

**OVERVIEW REPORT OF ACADEMIC DEGREE
PROGRAMS IN CYBER CRIME AND DIGITAL
FORENSICS IN THE UNITED STATES**

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About the Cyber Crime & Computer Forensics Institute

The Cyber Crime & Computer Forensics Institute is a multi-university partnership that aims to increase the capacity to identify, investigate, and prosecute computer crime through a research agenda and academic curriculum that focus on the intersection of computer technology and crime. Funded by the U.S. Department of Justice, the Institute's partners include Drexel, East Stroudsburg, and Rider Universities. Its research and educational programs involve faculty and researchers from criminal justice, business, computer science, computer engineering, law, accounting, information management, anthropology, and psychology, as well as professionals from the law enforcement and security communities.

About Drexel University

Drexel University is a private university located in Philadelphia, Pennsylvania. It offers students a challenging learning environment that is enhanced by technology, cooperative education, and scholars whose research is on the cutting edge of science and technology. Drexel has approximately 18,500 undergraduate and graduate students. It offers over 60 bachelor's, 60 master's, and 35 doctoral degree programs, as well as professional degree programs in medicine and law. Drexel is ranked by U.S. News and World Report as one of the best national doctoral universities and has received a Carnegie Foundation ranking of doctoral granting university with high research activity. Its research expenditures have grown exponentially over the past decade and have since the 2004/2005 academic year exceeded \$100 million annually. Drexel is one of 75 universities designated by the U.S. National Security Agency as a Center for Academic Excellence in Information Assurance Education.

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II. METHODOLOGY

The CC & DF degree programs examined in this report were identified through Internet searches using both publicly-accessible and proprietary databases. *Google* was used to search publicly-indexed web pages, including the web pages of academic institutions throughout the United States. *ABI/INFORM* and *LexisNexis* were used to search through media reports and trade publications for mention of academic institutions with degree programs in CC & DF. Lastly, the website of the *Chronicle of Higher Education* was searched for articles and news related to computer crime and digital forensics education. The *Chronicle's* website contains an archive of the news and articles it has published since 1989.

A combination of following terms and phrases were used to search for relevant academic programs: *digital forensics, cyber crime, computer crime, digital crime, cyber forensics, education, college programs, undergraduate degree, and graduate degree*. All analyses for this report were completed using information publicly available through the websites of the respective academic institutions. All searches were conducted between July 2006 and September 2006. The information used in the analyses was gathered during the same period.

III. DEMOGRAPHICS OF INSTITUTIONS OFFERING CYBER CRIME AND DIGITAL FORENSICS PROGRAM

We found 19 active, formal Cyber Crime and Digital Forensics (CC & DF) programs located in academic institutions of higher education throughout the United States. Of these 19 programs, ten were offered by community colleges, four were offered by colleges, four were offered by universities, and one was offered by a technical institute. Table 1 provides a regional breakdown of these institutions. Seven of the 19 programs were offered at institutions in Pennsylvania, including one program in Philadelphia (Community College of Philadelphia) and one program in Pittsburg (Pittsburg Technical Institute).

Table 1: Regional Breakdown of Institutions Offering CC & DF Programs

Region	State within Region	# Program Offered
Northeast	District of Columbia	1
	Maryland	2
	New York	1
	Pennsylvania	7
	Vermont	1
North Central	Iowa	1
	Ohio	1
	Minnesota	2
Southeast	West Virginia	1
	North Carolina	1
South Central	Colorado	1

Of the 19 institutions examined, ten are classified as small (< 4,500 students); three as medium (4,500-7,999 students); three as large (8,000-14,999 students); and three as extra-large (15,000+ students). Eight institutions are classified as urban, two as suburban, and nine as rural. Thirteen of the 19 institutions were publicly controlled and supported

by local, county, or state government. Interestingly, Champlain College was the only institution to offer an online degree program. Table 2 provides a summary of the demographics of the institutions included in this report.

Table 2: Demographics of the Institutions

School Name	School Details*			Type* of Degree	Type of School*		
	Supported by	Student #	Online School			Est.	Accred
Associate Degree							
Anne Arundel Community College	State and locally	14,290	N	AAS	CC	1961	Y
Butler County Community College	County	3,809	N	AAS	CC	1966	Y
Community College of Beaver County	State and county	2,500	N	AAS	CC	1966	Y
Community College of Philadelphia	State and locally	22,671	N	AAS	CC	1965	Y
Chesapeake College	State and locally	2,354	N	AAS	CC	1965	Y
Fond du Lac	State	1,735	N	AAS	CC	1987	Y
Indian Hills Community College	State and locally	2,867	N	AAS	CC	1966	Y
Lehigh Carbon Community College	State and locally	6,674	N	AAS	CC	1966	Y
Minneapolis Community and Technical College	State	7,091	N	AAS	CC	1965	Y
Pittsburgh Technical Institute	Proprietary	1,975	N	AAS	Tech Inst	1946	Y
Southwestern Community College	State	2,014	N	AAS	CC	1964	Y
Stark State College of Technology	State and locally	6,857	N	AAS	Cllg	1960	Y
Bachelor's Degree							
Champlain College	Private	1,780	Y	BS & AAS	Cllg	1878	Y
Central Pennsylvania College	Proprietary	981	N	BS	Cllg	1881	Y
Colorado Technical University	Private	11,511	N	BS	Univ	1965	Y
Waynesburg College	Private	2,091	N	BS	Cllg	1849	Y
Master's Degree							
George Washington University	Private	24,079	N	MS	Univ	1821	Y
John Jay College	State and locally	14,295	N	MS	Univ	1964	Y
Marshall University	State	16,585	N	MS	Univ	1837	Y

* Private schools - rely on tuition payments and funds from non-public sources
 Proprietary schools are private schools that are run for profit
 N – No; Y – Yes; NA – Not Available
 AAS – Associate in Applied Science; BS – Bachelor of Science; MS – Master of Science
 CC – Community College; Cllg – College; Univ- University; Tech Inst – Technical Institute

IV. CHARACTERISTICS OF THE CYBER CRIME AND DIGITAL FORENSICS PROGRAMS

Education in the field of cyber crime and digital forensics (CC & DF) is comprised of many broadly defined programs. These programs are predominately entitled, *Computer Forensics* or *Cyber Crime* (Table 3). The name of the program is typically influenced by the thrust of the program (Section V); computer forensics, criminal justice, criminology, computer information systems (CIS), and cyber crime. Only the program offered by Champlain College is affiliated with a campus-based center or institute specifically related to computer crime and digital forensics. Champlain College received funding from the U.S. Department of Justice, Bureau of Justice Assistance to support its Center for Digital Investigations. The program at Anne Arundel Community College is also affiliated with campus institute (The Institute for Criminal Justice, Legal Studies, and Public Service). This institute is, however, not specifically related the substantive focus of the degree program.

The CC & DF programs are typically designed to provide students with skills in the area of criminology, foundations of computer information systems (hardware, software, networking, and security), and collection and analysis of computer-based evidence. Twelve of the institutions offered associate degrees, four undergraduate degrees and three graduate degrees. The number of program credits required by the institutions ranged from 60–84 (associate), 65-95 (undergraduate) and 36-49 (graduate).

Eleven of the institutions require an internship for CC & DF majors. The internship ranges from 2-4 credits. Typically a criminal background check is required prior to enrollment in the internship course. During this internship, students work in government agencies or private organizations.

Typical employment opportunities include entry-level positions in law enforcement agencies, private security firms, human resources departments, information systems departments, and computer forensics departments within private sector organizations.

Typical job titles include: *computer security coordinator, computer forensics investigator, computer forensics specialist, intrusion detection analyst, network security analyst, and digital detective.*

In addition, two of the community colleges (Indian Hills Community College and Minneapolis Community & Technical College) offer students an option to go beyond the two-year associate degree to earn a bachelor's degree.

Table 3: Details of CC & DF Programs

Institute Name	Program Name	# of Semesters	# of Credits	Type of Degree	Center	Internship
Associate Degree						
Anne Arundel Community College	Cybercrime	NA	64	AAS	Y	N
Butler County Community College	Computer Forensics	4	66	AAS	N	Y
Community College of Beaver County	Computer Forensics Degree	4	66	AAS	N	Y
Community College of Philadelphia	Computer Forensics	NA	60	AAS	N	N
Chesapeake College	Computer Information Systems	3	67	AAS	N	Y
Fond du Lac	E-Crime	NA	60	AAS	N	N
Indian Hills Community College	Computer Forensics	7 terms	84	AAS	N	Y
Lehigh Carbon Community College	Computer Specialist - Computer Forensics	4	70	AAS	N	Y
Minneapolis Community and Technical College	Computer Forensics	4	64	AAS	N	N
Pittsburgh Technical Institute	Information Technology Network Security and Computer Forensics	NA	NA	AAS	N	Y
Southwestern Community College	Cyber Crime Technology	3	69	AAS	N	N
Stark State College of Technology	Cyber Security and Computer Forensics Technology	4	72	AAS	N	N
Bachelor's Degree						
Champlain College	Computer & Digital Forensics	2	65	BS & AAS	Y	Y
Central Pennsylvania College	Info Tech - Cyber Security	NA	95	BS	N	Y
Colorado Technical University	Cybercrime Investigation	NA	NA	BS	N	N
Waynesburg College	Forensics Science	4	76	BS	N	Y
Master's Degree						
George Washington University	Forensic Science: High Technology Crime Investigation	NA	36	MS	N	Y
John Jay College	Forensics Computing	NA	39	MS	N	N
Marshall University Forensic Science Center	Forensic Science Program	NA	49	MS	N	Y

N – No; Y – Yes; NA – Not Available
AAS – Associate in Applied Science; BS – Bachelor of Science; MS – Master of Science

V. COURSE OFFERINGS IN CYBER CRIME & DIGITAL FORENSIC PROGRAMS

Major Knowledge Thrusts

Table 4 provides a comparative view of the major areas of emphasis among 15 of the 19¹ CC & DF programs covered in this report. The left column contains a list of knowledge thrusts that represent substantive areas in which a large block of credits is required. This list approximates a union of the topics specified in the 15 CC & DF curriculum reports and, thus, provides a summary of the topics studied in these programs. Appendix D provides a detailed description of some of the course offerings. The various outlines use different language for a given topic. They also differ in the extent to which they break down a topic into subtopics. As a result, the list of topics provided in Table 4 is not an exact match with the topic list of any of the curriculum reports (provided in Appendix C). Rather, it is a categorization of topics specified across the 15 CC & DF programs.

Table 4: Major thrusts of digital forensics curricular by degree program

Associate Degree:

Knowledge Thrust	Institution	% of credits in area of knowledge thrust
CIS and criminology	Butler County Community College, Lehigh Carbon Community College	43%, 37%
CIS, criminology, and networking	Community College of Beaver County, Chesapeake College	67%, 61%
Criminology and computer forensics	Community College of Philadelphia	57%
CIS and computer forensics	Indian Hills Community College	51%
CIS, networking, legal	Southwestern Community College	68%
CIS	Minneapolis Community and Technical College, Stark State College of Technology	43%, 44%
Criminology	Fond du Lac	35%

¹ Course details were not available for four of the programs included in this report

Bachelor's Degree:

Knowledge Thrust	Institution	% of credits in area of knowledge thrust
CIS, criminology, and computer forensics	Champlain College	52%
CIS and networking	Central Pennsylvania College	65%
CIS and criminology	Waynesburg College	55%

Master's Degree:

Knowledge Thrust	Institution	% of credits in area of knowledge thrust
Computer forensics and forensics	Marshall University Forensic Science Center	71%
Networking, legal, and computer forensics	George Washington University	34%

Each major knowledge thrust was grounded in one or more of the following substantive areas: CIS, criminology/criminal justice, networking, computer forensics, legal, and forensics².

Examination of the percentage (%) credits column of Table 4 indicates that some of the CC & DF programs are not authentic. They appear to be the result of cosmetic changes to some existing courses and then repackaged as a CC & DF program. In the associate degree category for example, Fond du Lac's main knowledge thrust is criminology. Thirty-five percent of the credits offered in this program are dedicated to criminology. Of those institutions offering an undergraduate degree, Central Pennsylvania College had 65% of its CC & DF credits focused on CIS and networking related courses and Waynesburg College had 55% of its CC & DF credits focused on CIS, criminology, and legal courses. At the graduate level, the knowledge thrust seems to be on computer forensics.

Minor Knowledge Thrusts

Minor knowledge thrusts also existed within CC & DF programs. These focus areas are considered important for a career in CC & DF. The minor knowledge thrusts included

² The substantive area of forensics includes coursework in forensic sciences that does not deal with computer, or digital, forensics.

the following substantive areas: security management, communication (verbal and written), ethics, and law. Institutions offering undergraduate and graduate degrees in CC & DF seem to cover these areas with an adequate number of credits. Table 5 provides a breakdown of the number of credits offered in the minor knowledge thrusts for each of the CC & DF programs.

VI. CONCLUSION

In conclusion, we would like to highlight the following findings:

- The majority of the CC & DF programs examined are offered at the associate degree level.
- There is only one undergraduate or graduate degree program in CC & DF in the Philadelphia region.
- Only one institution offered an online program in CC & DF.
- Internships are an important component of a CC & DF program.
- Most of the CC & DF programs seem to have evolved from existing programs in related substantive areas. The primary educational thrust of the CC & DF programs is, thus, not computer crime or computer forensics.
- Only one program has an institutional center oriented towards computer crime and digital forensics and has received financial and non-financial support from a government agency.

Table 5: CC & DF Programs and Minor Knowledge Thrust (# of Credit Hours)

School Name	Security Management	Communication	Ethics	Law
Associate Degree				
Anne Arundel Community College	NA	NA	NA	NA
Butler County Community College	6	6	0	6
Community College of Beaver County	0	6	3	3
Community College of Philadelphia	3	6	0	3
Chesapeake College	0	9	0	0
Fond du Lac	0	13	0	0
Indian Hills Community College	0	9	6	0
Lehigh Carbon Community College	3	6	3	3
Minneapolis Community and Technical College	0	9	0	6
Pittsburgh Technical Institute	NA	NA	NA	NA
Southwestern Community College	3	3	3	9
Stark State College of Technology	6	9	0	3
Bachelor's Degree				
Champlain College	0	12	3	6
Central Pennsylvania College	3	6	3	3
Colorado Technical University	NA	NA	NA	NA
Waynesburg College	3	7	4	9
Master's Degree				
George Washington University	3	0	6	6
John Jay College	NA	NA	NA	NA
Marshall University Forensic Science Center	3	0	0	3

NA – Not Available

Appendix A – School Description

School Name	School Details			Location			Type of Degree	Hybrid Program		Type of School		
	Supported by	Student #	Online School	Area	State	Region			With:		Est.	Accred
Associate Degree												
Anne Arundel Community College	State and locally	14,290	N	Sub	MD	Northeast	AAS	Y	Institute for Criminal Justice, Legal Studies and Public Service	CC	1961	Y
Butler County Community College	County	3,809	N	Urb	PA	Northeast	AAS	N		CC	1966	Y
Community College of Beaver County	State and county	2,500	N	Rur	PA	Northeast	AAS	Y	Computer Information Systems/Telecommunications	CC	1966	Y
Community College of Philadelphia	State and locally	22,671	N	Urb	PA	Northeast	AAS	NA		CC	1965	Y
Chesapeake College	State and locally	2,354	N	Sub	MD	Northeast	AAS	NA		CC	1965	Y
Fond du Lac	State	1,735	N	Rur	MN	North Central	AAS	NA		CC	1987	Y
Indian Hills Community College	State and locally	2,867	N	Rur	IA	North Central	AAS	N		CC	1966	Y
Lehigh Carbon Community College	State and locally	6,674	N	Rur	PA	Northeast	AAS	Y	Criminal justice & networking	CC	1966	Y
Minneapolis Community and Technical College	State	7,091	N	Urb	MN	North Central	AAS	NA		CC	1965	Y
Pittsburgh Technical Institute	Proprietary	1,975	N	Urb	PA	Northeast	AAS	NA		Tech Inst	1946	Y
Southwestern Community College	State	2,014	N	Rur	NC	Southeast	AAS	NA		CC	1964	Y
Stark State College of Technology	State and locally	6,857	N	Rur	OH	North Central	AAS	NA		Cllg	1960	Y

School Name	School Details			Location			Type of Degree	Hybrid Program		Type of School		
	Supported by	Student #	Online School	Area	State	Region			With		Est.	Accred
Bachelor's Degree												
Champlain College	Private	1,780	Y	Rur	VT	Northeast	BS & AAS	Y	Computer Networking and Criminal Justice	Cllg	1878	Y
Central Pennsylvania College	Proprietary	981	N	Urb	PA	Northeast	BS	Y	Info Tech	Cllg	1881	Y
Colorado Technical University	Private	11,511	N	Rur	CO	South Central	BS	NA		Univ	1965	Y
Waynesburg program.	Private	2,091	N	Rur	PA	Northeast	BS	Y	Dept Math, Comp Science & Physics	Cllg	1849	Y
Master's Degree												
George Washington University	Private	24,079	N	Urb	DC	Northeast	MS	NA		Univ	1821	Y
John Jay College	State and locally	14,295	N	Urb	NY	Northeast	MS	NA		Univ	1964	Y
Marshall University Forensic Science Center	State	16,585	N	Urb	WV	Southeast	MS	Y	Ctr Information Tech & Eng, Sch of Medicine	Univ	1837	Y

Key:

CC – Community College

Collg – College

Univ – University

Tech Inst – Technical Institute

BS – Bachelor of Science

AAS - Associate in Applied Science

Y – Yes

N – No

NA – Not available

Sub – Suburban (Close to metropolitan area)

Urb – Urban (In the metropolitan area)

Rur – Rural (In a smaller city)

Appendix B – Program Description

The following program descriptions and credit totals have been taken directly from their respective program’s website. Minimal editing was done for formatting purposes.

Anne Arundel Community College	Total 64 Crs (NA for CC & DF) http://www.aacc.edu/criminaljustice/cybercrime1.cfm
Program Description: AAS in Cybercrime Degree Program	<p>This Associate of Applied Sciences Degree Program combines criminal justice courses, cybercrime courses, and general studies courses to prepare you to work in federal, state and local law enforcement agencies and in the private sector to detect, deter and prosecute computer-based and computer-targeted crime.</p> <p>Courses include, but are not limited to, the following:</p> <ul style="list-style-type: none"> ▪ Cybercrime ▪ Cyber Forensics ▪ Cyberlaw ▪ Investigation and Criminalistics ▪ Criminal Justice Ethics ▪ Criminal Law ▪ Criminal Evidence and Procedure

Butler County Community College	Total 66 Crs (57 for CC & DF) http://bc3.org/academics/technology/compforensics.htm
Program Description: AAS in Computer Forensics (Business Program)	<p>The Computer Forensics Program is designed to provide students with skills in the areas of criminology, data recovery, computer operating systems, network and PC security, cyber-crime investigation, the collection and analysis of computer-based evidence, ensuring the integrity of the chain of evidence, and preparing evidence for presentation in a court of law. Students will gain experience with professional investigative software and evidence gathering in a dedicated computer lab. Students must pass a criminal background check prior to enrolling in CFOR 200, Security Systems. Students must pass a current background investigation prior to enrolling for the Practicum.</p> <p>Typical employment opportunities include entry-level positions in law enforcement agencies; private security firms; and human resource departments, information systems departments, and computer forensics departments within private sector corporations</p>

Community College of Beaver County	Total 66 Crs (66 for CC & DF) http://www.ccbc.edu/exploring/technologies.jsp?pageId=2090611881251112733840082
Program Description: AAS in Computer Forensics Degree	<p>The Computer Forensics program is designed to provide students with skills in the collection and analysis of computer-based evidence, ensuring the integrity of the chain of evidence, and preparing evidence for presentation in a court of law</p> <p>Using state-of-the-art classrooms equipped with the necessary computer hardware, operating systems, and investigative software students learn about criminology, data recovery, computer operating systems, network security, and cyber crime investigations.</p> <p>Students must pass a criminal background check prior to enrolling in CISF250 Computer Forensics Internship.</p> <p>Graduates of this program will be qualified to obtain employment locally and nationally as a computer security coordinator, forensics investigator, computer forensics specialist, intrusion detection analyst, network security analyst, and security specialist.</p>

Community College of Philadelphia	Total 60 Crs (50 for CC & DF) http://www.ccp.edu/site/academic/degrees/pdfs/computer_forensics.pdf
Program Description: AAS in Computer Forensics	<p>The Computer Forensics Program provides a sound educational foundation for the performance of professional activities within the computer forensics arena. A sequence of courses is offered which will enable students to:</p> <ul style="list-style-type: none"> (1) develop a knowledge base about computer crime, computer evidence and computer investigation, (2) adopt a set of professional values and (3) develop skills related to professional activity in the field of computer forensics. <p>Students completing the Computer Forensics Program will be prepared to enter the field of computer forensics in a public or private environment as computer crime investigators, computer crime analysts, computer forensics investigators, computer forensics technicians, computer forensics analysts, Internet security technicians, and Internet security analysts. Individuals currently working in this or a related field will substantially enhance their knowledge and skills.</p>

Chesapeake College	Total 67 Crs (51 for CC & DF) http://www.chesapeake.edu/sched_cat/proglist.asp?pickcos=Computer+Information+Systems~Computer+Forensics+Option
Program Description: AAS in Computer Information Systems	The Computer Forensics program prepares law enforcement and computer specialists to perform competently as entry-level computer forensics technicians. The program provides the student with the opportunity to acquire proficiency in the computer forensics field. The fundamental goal is to provide the student with an adequate understanding of microcomputer operating systems and networks, as well as criminal evidence and investigative procedures, to investigate and prevent cyber crime and other more traditional crimes, such as murder, burglary, or fraud, for which evidence may be found on a computer or network. Emerging law related to cyberspace will also be studied. Students should consult with an academic advisor in planning an appropriate program

Fond du Lac	Total 60 Crs (47 for CC & DF) http://www.fdlcc.edu/web/checklists/E-Crime_D.pdf
Program Description: AAS in E-Crime	This program is geared toward those students who want to develop and implement enterprise-wide security measures, from policies and procedures to intrusion detection and incident response. This degree program and the related certificate programs will provide law enforcement or criminal justice students with computer crime investigation skills.

Indian Hills Community College	Total 84 Crs (~84 for CC & DF) http://www.ihcc.cc.ia.us/ihcc/Learn/advtech/comp-forensics.asp
Program Description: AAS in Computer Forensics	<p>The Computer Forensics program is a 21-month (seven-term) program focusing on the investigation, detection, preservation and documentation of evidence discovered on electronic forms of media.</p> <p>When you complete this program, you'll receive an Associate of Applied Science (A.A.S.) degree.</p> <p>The Computer Forensics program offers you additional options beyond the two-year degree, which lead to advanced study and degrees. The 2+2 option entails two years of academic work at Indian Hills, followed by admission to Buena Vista University in Ottumwa in the Bachelor of Arts program as a junior. You would then graduate with a B.A. degree in Criminal Justice/Criminology.</p>

Lehigh Community College	Total 70 Crs (61 for CC & DF) http://www.lccc.edu/default.aspx?pageID=415&degree=22
Program Description: AAS in Computer Specialist - Computer Forensics	<p>The Computer Forensics program was created to meet a large market demand for skilled forensic investigators who also possess a strong computer background. This program is a combination of courses from the Criminal Justice program, the Computer Networking program, and a new series of courses in Computer Forensics and Security. The program also requires that the student have knowledge of criminal behavior, technical reporting, accounting, and statistical analysis.</p> <p>Graduates of the program may obtain a position in local or federal law enforcement, or as a security consultant or in corporate security. A Computer Forensics graduate's job title may be digital detective, computer forensics investigator, or computer security specialist.</p> <p>Upon successful completion of the program, graduates will be able to:</p> <ul style="list-style-type: none"> ▪ apply critical thinking, team building, and problem solving skills. ▪ demonstrate effective oral and written communication. ▪ describe the OSI layers, networking devices and their functionality. ▪ troubleshoot personal computer hardware and software problems. ▪ describe the components of the criminal justice system, the steps involved in criminal investigation, criminal law, search and seizure, and court procedures. ▪ identify the social and biological characteristics of criminal behavior. ▪ follow ethical practices and adhere to a code of ethics. ▪ demonstrate computer forensic investigation skills using computer forensic tools.

	<ul style="list-style-type: none">▪ be prepared, with appropriate study, to take the Network+, A+, Security+, IACIS (International Association of Computer Investigative Specialists) and CISSP (Certified Information Systems Security Professional) certification exams.▪ perform a capstone project or internship in computer forensics.
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Minneapolis Community & Technical College	Total 64 Crs (60 for CC & DF) http://www.minneapolis.edu/academics/areaofstudy.cfm?aos_id=90
Program Description: AAS in Computer Forensics	<p>MCTC's Information Technology Program has three A.A.S. awards: Computer Forensics, Computer Support and Network Administration, Software Development; and a number of diplomas and certificates.</p> <p>MCTC's Computer Forensics A.A.S is a unique degree program that combines knowledge and skills of a number of areas including information technology, information security, computer forensics, criminal justice, law, investigation and ethics. Computer forensics professionals are primarily employed by governmental and legal agencies that specialize in cyber crime investigations. Instructors with business and industry experience lead classes and cover the various program areas.</p> <p>You will have the chance to work in groups with other class members to learn valuable teamwork and communication skills that reflect the real-world soft-skill requirements.</p> <p>You'll also have the opportunity to participate in various student club activities, technology competitions and industry events.</p> <p>In addition, you will have the opportunity to participate in valuable learning activities such as internships, student learning experiences and the Information Technology Club. Upon completion of the program, you will have gained strong technical problem solving, interpersonal, and communication skills that will be useful as you enter the workforce.</p> <p>MCTC has articulation agreements with Metropolitan State University, Minnesota State University, Moorehead, St. Mary's University and St. Scholastica for students who wish to pursue a four-year degree.</p>

Pittsburgh Technical Institute	NA http://www.pti.edu/programs/computer-network-systems.html
Program Description: AAS in Information Technology Network Security and Computer Forensics	<ul style="list-style-type: none"> ▪ Computer Forensics ▪ Cyber Crime ▪ Intrusion Detection Systems ▪ Network Security Technology ▪ Internetworking Technologies ▪ UNIX Operating Systems ▪ Network Operation Systems ▪ Technical Research and Documentation ▪ Additional career-related courses ▪ Internship

Southwestern Community College	Total 69-70 Crs (66 for CC & DF) http://www.southwesterncc.edu/ACADPROG/cct.htm
Program Description: AAS in Cyber Crime Technology	<p>This curriculum will prepare students to enter the field of computer crime investigations and private security. Students completing this curriculum will be capable of investigating computer crimes, properly seize and recover computer evidence and aid in the prosecution of cyber criminals.</p> <p>Course work in this curriculum will include a division of work in the disciplines of criminal justice and computer information systems. Additionally, students will be required to take specific cyber crime classes.</p> <p>Graduates should qualify to become computer crime investigators for local or state criminal justice agencies. Also these graduates should be competent to serve as computer security specialists or consultants with private business</p>

Stark State College of Technology	Total 72 Crs (58 for CC & DF) http://www.starkstate.edu/academics/it_tech/cybersecur.htm
Program Description AAS in Cyber Security and Computer Forensics Technology	<p>The Cyber Security and Computer Forensic Technology program covers areas that are identified in the Emergency Preparedness and Response, Information Analysis and Infrastructure Protection divisions of the Department of Homeland Security. Major topics of the program include; risk and threat assessment on computer system and data, developing procedures to prevent and react to data and computer related security breaches, and computer system security plan documentation.</p> <p>Students graduating from Stark State College with a Cyber Security and Computer Forensic Technology degree will assess a company's risk, document and implement security procedures and check for security breaches in their systems.</p> <p>Cyber Security and Computer Forensic graduates can find employment in both the private and public sector, including positions related to homeland security</p>

Champlain College	Total 91 Crs (65 for CC & DF) http://www.champlain.edu/majors/digitalforensics/
Program Description: BS in Computer & Digital Forensics	<p>The major combines aspects of computer and network technology, criminal justice, digital evidence investigative methods, and other related fields. Champlain College has been offering this degree program since 2003</p> <p>Champlain College has received funding from the U.S. Department of Justice Bureau of Justice Assistance in support of the Champlain College Center for Digital Investigation. The C&DF program has also been recognized as a model electronic crime and digital investigation curriculum by the National Institute of Justice's Electronic Crime Partnership Initiative (ECPI).</p>

Central Pennsylvania College	Total 125 Crs (95 for CC & DF) http://www.centralpenn.edu/academics/programs/program.asp?id=Wf5GeZDa1LJVSIZV83PG
Program Description: BS in Info Tech - Cyber Security	<p>New leading edge Bachelor's Degree program developed in response to the demands fastest growing career field to at least 2010.</p> <ul style="list-style-type: none"> ▪ Understand and apply accepted IT principles ▪ Learn the elements of data communications ▪ Gain hands-on ability to create relational databases ▪ Troubleshoot PC hardware and software ▪ Create working programs from standard business requirements ▪ Communicate properly and effectively with end users and management ▪ Have an appreciation for and understanding of systems analysis, design, development, implementation, and evaluation ▪ Understand the past, present, and have an appreciation for the future impact of technology on society ▪ Learn the legal and ethical considerations of the use of technology <p>The concentration in Corporate Cyber Security prepares the student to not only understand and discover malicious hacker and virus attacks, but to defeat them. Additionally, you will learn how to immediately recover from disaster and plan and coordinate the various disciplines of a major e-Commerce security program that will prevent a recurrence. Central Pennsylvania College offers a program integrating the functions of anti-virus, intrusion detection, and firewall protection. You will insure the smooth, uninterrupted conduct of Internet based commerce. Standing as an electronic shield, you will secure the most valuable asset of any commercial enterprise - the trust of its customers.</p>

Colorado Technical University	NA http://www.ctukansascity.com/degree_programs/wrapper_undergraduate.asp?page=/includes_share/d/degree_programs/bachelors/bsci.asp
Program Description: BS Cybercrime Investigation	The Bachelor of Science in Cybercrime Investigation (BSCI) degree program is designed to equip you with a base of practical, real-world applications in the field of criminal justice with strong emphasis on foundational studies in the electronic criminal investigation of such crimes as fraud, identity theft, computer terrorism, and other computer-related crimes that are committed in both a national and global environment. The investigation of computer-based crimes is not limited to federal, state and local agencies but is also increasing in organizations that conduct business in an electronic environment

Waynesburg College	Total 76 Crs (0 for CC & DF) http://www.waynesburg.edu/depts/regist/wbgcatlg.pdf
Program Description: BS Computer Science / Computer Forensics	A student majoring in a computer science program at Waynesburg College may choose one of four majors to enhance their future career path, a Business Information Science major, a Computer Science major, an Information Technology major, or a Computer Forensics major. By careful selection of electives, a student may also enrich his or her learning experiences by receiving a minor in a related field such as business, mathematics or communications. The student should note that the Computer Science major and the Computer Forensics major are designed to allow the student the opportunity for further study at a graduate level.

George Washington University	Total 36 Crs (36 for CC & DF) http://www.gwu.edu/%7Eforensic/htci.htm#Top_page
Program Description: MS in Forensic Science: High Technology Crime Investigation	<p>GW offers an exceptional Forensic Science program that includes two Master's degrees – Security Management and High Technology Crime Investigation. The mission of these Master of Forensic Sciences degrees is to provide innovative and relevant programs that reflect the changing security environment of the 21st century, incorporating the latest thinking and best practices in the field with a solid foundation in theory and proven principles. Both programs are offered at GWU's Arlington Graduate Center and are conveniently located at the Virginia Square Metro station in Arlington, Virginia.</p> <p>Electronic evidence and information gathering have become the critical component in an increased number of crimes and conflicts. From criminal cases, civil disputes, medical malpractice and employee misconduct to acts of terrorism, if there is a computer or other media device involved, the chances are very good that there will be valuable evidence that requires recovery and analysis, possibly for presentation in court. This increase in technology-related crime has generated an urgent need for a new type of investigator who can combine the science of information technology and forensics with the art of investigation and critical thinking</p>

John Jay College	Total 39 Crs (NA) http://www.jjay.cuny.edu/programsGraduate/progGraduateForensicComputing.asp
Program Description: MS in Forensics Computing	<p>Computer crime and digital evidence together pose the most vexing technological challenge facing law enforcement and security agencies today. To help meet this challenge, John Jay College of Criminal Justice created a new program - the Master of Science in Forensic Computing. This is the first dedicated graduate degree program in the country to address this emerging and critical field.</p> <p>Graduates of the program will be equipped with both understanding of criminal justice issues related to electronic crime investigation and a computer science foundation in forensic computing.</p> <p>The theoretical grounding of the computing curriculum will equip graduates to respond to the ever fresh technical and legal challenges in the field and to participate in research and training in computer forensic and security techniques.</p> <p>The practical side of the curriculum will equip students to work as forensic computing specialists in such roles as cyber-investigators, first responders, technicians in forensic labs, and consultants on computer security issues</p>

Marshall University Forensic Science Center	Total 49 Crs (49 for CC & DF) http://forensics.marshall.edu/MSDegree/MSDegree-Computer.html
Program Description: MS in Forensic Science Program	<p>The Emphasis in Computer Forensics provides a program specific for those seeking to be computer-based and network-facilitated crime investigators. Students pursuing this emphasis benefit by gaining experience in a state-of-the-art case-working lab devoted to computer investigations performed in conjunction with local law enforcement. A wide array of course offerings is available through a cooperative agreement between the Forensic Science Program and the Center for Information Technology and Engineering (CITE). Experts from these programs provide a broad scope of instruction for those interested in this growing field of forensic science</p> <p>Criminals now use computers to carry out a variety of crimes, from viral attacks, to financial fraud. The Computer Forensics Emphasis prepares students for positions in law enforcement and private corporations to combat the threat of these computer savvy criminals. Computer technology will only continue to advance and permeate society, and criminals will only continue to get smarter in the ways they use computers to carry out crimes and hide information. Trained computer forensic professionals in both law enforcement and private industry will prove to be extremely valuable in the years to come fighting cyber crime. Currently most law enforcement agencies and corporations do not have enough trained investigators to handle the amount of active investigations. According to the Federal Bureau of Investigation (FBI), in the year 2000 there were 2,032 cases opened involving cyber crime. Of those cases, only 921 were closed. Of those closed cases only 54 convictions were handed down in court</p>

Appendix C – Course Offerings

The following course offerings have been taken directly from their respective program’s website. Some were minimally edited to fit the format of the table.

Butler County Community College	Total 66 Crs (57 for CC & DF) http://bc3.org/academics/technology/compforensics.htm	
Program Breakdown:	<i>First Semester</i>	
AAS in Computer Forensics (Business Program)	COMP 101 Computer Information Systems	3
	COMP 242 Microcomputing Applications	3
	ENGL 101 English I	3
	CRIM 100 Crime and Justice System	3
	BUSN 203 Introduction to Business	3
	HLTH 120 Physical Wellness PHED 125 or Health Science	2/3
		17/18
	<i>Second Semester</i>	
	COMP 215 PC Management Techniques	4
	CRIM 200 Criminal Law	3
	CFOR 120 Introduction to Computer Forensics	3
	COMP 115 Internet Principles and Practices	3
	COMP 244 Microcomputer Operating Systems	3
		16
	<i>Third Semester</i>	
	COMP 211 Data Communications and Networking	3
	CRIM 210 Criminal Procedure	3
	MATH 101 College Math I	3
	ENGL 106 Technical Writing	3
	CFOR 200 Security Systems	3
	CFOR 240 Search and Seizure	3
		18
	<i>Fourth Semester</i>	
	CFOR 220 Intrusion Detection	3
	CFOR 270 Economic Crime Investigation	3
	CFOR 280 Computer Forensics Practicum or COMP 224 Intro to Programming (using JAVA) or COMP 214 Windows Server Administrator	4/4/3
	BUSN 102 Business Law	3
	PSYC 201 General Psychology	3
		15

Community College of Beaver County	Total 66 Crs (66 for CC & DF) http://www.ccbc.edu/exploring/technologies.jsp?pageId=20906118812511127338400 82
Program Breakdown: AAS in Computer Forensics Degree	<p style="text-align: center;"><u>Curriculum - 1st Year</u></p> <p><i>First Semester - 17 Credits</i></p> <p>CIST100 Introduction to Information Technology 3</p> <p>CISN105 PC Hardware 3</p> <p>CISN100 Introduction to Networking 5</p> <p>CRIM100 Administration of Criminal Justice 3</p> <p>WRIT101 English Composition I 3</p> <p><i>Second Semester - 17 Credits</i></p> <p>CISF120 Computer Forensics and Investigations 3</p> <p>CISN110 Basic Network Routing 5</p> <p>CIST160 Visual Basic I OR 3</p> <p>CIST170 Internet</p> <p>CISN200 Client Operating Systems 3</p> <p>CRIM131 Criminal Law 3</p> <p style="text-align: center;"><u>Curriculum - 2nd Year</u></p> <p><i>Third Semester - 17 Credits</i></p> <p>CISF210 Network Security 5</p> <p>CISN205 Server Operating Systems 3</p> <p>CRIM200 Criminal Evidence 3</p> <p>WRIT103 Writing for Business & Technology 3</p> <p>SOCI101 Principles of Sociology 3</p> <p><i>Fourth Semester - 15 Credits</i></p> <p>CISF200 Disaster Recovery 3</p> <p>CRIM212 Interview and Interrogation 3</p> <p>CRIM215 Police Ethics & Problems 3</p> <p>CRIM230 Criminology 3</p> <p>CISF250 Computer Forensics Internship-Click here for application OR CIS/Telecommunications Elective OR 3</p> <p>Criminal Justice Elective</p>

Community College of Philadelphia	Total 60 Crs (50 for CC & DF)	
	http://www.ccp.edu/site/academic/degrees/pdfs/computer_forensics.pdf	
Program Breakdown:	2 JUS 101 – Survey of Justice	3
	3 CIS 103 – PC Applications	3
AAS in Computer Forensics	7 CIS 104 – PC Operating Systems: Windows	3
	8 JUS 221 – Criminal Investigation	3
	9 CF 101 – Introduction to Computer Forensics	3
	10 JUS 241 – Criminal Law JUS 101	3
	11 JUS 261 – Criminal Evidence and Procedure	3
	12 CF 201 – Advanced Computer Forensics	3
	13 CF 202 – Intrusion Detection and Prevention	3
	18 CF 203 – Network Forensics	3
	19 CF 204 – Computer Forensics Seminar	3
	1 ENGL 101 – English Composition I	3
	6 ENGL 102 – English Composition II	3
	5,15 Social Science Electives	6
	4,16 MATH 118 –	3/4
	14 Humanities Elective	3
	17 Justice or CIS Elective	3
	20 General Elective	

Chesapeake College	Total 67 Crs (51 for CC & DF) http://www.chesapeake.edu/sched_cat/proglist.asp?pickcos=Computer+Information+Systems~Computer+Forensics+Option
Program Breakdown: AAS in Computer Information Systems	<p>Fall I</p> <p>CIS 109 Introduction to Computers 4</p> <p>COM REQ Communications Requirement 3</p> <p>ENG 101 Composition 3</p> <p>FSC 101 College Survival Skills 1</p> <p>SOC SCI Social/Behavioral Sciences 3</p> <p>Spring I</p> <p>CIS 110 Microcomputer Architecture 3</p> <p>CIS 151 Operating Systems for the P C Workstation 3</p> <p>CMJ 211 Techniques of Criminal Investigation 3</p> <p>CMJ 214 Criminal Evidence and Procedures 3</p> <p>CPL 201 Career Planning and Preparation 1</p> <p>PED 103 Fitness and Wellness 3</p> <p>Summer I</p> <p>ART/HUM Arts/Humanities Electives 3</p> <p>SOC SCI Social/Behavioral Sciences 3</p> <p>Fall II</p> <p>CIS 240 Teleprocessing Networks 3</p> <p>CIS 245 Network Administration 3</p> <p>ENG 210 Technical Writing 3</p> <p>MAT Math Elective 3</p> <p>NAT SCI Bio/Natural Sciences 4</p> <p>Spring II</p> <p>CIS 220 Computer Crime 3</p> <p>CIS 250 Adv. Network Design, Install., & Troubleshooting 3</p> <p>CIS 262 Computer Forensics 3</p> <p>CMJ 216 Criminalistics I 3</p> <p>CPL 280 Cooperative Work Experience 3</p>

Fond du Lac	Total 60 Crs (47 for CC & DF)	
	http://www.fdlccc.edu/web/checklists/E-Crime_D.pdf	
Program	BUS 1055 Business Communication	3
Breakdown:	CSCI 1001 Computer Literacy	2
	CSCI 1070 Introduction to Computer Security	2
AAS in E-Crime	CSCI/LAWE 1072 E-Crime: Detection and Prosecution Issues	3
	CSCI 1074 Introduction to Computer Forensics	3
	CSCI 1076 Identity Theft	3
	CSCI 2072 Cybersleuthing	3
	CSCI 2074 Computer Crime Scene Investigation	4
	CSCI 2076 Tools and Tactics of the Black Hat Hacker	3
	LAWE 1020 Criminal Investigation	4
	ENGL 1001 College Writing I	4
	ENGL 1020 College Writing IIB: Writing for Work	3
	SPCH 1020 Interpersonal Communication	3
	Natural Sciences	
	Student must complete one four-credit course	4
	Mathematical/Logical Reasoning	
	MATH 1030 Introduction to Statistics	3
	History and the Social and Behavioral Science	
	Student must complete one course	3/4
	Humanities and Fine Arts	
	Student must complete one course	3
	Human Diversity	
	AMIN 1050 Anishinaabeg of Lake Superior	3
	Ethical and Civic Responsibility	

Indian Hills Community College	Total 84 Crs (~84 for CC & DF) http://www.ihcc.cc.ia.us/ihcc/Learn/advtech/comp-forensics.asp	
Program Breakdown: AAS in Computer Forensics	<p>Term I</p> <p>CFR100 Introduction to Computer Forensics 3</p> <p>CFR121 Forensics Problem Solving 2</p> <p>CSC110 Introduction to Computers 3</p> <p>ENG105 Composition I 3</p> <p>SPC112 Public Speaking 3</p> <p style="text-align: right;">Total 14</p> <p>Term II</p> <p>CFR120 Forensic Operating Systems 2</p> <p>CFR130 Computer Hardware 2</p> <p>CFR142 Forensics Programming 3</p> <p>NET141 Introduction to Networking 2</p> <p>SOC240 Criminology 3</p> <p style="text-align: right;">Total 12</p> <p>Term III</p> <p>CFR141 Network Forensics 3</p> <p>ENG106 Composition II 3</p> <p>NET615 Social Engineering 2</p> <p>PHI145 Introduction to Ethical Conflicts 3</p> <p style="text-align: right;">Total 11</p> <p>Term IV</p> <p>CFR140 Data Recovery Methods I 3</p> <p>CFR148 Network Security 3</p> <p>CFR155 Computer Boot Analysis 2</p> <p>CFR160 Digital Search and Seizure 2</p> <p>Social Science elective 3</p> <p style="text-align: right;">Total 13</p> <p>Term V</p> <p>CFR180 Data Recovery Methods II 3</p> <p>CFR190 Ambient Data Sources 3</p> <p>NET635 Ethical Hacking 3</p> <p>Fine Arts elective 3</p> <p style="text-align: right;">Total 12</p> <p>Term VI</p> <p>ADM221 Career Development Skills 2</p> <p>CFR200 Data Encryption 3</p> <p>CFR210 Computer Evidence/Preservation 3</p> <p>CFR245 Forensic Evidence Analysis 3</p> <p style="text-align: right;">Total 11</p> <p>Term VII</p> <p>CFR230 Evidence and Testimony 3</p> <p>CFR240 Forensics Field Project 3</p> <p>Math elective 2</p> <p>Lab science elective 3</p> <p style="text-align: right;">Total 11</p>	

Lehigh Community College	Total 70 Crs (61 for CC & DF)	
	http://www.lccc.edu/default.aspx?pageID=415&degree=22	
Program Breakdown:	<i>First Semester Credits</i>	
AAS in Computer Specialist - Computer Forensics	BUS 120 Intro to Business Organization	3.00
	CIS 105 Intro to Comp & Applications	3.50
	CJA 101 Intro to Criminal Justice Sys	3.00
	ENG 105 College English I	3.00
	IDS 105 Think, Prob Solv, Team Buildin	3.00
	NET 111 A+ Hardware	3.00
		18.50
	<i>Second Semester Credits</i>	
	CFS 105 Computer Ethics	3.00
	ENG 107 Technical Writing	3.00
	NET 110 Network Plus	3.00
	NET 121 A+ Operating Systems	3.00
	PSY 140 Introduction to Psychology	3.00
	SOC 250 Criminology	3.00
		18.00
	<i>Third Semester Credits</i>	
	ACC 160 Principles of Accounting I	3.50
	CFS 110 Intro to Computer Forensics	3.50
	CJA 105 Criminal Investigations	3.00
	CJA 240 Criminal Law	3.00
	Elective Mathematics *	3.00
		16.00
	<i>Fourth Semester Credits</i>	
	CFS 145 Princ of Information Security	3.00
	CFS 155 Network Security	3.50
	CFS 160 Special Topics Comp Forensics	3.00
	CJA 201 Crim Evidence & Court Proc	3.00
	MAT 150 Intro Probability & Statistics	3.00
		15.50
	<i>Other Credits</i>	
	CFS 280 Computer Forensics Practicum	2.00

Minneapolis Community & Technical College	Total 64 Crs (60 for CC & DF) http://www.minneapolis.edu/academics/areaofstudy.cfm?aos_id=90
Program Breakdown:	First Semester
AAS in Computer Forensics	Course # Course Name Credits
	ITEC 1100 Information Technology Concepts 2
	ITEC 1110 Information Technology Skills 2
	ITEC 1150 Programming Logic and Design 3
	ITEC 1250 Microsoft Windows Operating Systems 3
	ITEC 1425 Data Communications 4
	Second Semester
	Course # Course Name Credits
	PSCI 1101 American Government 3
	ITEC 1310 Microcomputer System Maintenance 4
	ITEC 2710 Microsoft Network Administration 4
	OR
	ITEC 1475 Linux Administration 4
	ENGL 1110 College English 1 3
	General Education Courses (see below) 4
	Third Semester
	Course # Course Name Credits
	ITEC 2865 Internet/Intranet Security 4
	PSCI 2000 Constitutional Law 3
	SOCI 2155 Introduction to Criminal Justice 3
	ENGL 1111 College English 2 3
	SPCH 1000 Fundamentals of Communication 3
	Fourth Semester
	Course # Course Name Credits
	ITEC 2855 Computer Forensics 4
	ITEC 2950 Information Technology Career Preparation 2
	LAWE 2230 Legal Issues and Law Enforcement 3
	General Education Course (see below) 4
	Elective Courses (see below) 3

Southwestern Community College	Total 69-70 Crs (66 for CC & DF) http://www.southwesterncc.edu/ACADPROG/cct.htm	
Program Breakdown: AAS in Cyber Crime Technology	<i>Fall Semester 1</i> CCT 110 Intro to Cyber Crimes 3 CCT 112 Ethics & High Technology 3 ENG 111 Expository Writing 3 MAT 115 Mathematical Models 3 or MAT 140 Survey of Mathematics 3 NOS 110 Operating Systems Concepts 3 Totals 15 <i>Spring Semester 1</i> CCT Approved Elective 3 CCT 121 Computer Crime Investigation 4 NET 110 Networking Concepts 3 NOS 120 Linux/UNIX Single User 3 SEC 110 Security Concepts 3 Totals 15-16 <i>Summer Semester 1</i> ENG 114 Professional Research and Reporting 3 PSY 150 General Psychology 3 *** ** Humanities Elective 3 Totals 9 <i>Fall Semester 2</i> CCT 231 Technology Crimes & Law 3 CCT 240 Data Recovery Techniques 3 CCT 250 Network Vulnerabilities I 3 CJC 231 Constitutional Law 3 CTS 120 Hardware / Software Support 3 Totals 15 <i>Spring Semester 2</i> CCT 241 Advanced Data Recovery Techniques 3 CCT 251 Network Vulnerabilities II 3 CCT 285 Trends in Cyber Crime 3 CCT 289 Capstone Project 3 CJC 131 Criminal Law 3 Totals 15 Approved Electives CCT 220 Forensic Accounting 3 CJC 114 Investigative Photography 2 CJC 120 Interviews & Interrogations 2 NET 125 Routing & Switching 3 NOS 220 Linux/UNIX Admin I 3 Totals 13	

Stark State	Total 72 Crs (58 for CC & DF)	
College of	http://www.starkstate.edu/academics/it_tech/cybersecur.htm	
Technology		
Program	First Semester Credit Hours Prerequisite	
Breakdown:	ECA122 Computer Applications for Technical Professionals	3
	EET131 PC Upgrading and Maintenance	3
AAS in Cyber	EET141 Introduction to Computer Networking	3
Security and	ECA133 Computer Applications Support	3
Computer	MTH121 College Algebra & Trigonometry I	4
Forensics		
Technology	Second Semester	
	ECA136 Principles of Information Security	3
	ECA127 Programming Logic and Problem Solving	3
	ECA137 Computer Crime and Investigation	3
	ENG124 College Composition	3
	Algebra & Trigonometry II	3
	PHY121 Physics I	4
	Third Semester	
	ACC235 Forensic Accounting and Fraud Investigation	3
	ECA134 CCNA Phase I	2
	ECA135 CCNA Phase II	2
	ECA257 File Systems Analysis	3
	ACC236 Cyber Law & Ethics	3
	ECA244 MS Windows Server 2003 Network Infrastructure	3
	EET257 UNIX/LINUX Operating Environment	3
	Fourth Semester	
	ECA256 Disaster Recovery & Incident Planning	3
	ECA258 Cyber Forensics & Data Recovery	3
	EET258 Data Encryption and Firewall Technology	3
	ECA245 Designing Security for Windows 2003 Network	3
	ENG221 Technical Report Writing	3
	SPH121/122 Effective Speaking or Inter-group Communications	3
	TOTAL CREDITS	72

Champlain College	Total 91 Crs (65 for CC & DF) http://www.champlain.edu/majors/digitalforensics
Program Breakdown: BS in Computer & Digital Forensics	<p>FIRST YEAR</p> <p>First Semester Cr. Hrs Prereqs.</p> <p>CAP 121 Research Using Internet & Online Resources 1</p> <p>COM 130 Interpersonal Communication 3</p> <p>CRJ 120 Criminal Law I 3</p> <p>ENG 111 Critical Reading & Expository Writing I 3</p> <p>NET 100 File Management 1</p> <p>PSY 100 Psychology 3</p> <p style="text-align: right;">14</p> <p>Second Semester Cr. Hrs</p> <p>CRJ 121 Criminal Procedure 3</p> <p>ENG 112 Critical Reading & Expository Writing II 3</p> <p>FOR 110 Survey of Criminalistics or 3</p> <p>SCI 170 Laboratory Forensic Science (1) 4</p> <p>MTH 120 College Algebra 3</p> <p>NET 120 Computers and Telecommunications 3</p> <p style="text-align: right;">15-16</p> <p>SECOND YEAR</p> <p>First Semester Cr. Hrs</p> <p>FOR 200 Analysis of Digital Media 3</p> <p>HIS 210 Legacy of World Civilization I 3</p> <p>NET 130 Introduction to Data Communications 3</p> <p>NET 140 Operating Systems 3</p> <p>General Elective 3</p> <p style="text-align: right;">15</p> <p>Second Semester Cr. Hrs</p> <p>FOR 240 Computer Forensics I 3</p> <p>CRJ 230 Criminal Investigation 3</p> <p>HIS 211 Legacy of World Civilization II 3</p> <p>MTH 200 Introduction to Statistics 3</p> <p>WEB 100 Programming for Mere Mortals 1</p> <p>Fine Arts Elective 3</p> <p style="text-align: right;">16</p> <p>THIRD YEAR</p> <p>First Semester Cr. Hrs Prereqs.</p> <p>COM 270 Intercultural Communication 3</p> <p>CRJ 210 Investigative Interviewing 3</p> <p>FOR 340 Computer Forensics II 3</p> <p>LAW 140 Business Law I 3</p> <p>Literature Elective 3</p> <p style="text-align: right;">15</p> <p>Second Semester Cr. Hrs</p> <p>ACC 130 Financial Accounting 3</p> <p>CAP 112 Computer Applications: Spreadsheets 1</p> <p>FOR 350 White Collar Crime 3</p> <p>HIS 313 Modern American Social History 3</p>

	PHI 210 Critical Thinking	3
	SEC 250 Computer & Network Security	3
		16
	FOURTH YEAR	
	First Semester Cr. Hrs	
	ACC 280 Forensic Accounting	3
	FOR 360 Cybercrime	3
	HIS 415 Seminar in Contemporary World Issues	3
	SWK 425 Ethics in Human Services	3
	Natural Science w/ Lab (2)	4
	General Elective	3
		15-16
	Second Semester Cr. Hrs	
	ECN 205 Microeconomics or	
	ECN 210 Macroeconomics	3
	FOR 450 Senior Seminar in Digital Investigation	3 90
	FOR 490 Computer Forensics Internship or 75 cr.,	3.0
	CRJ/CIS/FOR Elective	3
	SOC 295 Community Service	1
	General Elective	3
		13

Central Pennsylvania College	Total 125 Crs (95 for CC & DF)	
	http://www.centralpenn.edu/academics/programs/index.asp	
Program Breakdown:	Bachelors Humanities Electives	2
	Bachelors Math, Science & Technology Electives	15
BS in Info Tech - Cyber Security	Bachelor's Social & Behavioral Science Electives	12
	Cis100 Data Modeling Foundations	3
	Cis120 Structured Programming	3
	Cis135 Networking Fundamentals	3
	Cis140 Microcomputer Systems	3
	Cis145 Routers And Routing	3
	Cis222 Network Security Fundamentals	3
	Cis242 Linux I	3
	Cis243 Linux Ii	3
	Cis245 Internet Programming I	3
	Cis252 Sql Fundamentals	3
	Cis262 Database Administration	3
	Cis390 Systems Analysis & Design	3
	Cis411 Cyber Ethics	3
	Cis499 Internship For Computer Information Systems 4	
	Eng100 English Composition I	3
	Eng200 English Composition Ii	3
	Mip245 Web Design I	3
	Sts005 The Central Penn Experience	1
	General Education Electives	15
	Electives (18 credits total) choose from the following:	
	Possible Electives	
	CIS223 Firewalls And Network Security	3
	Cis285 Computer Forensics	3
	Cis302 Disaster Recovery	3
	Cis412 Computer Hacking	3
	Cri365 Legal Aspects Of Cyber Security	3

Waynesburg College	Total 76 Crs (0 for CC & DF)	
	http://www.waynesburg.edu/depts/compsci/pages/courses/computer_sci/computer_forensics.htm	
Program	CSC	
Breakdown:	115 Survey of Computer Applications	3
	116 Computer Programming I	3
BS Computer Science	117 Computer Programming II	3
	119 Computer Hardware and Architecture	4
	125 Information Systems	3
	206 Computer Organization/Assembly Language	3
	207 Data Structures	3
	208 Database Management	3
	217 Computer and Ethics in Society	1
	219 Telecommunications	3
	319 Computer Networks	4
	365 Internship	3
	409 Computer Security	3
	499 Senior Project	1
	MAT	
	108 Intermediate Algebra	3
	205 Elementary Functions	3
	CRJ	
	109 Criminal Justice Administration	3
	115 Law and the United State Legal System	3
	218 Criminal Investigation	3
	219 Criminal Law	3
	328 Criminal Procedure	3
	329 Law and Evidence	3
	345 White Collar Crime	3

George Washington University	Total 36 Crs (36 for CC & DF) http://www.gwu.edu/%7Eforensic/htci.htm#Top_page
Program Breakdown: MS in Forensic Science: High Technology Crime Investigation	<p>Introduction to Criminal Investigations FORS 116: Introduction to Criminal Law FORS 117: Introduction to Organizational Systems for Security Professionals FORS 118: Introduction to Computer Systems for Security Professionals FORS 119: Introduction to Network Systems for Security Professionals</p> <p>Masters Program (36 credits, 12 courses) Required Courses: (12 credits, 4 courses) FORS 261: Security Management FORS 262: Risk Analysis and Loss Prevention FORS 264: Protection of Information Systems FORS 273: Research Methods for the Security Professional</p> <p>Concentration Courses (15 credits, 5 courses)</p> <p>FORS 259: Computer-Related Law FORS 265: Ethics and Leadership FORS 277: Computer Forensic I - Investigating and Evidence Gathering FORS 279: Intrusion I - Understanding and Identifying Network-Based Attacks FORS 285: Capstone Seminar: High Technology Crime Investigations</p> <p>Electives Include (9 credits, 3 courses) FORS 260: Security Case Law FORS 263: Issues in Crisis and Disaster Management FORS 267: Organizational Behavior for Security Professionals FORS 268: Industrial Espionage and Corporate Privacy Issues FORS 269: Corporate Fraud FORS 270: Security Contracting With Federal and State Entities FORS 271: Forensic Psychology FORS 274: Video Forensic Analysis FORS 278: Computer Forensics II - Evidence and Analysis FORS 280: Intrusion II - Investigating Network-Based Attacks FORS 281: Forensic Accounting FORS 282: Telecommunication Systems for Security Professionals FORS 283: Steganography and Electronic Watermarking FORS 286: Personnel Security FORS 290: Selected Topics: Current Issues in High Technology Crime Investigation FORS 295: Research FORS 298: Practicum</p>

Marshall University Forensic Science Center	Total 49 Crs (49 for CC & DF) http://forensics.marshall.edu/MSDegree/MSDegree-Computer.html	
Program Breakdown:	<u>Core Curriculum</u>	
MS in Forensic Science Program	FSC 604 Genetics and DNA Technology	3
	FSC 606 Crime Scene & Death Investigation	2
	FSC 612 Introduction to Forensic Microscopy	2
	FSC 618 Forensic Comparative Science	2
	FSC 622 Forensic Analytical Chemistry I	3
	FSC 624 Biochemistry: Forensics	4
	FSC 630 Forensic Internship	5
	FSC 632 Foundation & Fundamentals in Digital Evidence	3
	FSC 665 Forensic Science Legal Issues	3
	FSC 680 Forensic Science Seminar: Term 1	1
	FSC 680 Forensic Science Seminar: Term 2	1
	FSC 680 Forensic Science Seminar: Term 3	1
	FSC 680 Forensic Science Seminar: Term 4	1
	MTH 519 Forensic Science Statistical Issues	3
	N/A Elective	4
	Total	38
	<u>Option</u>	
	FSC 605 Forensic Digital Imaging	3
	FSC 609 Introduction to Cybercrime	3
	FSC 676 Advanced Digital Evidence Detection and Recovery	2
	IS 631 Information Security	3
	Total (Including CORE Courses)	49

Appendix D – Course Descriptions & Syllabi

Appendix D contains course descriptions and syllabi from the CC & DF programs examined in this report that were available via the Internet. Please note that not all programs published course descriptions and syllabi. The descriptions and syllabi below have been copied directly from their respective program's website. Minimal editing was done for formatting purposes.

Name of Institution	Butler County Community College
Name of Program	Computer Forensics (Business Program)
Degree Offered	Associate in Applied Science

Introduction to Computer Forensics

This course introduces students to the fundamentals of computer forensic technology. Emphasis will be placed on identifying the threats to, and vulnerabilities of, computer systems and how to minimize them. Students will learn how hackers identify victims, how attacks are executed, and various methods used to gain access to computer systems

Computer Forensics Practicum

The course is a practicum for advanced students in the Computer Forensic Program. Projects or work in actual government agencies and business organizations are cooperatively supervised by the instructor and immediate supervisor. Students will gain experience in various aspects of maintaining adequate security, data recovery, and techniques used in detecting and solving computer-based problems.

Prerequisites: CFOR 240 and CRIM 210, and acceptable criminal background check (must be less than three months old)

Crime and Justice Systems

This course is an introduction to the field of criminology. Historical data; theories of causation; social control of behavior; development of laws; economic, political, social, and cultural changes will be explained. The student will study the Criminal Justice System as it evolved and exists in the United States including the police, courts and correctional facilities, and the administration of each. In addition

to learning the terminology used in this particular field, the student will have an opportunity to examine methodology and personal values and attitudes.

Criminal Law

The course will introduce the student to the definitions of crimes as well as the Pennsylvania Crimes Code. Affirmative criminal defenses, competency and inchoate crimes will be examined.

Criminal Procedure

This course will introduce the student to the principles of criminal procedure with particular emphasis on federal and state constitutional limitations and rights.

Name of Institution Community College of Beaver County
Name of Program Computer Forensics Degree
Degree Offered Associate in Applied Science

Computer Forensics and Investigation

This course teaches students the fundamentals of computer forensics and investigation. Topics include principles of computer investigations, current computer forensics software tools, digital evidence controls, computer forensic analysis, e-mail investigations, recovering image files, writing investigation reports, and becoming an expert witness

Computer Forensics Internship

This course is designed to give second year students supervised, on-the-job experience in various aspects of computer forensics. All students will be required to spend a minimum of nine hours per week at where he/she is assigned to complete the internship. Each student will meet with a faculty member before his or her assignment to establish goals and then several

Name of Institution	Chesapeake College
Name of Program	Computer Information Systems
Degree Offered	AAS

Computer Crime

The course introduces students to computer-based crimes. Students will explore the use of computers and peripheral devices by individuals and by organized crime in the perpetration of crime and cyber offenses, such as cyber terrorism, information theft, identity theft, child pornography, data corruption and disruption of service. The course will expose students to emerging laws of cyberspace. It will explore methods of investigating and preventing cyber crimes and infringements upon information security. Legal topics will include laws governing e-commerce and intellectual property protections, focusing on landmark cases such as Napster. Two hours lecture; two hours lab per week.

Computer Forensics

This course introduces students to the study of computer forensics. Students will explore computer-based investigation methods necessary to properly conduct a computer forensics investigation. Areas of focus include understanding computer investigations, working with different operating systems, identifying and using current computer forensics tools, applying digital evidence controls, processing crime and incident scenes, applying techniques for data acquisition, conducting E-mail investigations, recovering image files, producing written investigation reports, and implementing procedures for corporate high-technology investigations. Two hours lecture/Two hours lab per week

Criminalistics I

An examination of the evidence collection function of a law enforcement agency. Methods of locating, collecting, processing, and preserving evidence and equipment utilization will also be discussed. Three hours lecture per week.

Introduction to Computers

A survey of computers and information processing and their roles in society. This course introduces historical perspective, hardware, software, systems and human resources exploring their interaction and application in business and other segments of society. Students will be required to complete lab assignments using the PC's operating system and several commonly used applications, such as word

processors, Internet browsers and search engines, spreadsheets, and graphics presentations applications.
Three hours lecture, two hours lab per week

Name of Institution	Lehigh Community College
Name of Program	Computer Specialist - Computer Forensics A.A.S
Degree Offered	Associate in Applied Science

Intro to Computer Forensics

This course describes how to properly conduct a computer forensics investigation using the appropriate computer forensic tools. It also details the court criteria for a witness to be considered an expert

Computer Forensics Practicum

The Computer Forensics practicum will consist of an instructor approved capstone project or a fieldwork assignment. The capstone project will be a paper detailing a hypothesis, research, supporting documentation and a conclusion. The topic will be relevant to the field of Computer Forensics. The fieldwork assignment will consist of the student serving 140 hours as an apprentice to a criminal investigator or forensic consultant. The expectation is that the student will be able to apply the coursework to real-life scenarios.

Intro to Criminal Justice Sys

A review of the total criminal justice system. The five primary elements of the system - police, criminal courts, probation, prisons, parole - are studied. Interrelationships are stressed and problem areas discussed, particularly with respect to Constitutional guarantees.

Computer Ethics

Computer Ethics examines the impact ethical issues have on information technology. The course describes the methods to address these issues and focuses on the positive impact an IT professional should have in the field.

Criminology

This course offers students a sociological perspective on crime in American society. The class investigates differing definitions of the crime problem and explores how people learn about crime, what behaviors they fear, and why some but not all socially harmful acts are punished by the criminal justice system. Course materials present the major sociological theories of crime and criminality, giving students the conceptual tools to think about the causes of crime in our society. This course investigates the nature and extent of different types of crime: violent street crime, domestic violence, occupational crime, corporate crime, property crime, public order crime, and political crime. Finally, the class reviews and assesses our society's response to crime, giving particular attention to imprisonment and capital punishment.

Criminal Law

Substantive criminal law is examined to understand the law as a foundation of the justice system. Examples are taken from the Pennsylvania Crimes Code. The use of discretion and the trends toward increasing criminal and civil liability risks are explored.

Name of Institution	Southwestern Community College
Name of Program	Cyber Crime Technology
Degree Offered	Associate in Applied Science

Introduction to Cyber Crime

This course introduces and explains the various types of offenses that qualify as cyber crime activity. Emphasis is placed on identifying cyber crime activity and the response to these problems from both the private and public domains. Upon completion, students should be able to accurately describe and define cyber crime activities and select an appropriate response to deal with the problem.

Required Textbook(s):

Title: Principles of Information Security; Author: Whitman; Year: Edition: 3rd; ISBN: 0619063181

Course Objectives/Competencies:

Upon completion of this course, students will be able to

1. Accurately describe and define cyber crime activities and select an appropriate response to deal with the problem.

Computer Crime Investigation (3-2-4)

This course introduces the fundamental principles of computer crime investigation processes. Topics include crime scene/incident processing, information gathering techniques, data retrieval, collection and preservation of evidence, preparation of reports and court presentations. Upon completion, students should be able to identify cyber crime activity and demonstrate proper investigative techniques to process the scene and assist in case prosecution

Required Textbook(s)

Title: Guide to Computer Forensics and Investigations; Author: Nelson; ISBN: 0619131209

Course Objectives/Competencies:

Upon completion of this course, students will be able to

1. Identify the Scope and Breadth of Computer Crime.
2. Identify Jurisdiction of Investigations. (a) Corporate Practices and Policies (b) Law Enforcement Agencies

3. Identify and Use Appropriate Tools for Investigating Computer Crime. (a) Proper Steps and Sequence (b) Hardware and Software Systems (c) Hardware and Software Tools
4. Learn to Identify an Attack. (a) Attacks in Progress (b) Evidence of a Successful or Failed Attack
5. Learn and Practice Proper Methods of Investigation (a) Understand Legal Parameters, Documents, and Statutes (b) Follow the Rules of Evidence Handling (c) Understand Chain of Custody (d) Avoid Common Pitfalls of Investigation (e)

Technology Crimes & Law

This course covers the applicable technological laws dealing with the regulation of cyber security and criminal activity. Topics include an examination of state, federal and international laws regarding cyber crime with an emphasis on both general and North Carolina statutes. Upon completion, students should be able to identify the elements of cyber crime activity and discuss the trends of evolving laws.

Required Textbook(s):

Title: The GigaLaw Guide to Internet Law; Author: Isenberg; ISBN: 0812991982

Course Objectives/Competencies:

Upon completion of this course, students will be able to

1. Identify the elements of cyber crime activity.
2. Discuss the trends of evolving laws

Ethics & High Technology

This course covers ethical considerations and accepted standard practices applicable to technological investigations and computer privacy issues relative to the cyber crime investigator. Topics include illegal and unethical investigative activities, end-justifying-the-means issues, and privacy issues of massive personal database information gathered by governmental sources. Upon completion, students should be able to examine their own value system and apply ethical considerations in identifiable cyber crime investigations

Required Textbook(s):

Title: Computer Ethics

Author: Johnson

Year: Edition: 3rd

ISBN: 0130836990

Course Objectives/Competencies:

Upon completion of this course, students will be able to

1. Demonstrate an understanding of the importance of computer ethics and its application to computer crimes and computer crime investigations.
2. Demonstrate an understanding of human actions and the implications of technology to these human interactions.
3. Demonstrate an understanding of the traditional philosophical frameworks that establish ethical viewpoints. In addition, the student should demonstrate an understanding of the dialectic process.
4. Demonstrate an understanding of the ACM code of ethics and the Law Enforcement Code of Ethics. The student will also be able to compare and contrast these codes of ethical conduct.
5. Explain the fundamental principles of ethics and the Internet. The student should be able to also consider the implications of anonymity and reproducibility of material via the Internet.
6. Explain the impact of hacking (black hat) to the concepts of trust and accountability. The consideration by the student should be directed toward the controlling socially undesirable behavior and encouraging civil behavior.
7. Explain the impact of privacy issues encountered relative to the Internet and how the cyber crime professional should act relative to these issues. Discuss why we, as cyber crime professionals, should be cognizant of the privacy of individuals as it would relate to ethical matters.
8. Discuss the issues of property. Explain the concepts of copyright, trade secrecy, patent laws and computer software.
9. Demonstrate an understanding of accountability issues of software recommendations, liability of Internet Service Providers and the Y2K issues.
10. Considerations of legal issues between distinguishing computer information technology as either a service or a product.
11. Explain the view that the Internet and computer technology has ushered in a new social revolution.

12. Discuss the concept of the “digital divide”.
13. Discuss the ideas of jurisdiction, systems of trust and insularity.

Forensic Accounting

This course introduces the basic principles and procedures of investigative accounting and analysis of financial evidence. Emphasis is placed on collecting data and evidence, evaluation of internal control systems, accounting systems, concealed income analysis and fraud detection. Upon completion, students should be able to apply generally accepted accounting standards and procedures for conducting a criminal investigation audit for financial information

Required Textbook(s):

Title: It Takes a Thief to Catch a Thief: An Introduction to Forensic Accounting

Author: Carland

Year: Edition:

ISBN: 1932155392

Course Objectives/Competencies:

Upon completion of this course, students will be able to

1. Explain the legal elements of fraud, describe white collar crime, and discuss the widespread nature of fraud and its economic impact.
2. Discuss public record information, describe the sources of information available to the forensic accountant, and explain the mind set required for a forensic accountant.
3. Explain the fraud theory approach and describe fraudulent financial transactions, discuss fraud, bribery, corruption, embezzlement, larceny, conflicts of interest, and economic extortion.
4. Recognize fraudulent financial statements, apply the net worth method, discuss and recognize employee fraud schemes, on-book and off-book frauds, and explain the various types of fraud.
5. Apply financial statement analysis techniques to demonstrate the existence of fraud and identify potential fraudsters.
6. Describe expert testimony and interview theory, conduct fraud interviews, evaluate deception and elicit admission, and be able to apply fraud prevention and fraud deterrence techniques.

Name of Institution	Champlain College
Name of Program	BS in Computer & Digital Forensics
Degree Offered	Bachelors Science

Introduction to Forensics Technology

This is the introductory course in this program and is designed to expose students to a variety of information on numerous fields of forensic technology. While this course involves various forensic disciplines, including digital and non-digital methods, digital forensics does not exist in a vacuum. Other, non-digital but still highly technical forms of analysis are critical to creating a comprehensive and thorough examination of the facts in any case. Toward that end, the following topics will be covered:

- Introduction, Definition and History of Forensic Science
- Physical Evidence, Evidence Collection, and Crime Scene Management
- Fingerprints
- Drugs
- Forensic Toxicology
- Arson & Explosive Investigation
- Serology
- Firearms, Tool marks, and Impressions
- Forensic psychology
- DNA
- Computer Forensics

Computer Forensics I

This course covers topics related to criminal justice and computer technology and is, by its nature, a multi-disciplinary course — which is why this course was originally team taught by a computer guy and a police officer. Forensics is the use of science in a court of law; this course looks specifically at how one obtains evidence off of a computer and from network messages and logs, preserving the evidentiary chain, and the legal aspects of the search and seizure of computers and related equipment/information. To that end, we will cover a large set of topics, including:

Introduction to Computer and Internet Technology

Computer components; Computer media; The Internet, the Web, and TCP/IP; The Internet hacker subculture

Internet/Computer Demographics

Computer/network user statistics; Computer crime statistics

Types of Computer and Internet Crime

Types of crimes involving computers; Computer crimes; Network crimes; Criminals, hackers, and crackers

Investigations

The investigation life cycle; Legal methods to obtain the computer; Jurisdictions and agencies; Internet investigations (e-mail, IRC, chat rooms, etc.); IP addresses and domain names; Investigative methods

Evidence collection

Working with ISPs and telephone companies; Examining computer, server, and network logs; Anonymous services

Legal issues

Constitutional law, search and seizure guidelines, case law; Privacy Protection Act (PPA); Electronic Communications Privacy Act (ECPA); Seizing electronic evidence; Investigative and testimonial challenges; Future challenges; CALEA; International computer crime laws

Forensics

Types of computers (e.g., laptops, watches, PDAs); Windows and Unix file storage; Handling computers and media (seizure and maintaining the integrity of evidence); Searching and retrieving information; Encryption and steganography basics; Tools (e.g., Sam Spade, ping, traceroute, whois, netstat, EnCase, WinHex)

This course will present varying levels of detail on the topics above. It is expected that technology students will be more familiar with computers and networks than the Criminal Justice students but less familiar with the legal aspects, and vice versa. Part of the course experience will be the blending of student expertise in the formation of teams. This is intended to be a general, practical course.

Computer Forensics II

This course is designed to expose students to advanced concepts in digital/computer forensic analysis and Internet Investigations. As with the introductory course, there will be a balance of legal and technical aspects of study to achieve a balance similar to that encountered during common cases in which computer forensics are employed. Toward that end, the following topics will be covered:

- Introduction and Review of Basic Concepts
- Advanced Legal Concepts
- Subpoenas and Search Warrants
- Seizing digital media
- Creating a duplicate image of a thumb drive
- Imaging & Authentication
- Forensic Hardware & Software
- Linux as a forensic platform
- Advanced Encryption & Steganography
- Analyzing Media with EnCase Analyzing Media with Forensic Toolkit

Criminal Law

Provides a comprehensive analysis of the fundamentals of substantive criminal law. Students will learn the essential elements of crimes and the rationale underlying criminal law. The nature of jurisdiction, the criminal act, the criminal state of mind and matters affecting responsibility for criminal conduct are included

Computers & Telecommunications

This course is a survey introduction and overview about computer and network concepts and technology, and the relationship of information to that technology. It introduces the student to the interrelationship of a broad set of topics ranging from number systems and operating systems to programming and hardware design to types of networks and Web site design. The importance of system security and information assurance is also stressed throughout. Some of the subject matter is reinforced by hands-on laboratory exercises and assignments.

Cybercrime

This course will focus on economic and other crimes perpetrated over the Internet or other telecommunications networks. This course will discuss crimes ranging from auction fraud and social engineering to e-mail scams and phishing. Network forensics and investigative techniques will also be presented

Ethics in Human Services

Students explore the foundations of modern day ethics and ethical decision making, and the specific ethical issues and dilemmas facing such social service professionals as criminal justice personnel and social workers. This course develops guidelines for resolving professional ethical dilemmas and introduces liability and litigation considerations in professional ethical practice

Name of Institution	Central Pennsylvania College
Name of Program	Info Tech - Cyber Security
Degree Offered	Bachelor Degree

Computer forensics

Computer forensics is the application of computer and data investigation and analysis techniques to identify, collect, and protect potential legal evidence. Computer forensic specialists use a variety of techniques to discover data stored on a computer and to recover deleted, encrypted, or damaged file information. Extracted evidence must be properly handled and protected from damage and a continuing chain of evidence and custody must be established. Students in this course will learn what types of information may be gleaned from a computer system, how to gather that information as evidence, and how to insure the integrity of that evidence in a legal proceeding.

Legal Aspects Of Cyber Security

The course is primarily designed as a survey of the legal issues surrounding the use of the Internet. Coverage includes origins of the Internet, criminal aspects of cyberspace, tort liability, and privacy issues

Cyber Ethics

Cyber ethics refers to the study of moral, legal, and social issues involving computer and network technology. This course addresses the ethical roles and responsibilities of computer professionals. Privacy, security, intellectual property rights, and cyber related crimes will be discussed along with the problems of regulating commerce and speech in cyberspace.

Name of Institution	Waynesburg College
Name of Program	Computer Science
Degree Offered	Bachelor Degree

Computer Hardware and Architecture

A study of structured computer organization. Topics include the history of computer architecture, digital logic, microcomputer architecture, instruction sets and parallel computer architecture. Also included is a hands-on study of the basic hardware operation of PCs including memory, expansion, upgrades, troubleshooting and performance.

Computer Security

An examination of computer security and data retrieval. The course will consider topics and hands-on experience in security vulnerability, public key cryptology, firewalls, computer viruses and retrieval of lost and/or corrupted data.

Computers and Ethics in Society

Seminar designed to explore the impact of computers on society. The class will discuss contemporary technical issues and personal ethics and experiences from a variety of viewpoints: social, legal, political, constitutional, economic, and Judeo-Christian. Students will develop their own professional ethics guidelines.

Name of Institution	George Washington University
Name of Program	Master of Forensic Science: High Technology Crime Investigation
Degree Offered	Masters of Science

Computer Forensics I: Investigation and Data Gathering

Techniques used to detect computer crime and gather probative evidence to secure a conviction under federal law are examined. Open to degree and certificate candidates only or by permission from the Program Director. Lab fee required.

Computer Forensics II: Evidence and Analysis

The threats to and vulnerabilities of computer systems and how to minimize them are examined. Pre-requisite: FORS 277. Open to degree and certificate candidates only or with permission from the Program Director. Lab fee required.

Introduction to Criminal Investigations

Introduces the security student to the legal aspects of search and seizure, crime scene investigation and documentation techniques, fingerprint processing methods, collecting evidence and writing investigative reports. Students with an undergraduate or graduate course in Criminal Investigations or the equivalent may waive this course

Introduction to Criminal Law

Introduces the security student to principles of criminal law and procedures, preparation and presentation of evidence, examination of witnesses, and methods of legal research. Students with an undergraduate or graduate course in Criminal Law or the equivalent may waive this course

Introduction to Computer Systems for Security Professionals

Introduces the non-technical student to the basic aspects of computer hardware and software needed to function as an effective high technology crime investigator. Emphasis is placed on clearly understanding the aspects of computer systems and software that directly relate to media analysis, i.e. storage, memory, file system structures, as well as the structure of system peripherals, which may contain evidence. Common software operating systems discussed include: Windows, DOS, and Linux. Students with a

graduate or undergraduate course in computer hardware and software systems of A+ certification or the equivalent at the time of admission may waive this course. Lab fee required

Introduction to Network Systems for Security Professionals

Introduces the non-technical security student to the basics of network tools, administrative tools, network protocols and fundamentals of TCP/IP, which may be used to carry out a network attack. Using standard operating systems such as Windows and Unix, students develop a working knowledge of how information is processed and can be intercepted on the Internet/Intranet. Students with an undergraduate or graduate course in computer network systems and TCP/IP, CompTia Network+ Certification or the equivalent at the time of admission may waive this course. Lab Fee required

Computer-Related Law

Procedural rules affecting the collection and use of digital evidence in court are covered. Emphasis is placed on court opinions defining the rules of search and seizure and admissibility of evidence

Ethics and Leadership

This course covers the ethical dimensions of business issues faced by leaders, such as employer/employee loyalty, privacy, piracy, the professional use of technology, ethics in a global environment.

Name of Institution	Marshall University Forensic Science Center
Name of Program	Forensic Science Program
Degree Offered	MS

Introduction to Cybercrime

Teaches the basics of how computers and networks function, how they can be involved in crimes as well as a source of evidence

Digital Imaging

Introductory course in digital image processing. Covers techniques used in forensic laboratory to enhance, analyze, and catalog digital images. Instruction in a laboratory setting.

Advanced Digital Evidence Detection & Recovery

This course will provide an overview of the advanced procedures and techniques used by investigators working with digital evidence. The course will be taught as a combination of lectures, laboratory and practical exercises

Appendix E – Areas of Major Knowledge Thrust

	Anne Arundel CC	Butler County CC	CC Beaver County	Community College of Philadelphia	Central Penn College	Champlain College	Chesapeake College	Colorado Technical University	Fond du Lac	George Washington University
CIS	NA	16	15	6	27	16	10	NA	7	6
Networking/Telecom	NA	3	15	0	12	3	9	NA	0	9
Crime and Justice	NA	9	12	12	0	16	9	NA	14	0
Computer Forensics	NA	3	3	12	3	12	6	NA	6	9
Internet	NA	3	3	0	6	3	0	NA	0	0
Communication	NA	6	6	6	6	12	9	NA	13	0
Business	NA	3	0	0	0	9	0	NA	0	0
Ethics	NA	0	3	0	3	3	0	NA	0	6
Legal	NA	6	3	3	3	6	0	NA	0	9
Internship	NA	3	3	0	0	3	3	NA	0	0
Security	NA	6	0	3	0	0	0	NA	0	0
Risk/Loss/Disaster	NA	0	0	0	3	0	0	NA	0	6
Forensics	NA	0	0	0	0	3	0	NA	0	0
	Indian Hills CC	John Jay College	Lehigh Carbon CC	Marshall University E.S.C.	Minneapolis Comm. Tech College	Pittsburgh Technical Institute	Southwestern CC	Stark State College of Technology	Waynesburg College	
CIS	17	NA	9.5	0	23	NA	18	24	25	
Networking/Telecom	5	NA	6.5	0	0	NA	12	6	7	
Crime and Justice	6	NA	12	2	3	NA	2	0	9	
Computer Forensics	18	NA	6.5	11	4	NA	4	6	0	
Internet	0	NA	0	0	4	NA	0	0	0	
Communication	9	NA	6	0	9	NA	3	9	0	
Business	0	NA	6	0	0	NA	0	0	0	
Ethics	6	NA	3	0	0	NA	3	0	4	
Legal	0	NA	3	3	3	NA	9	3	9	
Internship	3	NA	3	5	0	NA	0	0	3	
Security	0	NA	3	3	0	NA	3	3	3	
Risk/Loss/Disaster	0	NA	0	0	0	NA	0	3	0	
Forensics	0	NA	0	21	0	NA	3	3	0	

NA – Not Available

