the program without restructuring the entire program.

Based on the existing data for the past five years, at least two of the seventeen program graduates continued beyond the Associate degree. Several graduates of the program

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completed a second Associate degree in Business Management, Accounting and/or other certificates such as Computer Applications Specialist.

No external review took place for this program. However, administration of the NOCTI test and the ETS Proficiency Profile serve as external assessment sources of the program's efficacy. Eight (8) IT students took the NOCTI test from 2015 to 2017. Results revealed those students scored 67 percent (cut score for this test is 62 and the national average score is 74.1). Please see tables One (ETS Results) and Two (NOCTI Results) in the "Summary of Assessment Section."

In fall 2015, the college received approval as a testing site for the Microsoft Technology Associate (MTA) certification. Six students took the exams and all six received the certification. The cost of the MTA exam, \$50, is included in the tuition of the IT courses. Future expectations depict the number of students seeking and achieving certification will continue to grow.

The IT program does not have full-time faculty. The revenues generated by the tuition exceed expenses, thus leaving the college with a positive net income. The IT program currently utilizes three adjunct faculty for all of the core and elective courses. In fall 2013, the college hired a full-time faculty in Information Technology. This IT faculty worked for the college for two years and developed several of the IT courses.

Based on IBM's request, the college has been offering C# course once every two years. The college has met with IBM representatives multiple times to explore opportunities for Eastern students.

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Mapping of the program’s outcomes and NOCTI’s outcomes:

NOCTI Outcomes		1	2	3	4	5	6	7	8	9	Eastern NOCTI Avg.	NOCTI National Agv.	Outperformed	Underperformed
BANN Title														
F14A	Professional Standards, Ethics, and Business Practices									x	83	81.8	1.2	
F14B	General Computer Knowledge and Concepts	x	x			x	x	x			53	73.3		-20.3
F14C	PC (Personal Computer) Hardware Knowledge			x							54	65.4		-11.4
F14D	PC (Personal Computer) Software Knowledge				x						76	85.3		-9.3
F14E	Networking and Data Communications								x		64	67.8		-3.8
F14F	Security										65	82.1		-17.1
PF10	NOCTI Accounting (Weighted Average)										67	74.1		-7.1
Program Outcomes -														
1	Apply basic system administration and scripting techniques													
2	Apply the foundation of management information systems													
3	Perform routine maintenance and repairs on the personal computer (PC)													
4	Install and troubleshoot operating systems													
5	Design an interactive website													
6	Demonstrate knowledge regarding information systems													
7	Design and manage a database													
8	Demonstrate basic knowledge of networking													
9	Demonstrate a basic knowledge of business organization and procedures													
10	Demonstrate effective communication skills (Assessed through Gen. Ed. Courses and ETS)													

Based on the students’ performance in NOCTI’s test, students can benefit by revising the program and adding a Cyber Security course to the curriculum. Please see the “Final Recommendation” section for additional information. Additionally, substituting one or two of the CIS courses with IT courses would improve general computer knowledge of the students.

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Course level assessment:

Nine program courses were assessed during this review period.

Year	Semester	Sbj.	Crs. #	# Of Students	Crs. Avg.	Target for Assessed Outcomes	Performance +/-	% of Assessed Outcomes	Action Plan / Notes
2016	Fall	CIS	121	7	83%	75%	8%	100%	No Action is needed - focus on unmet outcomes
2015	Fall	CIS	119	12	61%	75%	-14%	85%	Performance improved in 2016 and 2017
2016	Fall	CIS	119	15	84%	75%	9%	100%	Performance improved since previous year - focus on unmet outcomes
2017	Spring	CIS	119	21	85%	75%	10%	100%	Performance improved since previous year
2015	Spring	IT	134	5	89%	75%	14%	100%	No Action is needed - focus on unmet outcomes
2018	Spring	IT	228	6	64%	75%	-11%	100%	Low enrollment course
2017	Fall	IT	233	12	42%	75%	-33%	11%	Only one outcomes was assessed this period. No actions needed. Assess all outcomes next time the course is offered
2014	Summer	BUS	101	11	89%	75%	14%	79%	Outcomes of this course were reduced to simplify assessment
2012	Fall	BUS	101	11	88%	75%	13%	12%	Outcomes of this course were reduced to simplify assessment

Sample / Summary of Assessment of General Education Courses:

Semester	Course Assessed	# of Students	Target for assessed outcomes	Result
Spring 2013	MTH 121	9	75%	25% outcomes met at 75% or above.
Fall 2013	CIS 108	25	75%	91.5% of outcomes met at 75% or above.

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Approved by Board of Governors: 9/19/18

Spring 2013	CIS 108	17	75%	75% outcomes met at 75% or higher
Spring 2014	CIS 108	25	75%	97% outcomes met at 75% or above.
Spring 2013	CIS 108	17	75%	100% outcomes met at 75% or higher
Fall 2013	CIS 108	25	75%	100% outcomes met at 75% or higher
Spring 2014	CIS 108	25	75%	100% outcomes met at 75% or higher
Fall 2014	MTH 115	10	75%	50% outcomes met at 75% or higher
Fall 2015	CIS 114	9	75%	44% outcomes met at 75% or higher
Spring 2012 – Spring 2015	ENL 101	235	75%	71% outcomes met at 75% or higher

No changes is recommended as the result of this assessment. There are several program courses that have not been assessed so far. It is recommended that for the next review cycle, all program courses be assessed regularly.

This program doesn't have full-time teaching faculty and is managed by an administrative faculty who holds a bachelor's degree in Economics and three master's degrees in Business / Finance, Information Systems and Mathematics Education.

Based on the input from the advisory committee and faculty, the college is utilizing TestOut course materials that provide simulation for some of the IT courses.

Comments provided by the internship providers regarding two of the IT interns:

1. Student has been a great help in IT department. Eager to work and learn
2. Student's knowledge of IT is good and growing

Plans for program improvement, including timeline:

Projections indicate the number of graduates of the IT program will remain at a constant rate of three (3) students per year for the next five years. However, the quality of the

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program will improve as Eastern expands its course and program assessment. Program quality will improve as other related AAS programs become more firmly established and the college hires more qualified instructors.

In the 2018 – 2019 academic year, the college plans to apply for the HLC’s approval to offer Business Management and Information Technology programs online. Upon receipt of that approval, the college will be able to offer more IT courses in an online format. This will help program enrollment as well as improve the quality of the program and its associated courses.

To ensure students can be competitive in the IT field, revision of the IT program will replace some of the computer information systems courses with Information Technology Courses. Courses will incorporate more hands-on practice. Assessment of the program reveals IT students can benefit greatly if a cyber-security course is added to the list of core courses. The revision of the IT program for the school year 2018-2019 will include these recommendations. Focusing on industry certification will bolster the quality of the program and help students to enhance their resumes.

Identification of weaknesses or deficiencies from the previous review and the status of improvements implemented or accomplished:

In fall 2014, the College administered the NOCTI test for the first time. These test results gave the college an opportunity to assess the program outcomes. The results helped Eastern to compare its students’ performance with the performance of students from other institutions.

In the past five years, the quality of instruction has improved due to availability of well-qualified instructors. In the past four years, several Business Technologies instructors have received certification in Quality Matters. Instructors from fields such as Business, IT, and General Education are seeking Quality Matters certification in the near future. The college plans to apply Quality Matters standards to online and hybrid courses. The college is currently expanding its partnership with Potomac State College, Franklin University, Frostburg State University, and West Virginia University.

Assessment of the program indicated students could benefit if the “Computer Fundamentals”, a required General Education course, was replaced with a more rigorous and transferable course. As the result of this assessment, the college removed “Computer Fundamentals” from the curriculum and replaced it with “Introduction to Computer Applications and Concepts.”

The college has adopted Cengage textbooks for more than 80% of the program’s courses. In fall 2018, students can pay a flat rate of \$120 per semester to rent up to six eBooks.

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Information regarding this service, known as “Cengage Unlimited”, is provided to all IT students.

Enrollment and Graduates: Five-year trend data on graduates and majors enrolled:

From fall 2012 to spring 2017, seventeen students graduated from the program.

Graduate one: Secured an administrative job. She utilizes her IT skills to perform her duties, although her job is not categorized as an IT job.

Graduate two: Works in a field that does not require an associate degree.

Graduate three: Transferred to West Virginia Wesleyan, graduated with a BS in Computer Science and secured a high-paying job at Alphabet Inc. (Google) in Michigan.

Graduate four: Has moved to Virginia and works in the IT field in Winchester, VA.

Graduate five: Is working in the IT field at Grant Memorial Hospital.

Graduate six: Completed his RBA through Fairmont.

Graduate seven: Is working in an unrelated job that does not require an associate degree.

Graduate eight: Is working in the IT field from home.

Graduate nine: Completed two associate degrees. He has a job related to his other associate degree, which is not IT related.

Graduate ten: Moved to Fairmont. No further information is available about this graduate.

Graduate eleven: Transferred to Potomac State College. He is expecting to complete his BAS degree in IT this spring semester.

Graduate twelve: Is working in the IT field for the school system in Hardy County.

Graduate Thirteen: Is working in a managerial position. However, this position does not require an IT degree.

Graduate fourteen: Is looking for an IT job, but has not been successful so far.

Graduate fifteen: Moved to Virginia. No further information is available.

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Graduate sixteen: Secured a leadership position in an IT/manufacturing organization.

Graduate seventeen: Is a retired veteran and is not looking for a job.

Enrollment and Graduates from fall 2012 to spring 2017

	Headcount	FTE	Full-Time	Graduates
Fall 2012	27	19.9	18	0
Spring 2013	29	21.5	18	2
Fall 2013	23	15.9	13	4
Spring 2014	21	15.9	16	1
Fall 2014	19	13.2	12	2
Spring 2015	21	14.6	13	4
Fall 2015	17	12.5	11	0
Spring 2016	13	8.1	7	2
Fall 2016	11	5.8	2	1
Spring 2017	13	8.4	7	1
Total	194	136	117	17

Summary of Assessment Model and Utilization for Program Improvement

Eastern’s assessment plan consists of three levels: entry-level assessment (ACCUPLACER, SAT, ACT), active enrollment assessment (course and program assessment, student satisfaction surveys, etc.), and post-graduation assessment (employment satisfaction survey, alumni survey, employment and salary data, etc.). Since December 2014, AST students participated in taking the NOCTI exam, which delivers a variety of assessments for students studying career and technical programs at technical colleges. IDEA Short Form Reports (i.e. course evaluation surveys) are administered each semester in all course sections with enrollment of six or more students. Course completion rates and student tracking studies serve as a measure of overall program success.

Based on the recommendation of the visiting HLC team in 2013, the number of Learning Outcomes for IT courses decreased from an average of 35 outcomes per course to an average of 10 outcomes. This revision helped to streamline the assessment process.

In fall 2015, the College received approval as the testing site for Microsoft Office Specialist Certification, MOS, and Microsoft Technology Associate exam, MTA. So far,

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three students attempted the MOS exam and two received the certification, while six students took the MTA exam and all six passed the exam.

The college utilizes Blackboard’s “Goals” feature that allows computerized assessment of the courses by generating reports and by linking the course outcomes to assignments, exams, projects, and the discussion board. Using Blackboard for assessment has simplified the assessment process for all Business Technologies courses.

Beginning in the spring 2008 semester, Eastern began administering the ETS Proficiency Profile. Information Technology A.A.S. students have participated in this testing since 2010. Based on the test results, Eastern’s graduates score within the mean score ranges noted in ETS Comparative Scores for Associate Degree granting institutions. (See Table below).

Table 1 – ETS Results Eastern Students (2011-2015): Comparison Between Eastern Test Groups and ETS Mean Scores						
	Eastern 2010 – 2011 Mean = 436.78	Eastern 2011-2012 Mean = 443.86	Eastern 2012-2013 Mean = 438.33	Eastern 2013-2014 Mean = 444.04	Eastern 2014-2015 Mean = 444.33	ETS Mean = 439.3
% above mean	47%	49%	45%	42%	45%	47%
% below mean	52%	51%	55%	58%	55%	53%

During a three-year period, eight (8) IT students took the NOCTI test. Results revealed those students scored 67 percent (cut score for this test is 62 and the national average is 74.1).

Table 2 – NOCTI results

The table below shows the performance of eight IT graduates in NOCTI during a three-year period.

IT AAS Subscores										Subscore / Eastern Students Performance	National Performance
BANNER C#	Title	Student 1	2	3	4	5	6	7	8		
F14A	Professional Standards, Ethics	71.4	85.7	76.2	90.5	71.4	95.2	85.7	71.4	82	81.8
F14B	General Computer Knowledge	73.3	66.7	46.7	53.5	73.3	33.3	50	56.7	52	73.3
F14C	PC (Personal Computer) Hardware	48.5	48.5	57.6	48.5	60.6	54.5	57.6	42.4	54	65.4
F14D	PC (Personal Computer) Software	74.1	81.5	74.1	66.7	92.6	74.1	63	77.8	75	85.3
F14E	Networking and Data Communications	76	48	76	60	72	64	52	60	64	67.8
F14F	Security	76.5	76.5	52.9	58.8	64.7	70.6	70.6	70.6	65	82.1
PF 14	NOCTI Comp Tech	68.6	66	63.4	61.4	72.5	62.8	61.4	79.4	67	74.1

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According to the above test results, the IT students can benefit by taking security related courses. Additionally, they benefit if more hands-on practices is incorporated into courses such as PC Repair and Troubleshooting.

Some of the AAS students take the Internship during their final semester. As a requirement for the course, the Internship providers evaluate students by submitting a questionnaire. A review of these questionnaires indicated the interns are meeting the providers' expectations.

Final recommendations approved by governing board.

To better serve the needs of Eastern's six-county district, it is recommended the program continues to be offered in its current format with full-time day course implementation, increase the number of 2+2 articulation agreements, and to explore feasibility of offering the IT program as a web-based program.

Additionally,

- Promote industry certification
- Revise curriculum by adding a cyber-security course to the list of core courses
- Apply Quality Matters standards to online and hybrid courses
- Utilize technology to better assess courses and programs
- Facilitate the transfer of graduates to four year institutions
- Revise curriculum by replacing one of the CIS courses with an IT course

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APPENDIX I

Information Technology

ONETonline.org SOC Code: 11-3021

Associate in Applied Science

60 Semester Hours[^]

The Information Technology program offers students an opportunity to earn an Associate in Applied Science degree. This program provides students with the skills and knowledge for entry-level information technology-related careers. Graduates of this program will be qualified for employment as network technicians, help desk technicians, technical support representatives, and PC maintenance technicians. Upon completion of this program, graduates will have basic knowledge of network administration, hardware/software interface and troubleshooting, operating systems, and design skills.

Upon successful completion of the Information Technology Program, graduates will be able to:

- Apply basic system administration and scripting techniques
- Apply the foundation of management information systems
- Perform routine maintenance and repairs on the personal computer (PC)
- Install and troubleshoot operating systems
- Design an interactive website
- Demonstrate knowledge regarding information systems
- Design and manage a database
- Demonstrate basic knowledge of networking
- Demonstrate a basic knowledge of business organization and procedures
- Demonstrate effective communication skills
- Develop scientific knowledge and mathematical analytical skills and techniques
- Demonstrate global awareness and knowledge of human diversity

Program Implementation: Full-time day (Students attending part-time should see advisor for recommended course sequencing).

Recommended Course Sequence – Information Technology, Associate in Applied Science Degree

First Year—Fall Semester				First Year - Spring Semester			
Dept.		Course Title	Sem. Hrs.	Dept.		Course Title	Sem. Hrs.
BUS	101	Introduction to Business	3	BUS	203	Communications in Business OR	3

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CIS	114	Introduction to Computer Applications and Concepts	3	ENL	102	English Composition II	(3)
CIS	122	Introduction to Information Systems	3	CIS	121	Database Management Software	3
ENL	101	English Composition I	3	IT	134	Networking Fundamentals	3
Elective		Math Elective (MTH 121 or higher)	3	IT	180	PC Repair and Troubleshooting	3
				SSC	147	Understanding Human Diversity	3
<i>Total Semester Hours</i>			<i>15</i>	<i>Total Semester Hours</i>			<i>15</i>
Second Year—Fall Semester				Second Year—Spring Semester			
Dept.	Course Title		Sem. Hrs.	Dept.	Course Title		Sem. Hrs.
CIS	119	Spreadsheet Software	3	CIS	133	Introduction to Web Design	3
IT	181	Operating Systems	3	IT	276	IT Capstone OR	3
Elective	IT Elective		3	IT	278	IT Internship	(3)
Elective	IT Elective		3	Elective	IT Elective		3
Elective	Science Elective		3	Elective	IT Elective		3
				Elective	IT Programming Elective		3
<i>Total Semester Hours</i>			<i>15</i>	<i>Total Semester Hours</i>			<i>15</i>

Programming Elective (Select 1 course - 3 credit hours)		
Dept.	Title	Sem. Hrs.
IT 192	Introduction to Programming in Visual Basic	3
IT 194	Introduction to Programming Java	3
IT 198	Introduction to C# Programming	3
IT 233	Introduction to Web Programming	3
IT Electives (Select 4 courses – 12 credit hours)		
IT 192	Introduction to Programming in Visual Basic	3
IT 194	Introduction to Programming Java	3
IT 198	Introduction to C# Programming	3
IT 220	Windows Server Administration Fundamentals	3
IT 228	Systems Analysis and Design	3
IT 229	Introduction to Digital Forensics	3
IT 233	Introduction to Web Programming	3
IT 234	Database Administration Fundamentals	3
IT 269	Project Management	3
IT 275	Security Fundamentals	3

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