Community College *of* Philadelphia

AGENDA
Institution-Wide Committee
Monday, December 19, 2016
2:30 p.m.
I.A.S. Boardroom, M2-1

I. Call to Order

II. Attendance

III. Approval of Minutes
(a) October 24, 2016

IV. Old Business

V. New Business

- Cybersecurity AAS (new)
- Network Technology Management and Administration AAS (new)
- Photographic Imaging AAS (revision)

The Curriculum Committee voted on 12-8-2016 to approve these three program documents but also recommends that there be a larger conversation about how students are advised of alternative options for electives beyond those prescribed/designated in the curriculum grid.

VI. Adjournment

COMMUNITY COLLEGE OF PHILADELPHIA

New Degree Program Proposal

Name of Program	Associate in Applied Science in Cybersecurity
Writer(s) of this Proposal	Dr. Berna Dike-Anyiam
Contributors	None
Facilitator	Cynthia Giddle/Barbara Spadaro
Effective Semester	Fall 2017
Abstract	As the number of computers being used at the personal, business and government level to store sensitive information increases, the need for securing computers and other systems that store this information becomes more obvious. Information security professionals are needed to provide security for these infrastructures, and this program is designed to prepare students for such careers. This new degree program is designed for students who are interested in pursuing careers in information security. This program will also be beneficial to students who may wish to transfer to a four year college for a Bachelor's degree.
Keywords	The U.S. Bureau of Labor Statistics (BLS) uses information security as the main keyword for the cybersecurity profession. Other entities, such as the states, local authorities and private entities, may use keywords such as information systems security, information technology security, network security, etc. as the main keyword for cybersecurity profession.
Date	12/8/2016

I. Alignment with the College Mission

Offering an A.A.S in Cybersecurity is consistent with the Community College of Philadelphia's mission to achieve improved ability to pursue paths of inquiry, to interpret and evaluate what is discovered, and to express reactions effectively. Part of the College's commitment to "the changing needs of business, industry, and the professions," this program will enable students to gain valuable knowledge and skills necessary to monitor, detect and identify common information technology security threats and vulnerabilities. The program will also provide students the ability to evaluate, analyze and resolve information technology security issues, as well as diminish/prevent any potential attacks.

II. Opportunities and/or Problems That the Proposed Program Addresses

A University of Maryland study concluded that computers with Internet access are attacked every 39 seconds on average. [i] Corporations and the government need information technology security professionals who can protect their data and systems

from both internal and external security threats. This need will translate into increased employment opportunities for graduates of this new program.

According to the Bureau of Labor Statistics Occupational Outlook Handbook, 2016-17 edition:

> Demand for information security analysts is expected to be very high. Cyberattacks have grown in frequency, and analysts will be needed to come up with innovative solutions to prevent hackers from stealing critical information or creating problems for computer networks.
>
> The federal government is expected to greatly increase its use of information security analysts to protect the nation's critical information technology (IT) systems. In addition, as the healthcare industry expands its use of electronic medical records, ensuring patients' privacy and protecting personal data are becoming more important. More information security analysts are likely to be needed to create the safeguards that will satisfy patients' concerns.
>
> Employment of information security analysts is projected to grow 36 percent in computer systems design and related services from 2014 to 2024. The increasing adoption of cloud services by small- and medium-sized businesses that do not have their own dedicated IT departments could increase the employment of information security analysts in those establishments.
>
> As of May 2016, Pennsylvania is listed among states with the highest employment level in this occupation, and several nearby metropolitan areas (Trenton, Newark, NJ-PA Metropolitan division) are listed as top-paying metropolitan areas.

Appendix A shows some current local job openings for graduates of this program.

Keywords: The U.S. Bureau of Labor Statistics (BLS) uses information security as the main keyword for the cybersecurity profession. Other entities, such as the states, local authorities and private entities may use keywords such as information systems security, information technology security, network security, etc. as the main keyword for cybersecurity profession.

III. Expected Program Participants

This program serves students who intend to pursue a career in information technology security and related fields. It would also serve students who intend to transfer to a four-year college to pursue a bachelor's degree in information technology security or related areas.

IV. Program Structure and Coherence

First-Year Experience: Once the course is implemented, students will be required to take a first-year experience course (FYE). This course is open to developmental and college-ready students and must be taken within the first 12 credits. Until the course is implemented, students in the Program will take a general elective in place of the FYE course.

Students in this program will fulfill their General Education requirements such as English 101, CIS 103, and FMNT 118 throughout their time in the program, starting from the first semester. Students will be required to take a second Math course, MATH 121: Computer Mathematics and Logic, which helps students learn basic binary numbers, which is very helpful for Cybersecurity. During the first semester, students will also take CIS 150: Network Technology, which will provide the networking foundation needed to excel in this program.

During the second semester, students of this program who follow the recommended sequence will take CIS 152: Introduction to Cybersecurity and CIS 155: Principles of Operating Systems. These two courses will introduce students to the fundamentals of cybersecurity and operating systems, including Windows and Linux, as well as operating systems hardening. Students will also perform hands-on activities to reinforce important concepts. Students will also take ENGL 102, a social science course (SOC 101, SOC 115 or ANTH 112), and a humanities course (ENGL 115 or ENGL 117).

During the third semester, students will take eleven credits of two hundred-level program courses: CIS 204: Fundamentals of Linux and Unix, CIS 252: Windows Server Configuration, and CIS 259: Computing and Network Security. In these advanced courses, network security concepts are explored in depth, and more hands-on activities are incorporated to enable students to practice, apply and reinforce the knowledge and competencies that were introduced in CIS 150 and CIS 155. Sometimes, a Cybersecurity professional may have the need to write/modify a specific script that performs certain actions, especially during penetration testing. This requires knowledge of a scripting language, hence the addition of CIS 114: Java Script during the third semester. This course was deactivated in 2010, but the department is revising the course document immediately for this purpose.

Students will take the last two hundred-level program courses during the fourth semester: CIS 261: Cyber Investigation (4 credits) and CIS 274: Ethical Hacking and Penetration Testing (4 credits). Both of these courses, especially CIS 274, are hands-on intensive courses that build on the competencies acquired during the second and third semesters. It is beneficial for a cybersecurity professional to have a knowledge of cyber investigation. This knowledge will come in handy when it is necessary to extract artifacts, hidden and deleted files on the systems. CIS 261 will provide the necessary knowledge required for cyber investigation. CIS 274 focuses on advanced cybersecurity skills, including securing testing and systems/network defense and countermeasures.

V. Program Learning Outcomes and Methods of Assessment

Student Learning Outcomes Upon successful completion of this program, students will be able to:	**Method of Assessment**
Use technology and critical thinking skills effectively to analyze and communicate matters of information security	Tests (Embedded test questions) Final Exams (Embedded test questions) Hands-on Projects
Detect, analyze, identify and resolve security vulnerabilities, threats & breaches using appropriate tools	Tests (Embedded test questions) Final Exams (Embedded test questions) Hands-on Projects Written Case Projects
Install, configure and monitor information systems security devices/software, as well as apply software patches and service packs	Tests (Embedded test questions) Final Exams (Embedded test questions) Hands-on Projects
Identify the implications of information systems configuration weaknesses	Tests (Embedded test questions) Final Exams (Embedded test questions) Hands-on Projects Written Case Projects
Identify the implications of information systems policy/procedure weaknesses and human errors	Tests (Embedded test questions) Final Exams (Embedded test questions) Written Project Hands-on Projects Written Case Projects
Determine the necessity for cyber investigation and retrieve/seize cyber evidence from computer systems without contamination	Tests (Embedded test questions) Final Exams (Embedded test questions) Hands-on Projects
Utilize basic security features to configure and harden operating systems	Tests (Embedded test questions) Final Exams (Embedded test questions) Hands-on Projects

VI. Effect on Other Programs and Courses

This program will complement as well as enrich existing programs in the Business and Technology division, as well as the Digital Forensics program. As the importance of secure codes become more urgent, Computer Science degree students and students taking related programs can get valuable security knowledge and skills by taking the security classes as electives.

VII. Proposed New Courses

CIS 152: This course introduces students to the field of cybersecurity. Students are introduced to various security topics, including: Internet security, malware, vulnerability,

cyber terrorism, cyber fraud, cyber detectives, firewalls, privacy, policies/procedures, mitigation strategies to potential cyber threats, and legal and regulatory aspects of cybersecurity. Lectures and projects promote understanding of cyber threats and security.

Student Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Identify common cybersecurity threats and techniques used in cyber attacks
2. Assess best practices in cybersecurity to ensure the security of systems and networks
3. Become familiar with important legal and regulatory aspects of cybersecurity
4. Demonstrate knowledge of various policies related to cybersecurity and information assurance, including acceptable use policy and security policy

CIS 155: Principles of Operating Systems: This course introduces students to the basics of modern operating systems. Students learn concepts, commands and operations in popular operating systems (OS), such as Microsoft Windows and Linux/Unix operating systems. This course emphasizes basic hands-on skills in the following areas: OS hardening, operations and commands, accessing and installing application software, managing files and folders, troubleshooting, controlling and configuring the user environment, security configuration and disaster recovery

Student Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Demonstrate competency in the use of Windows OS and familiarity with Linux/Unix Operating systems
2. Use the Windows and Linux command line commands, as well as the graphical user interface to interact with computers
3. Perform basic operating systems administration and maintenance tasks, including security configuration

CIS 261: Cyber Investigation: This course focuses on cyber investigation principles, providing students with a solid foundation in the field of cyber investigation. Students will learn how to collect, preserve, examine and analyze cyber evidence for possible use in civil or criminal cases. Students will also learn the role of evidence in detecting and prosecuting cyber crimes, cyber terrorism, traditional and violent crimes, civil cases, fraud and other related offenses. Discussions and hands-on activities familiarize students with relevant cyber investigative techniques.

Student Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Identify when to initiate an investigation and at what point to involve law enforcement

2. Retrieve and seize cyber evidence from computer systems without contamination
3. Explain how/where data can be hidden and justify the use of particular cyber investigation tools
4. Explain laws relevant to cyber investigation and classify various forms of computer crime/abuse and the relevant evidence

CIS 274: Ethical Hacking and Penetration Testing: This course continues and expands students' understanding of issues related to cybersecurity. Students learn more advanced skills, such as ethical hacking/penetration testing, security testing and systems/network defense and counter measures. Students learn how to protect networks by utilizing the techniques that attackers use to compromise network and systems security. Students learn how to protect network/systems through hands-on lab activities utilizing the same tools and methods that intruders use to break into networks/systems. Topics include: hacker methodology and tools, how hackers operate, and setting up strong countermeasures to protect networks/systems.

Student Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Evaluate and analyze network/system vulnerabilities and how to mitigate them
2. Describe penetration testing/hacking phases and methodology
3. Demonstrate the use of various security tools and techniques to perform penetration testing
4. Implement security plans to protect network/systems against attacks
5. Demonstrate knowledge of societal issues in ethical hacking, including legal and ethical issues

VIII. Fiscal Implications

A. Space Needs

The current space, especially in CBI building, is sufficient for the needs of the program. However, due to the nature of the software, tools, etc. used in the security courses, a separate classroom would be needed for these courses. Specific details are below. CIS 152, CIS 155 and CIS 261 require a dedicated classroom.

B. Technology Requirements

CIS 152: The computers in the classroom should maintain Internet access (wireless is okay too). The computers should also have the ability to download files from the Internet, allow/retain software installations.

CIS 155 and CIS 261: These courses require an isolated networked computer lab with administrative privilege. The computers in the lab should be configured to retain software installations and configurations until the end of the semester. The computers should also maintain Internet access.

IX. Catalog Page

Cybersecurity

Description: The Associate of Applied Science (A.A.S) program is designed for students who are interested in pursuing careers in cybersecurity, network/systems administration, and system programmers. This program will also be beneficial to students who may wish to transfer to a four-year college for a Bachelor's degree. Those students who plan to transfer to a four-year college should select electives based on the requirements of the college to which they intend to transfer. This program will also consist of courses that help to prepare students for these industry certification exams:

- CompTIA Security+
- GIAC Security Essentials (GSEC)
- Certified Information Privacy Professional (CIPP)
- Systems Security Certified Practitioner (SSCP)
- Certified Ethical Hacker (CEH)
- Security Certified Network Professional (SCNP)
- Global Information Assurance Certification (GIAC)

Student Learning Outcomes

Upon successful completion of this program, students will be able to:

- Use technology and critical thinking skills effectively to analyze and communicate matters of information security
- Detect, analyze, identify and resolve security vulnerabilities, threats & breaches using appropriate tools
- Install, configure and monitor information systems security devices/software, as well as apply software patches and service packs
- Identify the implications of information systems configuration weaknesses
- Identify the implications of information systems policy/procedure weaknesses as well as human errors
- Determine the necessity for cyber investigation and retrieve/seize cyber evidence from computer systems without contamination
- Utilize basic security features to configure and harden operating systems

Program Entry Requirements: New students are normally required to take the College's placement test at their time of entry. Students who have had prior computer-related experience may be placed in more advanced courses after consultation with and the approval of the department chairperson. Also, students who possess business computer application skills may test out of CIS 103: Computer Technology & Concepts. Students who are identified as needing developmental course work must satisfactorily complete the appropriate English and mathematics courses as part of their degree program.

Program of Study and Graduation Requirements: A total of 61 credit hours as prescribed must be satisfactorily completed with a grade point average of 2.0 ("C" average).

Cybersecurity Course Sequence			
Course Number and Name	Prerequisites and Corequisites	Credits	Gen Ed Requirements
FIRST SEMESTER			
CIS 103 - Computer Technology & Concepts		3	Technological Competency
CIS 150 - Network Technology		4	
ENGL 101 - English Composition I		3	ENGL 101
FNMT 118 - Intermediate Algebra or above		3	Mathematics
General Elective		3	
SECOND SEMESTER			
CIS 152 – Introduction to Cybersecurity	CIS 150	3	
CIS 155 - Principles of Operating Systems		3	
ENGL 102 - The Research Paper	ENGL 101 with a grade of "C" or better	3	ENGL 102, Info Lit
SOC 101-Introduction to Sociology or SOC 115 - Women and Men in America or ANTH 112 - Cultural Anthropology	For SOC 115: ENGL 101	3	Social Sciences, Am/Global Div., Interpretive Studies, Writing Intensive
ENGL 115 - Public Speaking or ENGL 117 - Group and Team Communication	ENGL 101, which may be taken concurrently	3	Humanities
THIRD SEMESTER			
CIS 114 - Java Script		4	
CIS 204 Fundamentals of Linux and Unix	CIS 105 or CIS 155	3	
CIS 252 - Windows Server Configuration	CIS 150	4	
CIS 259 - Computing & Network Security	CIS 150 with a C or better	4	
FOURTH SEMESTER			
MATH 121- Computer and Logic		3	
PHYS 105 (preferred) or ASET 130 - Quality Control/Quality Assurance	For ASET 130: FMNT 118	4	Natural Science
CIS 261 - Cyber Investigation	CIS 155	4	
CIS 274 - Ethical Hacking & Penetration Testing	CIS 152 and CIS 259	4	

MINIMUM CREDITS NEEDED TO GRADUATE:	**61**	

GENERAL EDUCATION REQUIREMENTS

All General Education requirements are met through required courses (as indicated above) A list of courses that fulfill these requirements and a more detailed explanation of the College's general education requirements appear at http://ccp.edu/college-catalog/degree-requirements

For more information, contact: The Division of Business and Technology, Room B2-22, 1700 Spring Garden Street, Philadelphia, PA 19130, Telephone (215) 496-6164 or the College Information Center (215) 751-8010.

XI. Curriculum Map

Key: **I** – Introduced **R**—Reinforced and opportunity to practice
M—Mastery at exit level **A**—Assessment evidence collected

Student Learning Outcomes	CIS 103	CIS 114	CIS 150	CIS 152	CIS 155	CIS 204	CIS 252	CIS 259	CIS 261	CIS 274
Use technology and critical thinking skills effectively to analyze and communicate matters of information security	I, A			I, R					I, R, A	
Detect, analyze, identify and resolve security vulnerabilities, threats & breaches using appropriate tools				I				I		R, M, A
Install, configure and monitor information systems security devices/software, as well as apply software patches and service packs				I				I, R		R, M, A
Identify the implications of information systems configuration weaknesses	I	I, R	I, R	I, A	R	R	I, R	I, R		R, M, A
Identify the implications of information systems policy/procedure weaknesses as well as human errors	I	I, R	I, R	I, A	R	R	I, R	I, R		R, M, A
Determine the necessity for cyber investigation and retrieve/seize cyber evidence from computer systems without contamination									I, R, A	
Utilize basic security features to configure and harden operating system					I, A	R, A				

Appendix A: Current local job openings for graduates of this program are provided as a separate PDF document. Double clicking below will open an embedded 47-page PDF.

6/30/2016 Cybersecurity Analyst - Epsilon | Philadelphia, PA

SimplyHired

Epsilon

Cybersecurity Analyst

Philadelphia, PA

Date posted: April 09 2016

Apply Now

Cybersecurity Analyst

Security Clearance Required: Secret

Location: Philadelphia, PA

Position Summary: Works on a Team of 6 to 12 Cybersecurity Analysts in the creation and delivery of C&A Packages for medium to large IT Systems providing DOD Information Assurance Support Certification & Accreditation Process (DIACAP) Services / Risk Management Framework (RMF). Performs hands-on package creation and delivery while collaborating with the entire technical team in the performance of duties and responsibilities.

Summary of Position Responsibilities:

Conduct independent reviews, testing and assessment of all information, artifacts, and other relevant data that is provided by the Information Systems Security Engineer

Develop Plan of Actions and Milestones (POA&Ms) / Risk Assessment Reports (RARs), and automated scan reviews

Use DISA Security Technical Implementation Guides (STIGs) in the performance of responsibilities

Perform work specific to hardening and remediation of the system to includes STIGs, patching, scanning, validation of inventory and creation of network diagrams

Responsible for Certification Test and Evaluation (CT&E) system's compliance with all applicable Information Assurance Controls (IACs) for an assigned system, including developing the appropriate test procedures, executing the test procedures; and accurately documenting the results of security testing

Review CT&E test plans and procedures to ensure the test plan addresses level of effort and validates all IA requirements Retina and Assured Compliance Assessment Solution

http://www.simplyhired.com/job/cybersecurity-analyst-job/epsilon/wfdlthlepx?cid=vdmhlsuaaibchqjpldnvsxqvcsklau 1/5

[i] http://www.eng.umd.edu/html/news/news_story.php?id=1881

COMMUNITY COLLEGE OF PHILADELPHIA New Program Proposal	
Name of Program	Associate in Applied Science in Network Technology Management and Administration
Writer(s) of this Proposal	Robert O. Spencer, M. Ed, M.S., MCITP, MCSA, MCSE, CCNA, CCENT Assistant Professor, Community College of Philadelphia Computer Technologies Department
Contributors	
Facilitator	Barbara Spadaro
Effective Semester	Fall 2017
Abstract	The Network Technology Management and Administration Program provides students with knowledge essential in the operation of technology businesses, preparing them with the technical expertise required for the creation and installation of a large network enterprise as well as the management and staff direction expertise needed to supervise, direct and manage small to medium-sized Network Operation Centers and Technology Departments. Graduates of the program will be prepared for positions such as Network Technology Specialist, Technology Project Manager, Network Administrator, Network Engineer and other lead roles in technology The program learning outcomes are directly linked to international technology organizations such as CompTIA, Cisco and Microsoft.
Date	December 8, 2016

I. Alignment with the College Mission

The Network Technology Management and Administration Degree aligns with the College's goal of providing "programs of study in career technologies related to employment and lifelong learning." In addition, the program courses and outcomes "enable students to meet the changing technology needs of business and industry" and promote the mission of the College to provide "superior career programs which prepare students to meet current and evolving labor market needs." The degree also reflects the goal of offering "agile programs which meet the needs of employers and emergent workforce development initiatives (Based upon Philadelphia Works High Priority Occupations Data, 2016)"

II. Opportunities and/or Problems that the Proposed Program Addresses

According to the Bureau of Labor Statistics, job opportunities in the Networking field continue to expand. (See here and here.) Currently, many students taking CIS courses at the College express a desire to both earn a certificate in network administration that will enhance employment opportunities and to complete a degree at the College that will enable them to transfer to a four-year degree in network administration. Because of its close alignment with the existing Network and Systems Administration Proficiency Certificate, the Network Technology Management and Administration degree program would provide students with an efficient pathway to earn the Associate's Degree in addition to our Proficiency Certificate in the growing field of network technology.

III. Expected Program Participants

The College's affordability and flexible scheduling would attract a broad range of students to this Program, including:

- Professionals in the IT field who desire to upgrade their skills
- IT workers interested certifications to improve salary
- Working professionals desiring a career change
- Recent graduates of Career Technical Education (CTE) schools or programs
- Past graduates of Community College of Philadelphia's Networking Certificate program who desire a degree in addition to a certificate

With late afternoon and evening classes, the Program would be positioned to serve a large cross-section of students, including recent high school graduates, part-time students, non-traditional students, and full-time working professionals desiring to upgrade their careers in network technology or to transition into network technology from a different career path. Due to the extreme affordability of Community College of Philadelphia, we would easily be competitive with many network technology programs and degrees in the region while offering a higher-quality educational experience via the use of actual network equipment already possessed by the Computer Technologies department.

IV. Program Structure and Coherence

The Network Technology Management and Administration Degree allows students to develop the necessary skills to design, research, budget for and implement and manage a network technology enterprise. Program courses begin with technology and management concepts with network skill acquisition and progress through major technology research, budgeting, implementation and group management scenarios. Advanced courses introduce students to business models that will enable them to process, implement and maintain network technology and manage technology staff for a business, corporation or educational institution.

First-Year Experience: Once the course is implemented, students will be required to take a first-year experience course. This course is open to developmental and college-ready students and must be taken within the first 12 credits. Until the course is implemented, students in the Program will take a general elective in place of the first-year experience course.

Foundational and Advanced Coursework: The classes in the degree path provide students with a strong foundation in general education while providing them with the necessary expertise to become network technology implementation and management professionals. Required foundational courses in the program include CIS 150, CIS 105, MNGT 121, MNGT 142, ENGL 112 and ENGL 117. CIS 150 and CIS 105 provide the basic networking competencies needed for the advanced network technology courses. MNGT 121 lays the foundation for the business management skills and knowledge students apply, which are reinforced in MNGT 142. ENGL 112 and 117 introduce students to workplace communications and reports along with group and teamwork management skills necessary for projects assigned in the CIS courses required in the third and fourth semesters of the program. Advanced networking skills are reinforced and mastered in CIS 252, 253, 256, and 257. In addition, the program contains one new course, CIS 297 (See Section VII). This course contains an all-encompassing network technology implementation project that allows students to demonstrate required skills to address the network technology management needs of a large corporation in reference to designing, implementing, budgeting and managing a five-city network infrastructure. CIS 297 will be taken in the final semester of the program.

V. Assessment Plan and Program Student Learning Outcomes

Upon completion of the Network Technology Management and Administration Degree, students will be able to:

- Analyze and discuss business concepts, structures, and project management techniques relevant to today's workplace
- Identify theories of group dynamics and hone skills specific to working in and managing groups and teams
- Identify the basic knowledge and practical skills needed to install and support computer operating systems
- Install, configure and manage major network server types [i.e, VoIP (Voice over IP), Streaming Video, Web, Database and Remote Access Servers]

- Determine the hardware and software needs for enterprise-level networks, including network setup and the costs involved for equipment, staff and construction
- Configure enterprise-level network devices such as Routers, Switches and Wireless Access Points
- Install Server operating systems to perform various functions (i.e., user accounts, internet access, security gateways and e-mail servers)

Direct assessment of the learning outcomes will include pass rates on exams that contain questions directly connected to international certification standards created by Cisco, Microsoft and CompTIA; capstone project; and group presentations that are designed to support outcomes in the courses in which they appear. Indirect assessments will include yearly analysis of course grades, student attainment of technology certifications, and external assessments of student performance such as workplace or internship evaluations.

VI. Effect on Other Programs and Courses:

The establishment of this degree program will not adversely affect any other programs or courses.

VII. Proposed New Course

CIS 297: Network Technology and Management Capstone will allow students to combine the network technology expertise, group management experience and business processes they have learned throughout the Network Technology Management and Administration degree program. Due to the immersion in implementing and managing network technology, this class will enhance the potential for graduating students seeking jobs and internships. Similar capstone courses appear as part of comparable degree programs.

CIS 297: Network Technology and Management Capstone (3-2-4)

Students engage in a group project in which they respond to a Request for Proposal (RFP) engaged by a fictitious company. The RFP will encompass a multifaceted process, including needs analysis, equipment and software identification, budget expenditures, staffing requirements, technical reports, timelines, project assignments within groups and network design schematics and diagrams. At the conclusion of the accumulation of required elements, students will behave as if the fictional company has selected and accepted their proposal response and bid, resulting in the creation of a miniature network infrastructure addressing the needs of the fictitious company. Throughout the project, practical implementation and application of management principles and network technologies required in business, and other corporate environments will be evaluated and assessed. Elements of the finished network infrastructure and documentation will include functioning servers of various types (i.e., video, e-mail, web and database servers) combined with wired and wireless Wide Area Network (WAN) technologies. The course is highly advantageous for those who desire gaining employment at the network administrator or mid-management level in a technical department or enterprise.

Prerequisites: CIS 253, CIS 257, ENGL 117 (which may be taken concurrently), ENGL 112 and MNGT 142 (which may be taken concurrently).

Student Learning Outcomes
Upon successful completion of this course, students will be able to:

1. Describe, compare and contrast multiple certifications for various roles in networking, and describe, compare and contrast various business types
2. Identify, describe, compare, select and utilize various network technology infrastructure support and security methods
3. Identify, describe and utilize server-related and network system command line tools
4. Identify, describe and configure primary network traffic devices and support functions
5. Identify, describe and configure primary network server and features
6. Identify, describe, and utilize network management and planning methods.
7. Identify and describe theories of group dynamics, apply group dynamics principles in group projects, and describe and demonstrate skills specific to working in and leading groups and teams
8. Determine the needs for enterprise level networks, including network setup and the costs involved for equipment, staff and construction

VIII. Fiscal Implications

- Presently, the College has all of the capital equipment necessary to launch the Network Technology Management and Administration Degree program.

- Presently, there are two full-time faculty and the potential for two adjuncts in the Computer Technology Departments. Foreseeing the rapid growth of the degree, there is a search for additional Network Technology faculty. Combining these resources, the College will have an adequate number of instructors to support the Network Technology Management and Administration Degree.

- The College presently has adequate space required for offering a Network Technology Management and Administration Degree, utilizing classrooms already created in the Bonnell Building and the Center for Business and Industry presently outfitted with appropriate computers, whiteboards and projectors and associated network technology equipment (i.e., Routers, switches, cables and simulation software).

IX. Catalog Page:

Program Description: The Network Technology Management and Administration Program provides students with knowledge essential to implementing and managing a network technology business, including the technical skills needed to participate in the management of Network Operation Centers, Network Technology Departments, and their associated technicians and staff members. The degree offers students the knowledge and expertise needed to work in positions such as Project Manager, Network Administrator, Network Engineer, and Coordinator of Technology. The program learning outcomes are closely linked to international network technology certification standards required by from CompTIA, Cisco and Microsoft.

Student Learning Outcomes:

Upon completion of the Network Technology Management and Administration Degree, students will be able to:

- Analyze and discuss business concepts, structures, and project management techniques relevant to today's workplace
- Identify theories of group dynamics and hone skills specific to working in and managing groups and teams
- Identify the basic knowledge and practical skills needed to install and support computer operating systems
- Install, configure and manage major network server types [i.e., VoIP (Voice over IP), Streaming Video, Web, Database and Remote Access Servers]
- Determine the hardware and software needs for enterprise-level networks, including network setup and the costs involved for equipment, staff and construction
- Configure enterprise-level network devices such as Routers, Switches and Wireless Access Points
- Install Server operating systems to perform various functions (i.e., user accounts, internet access, security gateways and e-mail servers)

Program Entry Requirements: The Network Technology Management and Administration Degree program will be open to all interested full-time, part-time, continuing education and professional development students. Students identified as needing developmental course work must satisfactorily complete the appropriate English and mathematics courses as a part of their degree program.

Program of Study and Graduation Requirements: The minimum number of credits required for graduation is 61. A grade point average of 2.0 is necessary for graduation. It is highly recommended that the degree be completed within a three-year period to ensure up-to-date knowledge and skill acquisition.

Network Technology Management and Administration Degree Course Sequence

Course Number and Name	Prerequisites and Corequisites	Credits	General Education Requirements
FIRST SEMESTER			
CIS 103 - Computer Technology & Concepts		3	Tech Comp
CIS 150 - Network Technology		4	
ENGL 101 - English Composition I		3	ENGL 101
General Elective		3	
Total Credits this Semester		***13***	
SECOND SEMESTER			
SOC 101- Introduction to Sociology or SOC 115 - Women and Men in America or ANTH 112 - Cultural Anthropology	For SOC 115: ENGL 101	3	Social Science American/Global Diversity Interpretive Studies Writing Intensive
ENGL 102 - The Research Paper	ENGL 101 with a "C" grade or higher	3	ENGL 102 Info Lit
MNGT 121 - Introduction to Business		3	
CIS 252 - Windows Server Configuration (offered 7A)	CIS 150	4	
CIS 253 - Windows Server Administration (offered 7B)	CIS 252	4	
Total Credits this Semester		***17***	
THIRD SEMESTER			
FNMT 118-Intermediate Algebra		3	
ENGL 112 - Report and Technical Writing	ENGL 101	3	
CIS 256 - Cisco Routing Technology (offered 7A)	CIS 150	4	
CIS 257 - Advanced Cisco Routing and Switch Technology (offered 7B)	CIS 256	4	
Total for Semester		***14***	
FOURTH SEMESTER			
ASET 130 - Quality Control/Quality Assurance (preferred) or ASET 101 - Science, Technology, and Public Policy	For ASET 130: FMNT 118	3	Natural Science
ENGL 117 - Group and Team Communication	ENGL 101, which may be taken concurrently.	3	Humanities

MNGT 142- Management Information Systems	MNGT 121	3	
CIS 105 - Computer Systems Maintenance		4	
CIS 297 - Network Technology Capstone	CIS 253, CIS 257, MNGT 142 (which may be taken concurrently), ENGL 117 (which may be taken concurrently)	4	
Total for Semester		***17***	
MINIMUM CREDITS NEEDED TO GRADUATE:		**61**	

General Education Requirements: All General Education requirements are met through required courses (as indicated above). A more detailed explanation of the College's general education requirements can be found on the degree requirements web page.

Curriculum Map

Key: I—Introduced **R**—Reinforced and opportunity to practice **M**—Mastery at exit level **A**—Assessment evidence collected

Required Courses	**Student Learning Outcomes**						
	Analyze and discuss business concepts, structures, and project management techniques relevant to today's workplace	Identify theories of group dynamics and hone skills specific to working in and managing groups and teams	Identify the basic knowledge and practical skills needed to install and support computer operating systems	Install, configure and manage major network server types [i.e, VoIP (Voice over IP), Streaming Video, Web, Database and Remote Access Servers]	Determine the hardware and software needs for enterprise-level networks, including network setup and the costs involved for equipment, staff and construction	Configure enterprise-level network devices such as Routers, Switches and Wireless network antenna	Install Server operating systems to perform various functions (i.e., user accounts, internet access, security gateways and e-mail servers)
ENGL 112	I						
ENGL 117	R	I					
MNGT 121	R						
MNGT 142	R	R, M, A	I		I		
CIS 105		I	I	I			
CIS 150		I	I	I		I	
CIS 252		R	R	R			R
CIS 253		R, M, A	R, M, A	R, M, A			R, M, A
CIS 256		R	R			R	
CIS 257		R, M	R, M			R, M	
CIS 297	R, M, A	R, M, A	R, M, A	R, M, A	R, M, A	R, M, A	R, M, A

Appendix

Philadelphia Works High Priority Occupations Data:

- http://www.philaworks.org/sites/philaworks.org/files/pdf/2016DRAFT-PhiladelphiaCounty-HPO-List.pdf

Bureau of Labor Statistics Data:

- http://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm
- http://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm

Comparable Degree Programs:

- Bucks County Community College: http://www.bucks.edu/catalog/majors/math/networking/
- Delaware County Community College: http://www.dccc.edu/academics/programs/career-degrees/information-technology-network-engineering-associate-applied-scien
- Northampton Community College: http://catalog.northampton.edu/programs-and-majors/networking.htm

COMMUNITY COLLEGE OF PHILADELPHIA

Degree Program Revision

Name of Program	Photographic Imaging
Writer(s) of this Proposal	Jon Spielberg Kara Crombie (contributor)
Facilitator	Amy Birge
Effective Semester	Fall 2017
Date	December 8, 2016

I.Description of and Rationale for Revision

The proposed changes in this revision of the Photographic Imaging degree program will provide students with a more coherent and efficient pathway to completion. The Photographic Imaging program is technology-based and must continue to meet professional standards so that our students may immediately enter the workforce. The new courses proposed allow students to gain a wide range of valuable experience in handling new camera technology and utilizing the latest photo imaging software, while the program retains those courses that allow students access to the valuable experience of the traditional printing process in the darkroom. Students entering with a technological background in digital photography can gain analog experience to expand their professional skills and provide an important personal link to the history of the medium. Photographic Imaging students who are already experienced in darkroom techniques or entering a part of the profession where deep digital skills are needed may enter the program with PHOT 105, increasing their technical knowledge and doubling the locus of potential students.

To this end, this revision includes two new courses in digital photography and culture, PHOT 105 and PHOT 112, as alternatives to existing traditional courses, a course revision for PHOT 111 to satisfy the Humanities requirement for general education at the College, small adjustments to titles and prerequisites for existing courses PHOT 101 and PHOT 103 to accommodate the new and revised courses, fewer and more purposeful choices in Natural Science and Social Science electives, adjustments to the program grid and curriculum map, and a reduction in credits from 63 to 60.

Change the title of PHOT 101: Changing the title of PHOT 101 from "Basic Photography" to "Introduction to 35mm Film Camera and Darkroom Techniques" will provide clarity for students and further distinguish PHOT 101 from the new course that will be an alternative introductory course, PHOT 105: Introduction to Digital Photography.

Change the title and prerequisites for PHOT 103: The change in title from "Large Format Photography" to "Architectural and Landscape Photography" reflects the current use of both digital cameras and traditional film cameras in the course and more accurately describes course content. PHOT 105 may also serve as a prerequisite for PHOT 103 because the zone system and fine printing techniques that make up the majority of the class may be used with both digital and film photography.

Include PHOT 105 as an alternative first course for majors: This new course in digital photography is envisioned as an alternative first course for Photographic Imaging (PHOT) majors,

who currently only have the option of taking PHOT 101, a film-based introduction course. This course would also be a more attractive foundation course for non-photo majors because of its relevance to current digital practices and practicality.

Course Description: This course is an introduction to digital photographic technique and the aesthetics of photography. Through a series of practical demonstrations and shooting assignments, the course provides students with an overview of digital camera operation, digital imaging principles, techniques in composition and aesthetics, and a foundation in photography and printing that will prepare students for more advanced courses and career opportunities in photography.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Demonstrate basic digital photography principles and the conceptual foundations of digital imaging.
2. Demonstrate practical understanding of manual digital camera operation.
3. Digitally adjust images, including tone, color correction, and cropping, in basic image manipulation/media management software.
4. Apply aesthetic photographic skills such as composition, lighting, and color theory, when creating images with a digital camera.
5. Demonstrate the use of digital photographic file formats and their applications, as well as image compression techniques.
6. Prepare digital photographic files for printing.

Revise PHOT 111 to meet the Humanities, Interpretive Studies, and American/Global Diversity requirements of General Education: Similar to other courses in the arts that cover the history of their respective methods and movements, PHOT 111 and PHOT 112 emphasize analysis and exchange of ideas related to human experience. Students learn to use analytical methods to distinguish aesthetic movements and evaluate significant photographic works within historical context. PHOT 111 and PHOT 112 should also fulfill the Interpretive Studies requirement because students analyze primary sources, photographs, visual artworks, video, sound art, musical compositions and their relationship with historical periods and cultural movements. They will also interpret the experience and creative expressions of various cultures. PHOT 111 and PHOT 112 should fulfill the American/Global Diversity requirement as well because both PHOT 111 and PHOT 112 consider the impact of culture, geography, and historical circumstances on photographs and other artworks. Comparative analysis of artistic expression and modes of production across global cultures helps students understand the complexities and differences among the people of the United States or the complexities and differences between cultures.

Include PHOT 112 as an option for majors: The second new course, PHOT 112: Digital Technology, Art, and Culture, covers the history of photography, video, and sound production within the context of our digital culture. This course will serve as an option to PHOT 111: History of Photography, which has a more traditional focus, and will meet the Humanities, Interpretive Studies, and American/Global Diversity requirements of General Education. PHOT 112 is especially appropriate for students in the Digital Video Production program and will also be useful to students in Music and Art programs

Course Description: This is a lecture course in art and cultural history that examines the impact of digital technology on art and on the way society interacts with culture. Survey topics include the history of digital visual art, digital moving images, and digital music/sound art. Students will also examine critical theory that addresses the relationship between technology and art.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Describe the history of digital photography.
2. Describe the history of digital video production.
3. Describe the history of digital sound production.
4. Explain the symbiotic relationship between technology and art.
5. Explain how contemporary technology affects the way a culture consumes, shares, and interacts with art.
6. Apply a basic understanding of contemporary cultural criticism concerning art and digital technology.

Make MATH 137 the Mathematics requirement: MATH 137: Geometry for Design contains concepts and exercises that deal directly with the physical space, which students in photography need to understand the geometry of the studio and for lighting on location. MATH 137 is a more relevant mathematics course for students in the program than FNMT 118.

Embed the Humanities Elective in the Program: Ensuring that both PHOT 111 and the new course, PHOT 112, satisfy the Humanities requirement embeds the Humanities requirement in the program.

Limit the choice of Natural Science and Social Science Electives: Instead of allowing students to pick from literally dozens of science and social science courses to fulfill their General Education requirements, this revision limits the choices in these areas to courses that students in the Photographic Imaging program will find most relevant to their program of study.

Reduce the number of credits needed for graduation from 63 to 60: The changes above not only improve program access and coherence, but they also enable the program to shrink from 63 to 60 credits, which will improve rates of completion.

II. Supporting Data

- Links to similar programs (see Appendix)

III. Program Learning Outcomes

This change will not affect the program learning outcomes. The methods of assessment for PHOT 101 also apply to PHOT 105.

IV. Effect on Other Programs

This revision should not have a negative effect on any other programs. PHOT 112 will provide an opportunity for students in the Art and Design, Music, and Digital Video Production programs to take a course that specifically addresses culture and technology and that also meets several General Education requirements.

V. Space or Technology Requirements

We are converting our lecture room, B1-11 to a printing lab that uses laptop computers. The computers are already in-house and do not require an additional expenditure.

VI. Current Catalog Page (If the program grid or catalog description is changing, please include both the current and proposed catalog pages.)

Photographic Imaging (current)

Description: The Photographic Imaging curriculum provides special emphasis in several professional areas. Classroom lecture and laboratory assignments lead to the development of technical and aesthetic skills and knowledge preparing students to qualify for jobs in photographic imaging and related occupations. Students completing the Photographic Imaging program will be prepared to work as photographers, studio assistants and imaging lab technicians. Extensive darkroom, studio and imaging lab work is required, using both silver-based and digital technologies in both black and white and color.

Location or studio assignments are required in all courses. Professional practices and production are emphasized, and students are encouraged to develop artistic appreciation and imagination in their work. Upper-level courses emphasize working with advanced techniques and portfolio preparation.

Policy Regarding Student Work: The Department reserves the right to retain all student work submitted for grading for educational use or exhibition, or to select an example or samples for its permanent collection.

Costs: Students are required to supply, at their own expense, an approved professional quality 35mm SLR camera ($150-$300), film, paper, digital storage media, textbooks, a digital SLR camera ($500-$800) and other supplies. Approximate supply costs appear after each course description. In addition, students in large format and studio courses are required to have an incident/reflected light meter ($200-$400).

Student Learning Outcomes:

Upon completion of this program graduates will be able to:

- Create photographs, videos and/or digital slide shows to satisfy commercial clients' specifications.
- Demonstrate proficiency with camera operation, lighting, digital image processing, portfolio presentation, audio and video production.
- Evaluate their photographs in the context of historical and contemporary trends.
- Employ current business practices as applied to photographic imaging.

Program Entry Requirements: This program is open to interested students, assuming space is available. However, new students are normally required to take the College's placement tests at their time of entry. Students who are identified as needing developmental course work must satisfactorily complete the appropriate English and mathematics courses as a part of their degree program.

Requirements for Graduation: To qualify for the Associate in Applied Science (A.A.S.) degree in Photographic Imaging, a student must complete at least 63 credit hours and attain a grade point average of 2.0 ("C" average).

Photographic Imaging Course Sequence

Course Number and Name	Prerequisites and Corequisites	Credits	Gen Ed Req.
First Semester			
PHOT 101 - Basic Photography		4	
PHOT 104 - Introduction to Video Production		3	
PHOT 111 - History of Photography		3	
ENGL 101 - English Composition I		3	ENGL 101
CIS 103 – Applied Computer Technology		3	Tech Comp
Second Semester			
PHOT 103 - Large Format Photography	PHOT 101	4	
PHOT 151 - Digital Imaging		3	
PHOT 152 - Introduction to Color Photography and Digital Printing	PHOT 151, which may be taken concurrently	3	
ENGL 102 – The Research Paper	ENGL 101 with a grade of "C" or better	3	ENGL 102, Info Lit

FNMT 118 - Intermediate Algebra or higher		3	Mathematics
Third Semester			
PHOT 201 - Commercial Photography Basic Studio	PHOT 103	4	
PHOT 202 - Commercial Photography Portraiture	PHOT 152, which may be taken concurrently	4	
PHOT 217 - Digital Photojournalism	PHOT 104, PHOT 151; PHOT 152, which may be taken concurrently	4	
Science Elective		3/4	Natural Science
Fourth Semester			
PHOT 205 - Commercial Photography Advanced Studio	PHOT 152 and PHOT 201	4	
PHOT 211 - Corporate and Event Videography	PHOT 104	3	
PHOT 299 - Professional Practices in Photographic Imaging and Digital Video Production	PHOT 202 and PHOT 205 which may be taken concurrently	3	
Humanities Elective		3	Humanities
Social Science Elective		3	Social Science
Minimum Credits Needed to Graduate: 63			

General Education Requirements: All General Education requirements are met through required courses (as indicated above) except for the **Writing Intensive** requirement, **Interpretive Studies** requirement and the **American/Global Diversity** requirement. Therefore, in order to graduate, students in this program must choose one course that is designated **Writing Intensive**, one course that is designated **Interpretive Studies** and one course that is designated **American/Global Diversity**. The same course may be used to fulfill all three requirements. View the courses that fulfill all degree requirements and receive a more detailed explanation of the College's General Education requirements to help in your selection.

For More Information Contact: The Division of Liberal Studies, Room BR-21, 1700 Spring Garden Street, Philadelphia, PA 19130, Telephone (215) 751-8450; or the College Information Center (215) 751-8010.

VII. Proposed Catalog Page

Photographic Imaging (proposed)

Description: The Photographic Imaging curriculum provides special emphasis in several professional areas. Classroom lecture and laboratory assignments lead to the development of technical and aesthetic skills and knowledge preparing students to qualify for jobs in photographic imaging and related occupations. Students completing the Photographic Imaging program will be prepared to work as commercial photographers in fields including family and business portraiture, product and event photography, architectural and landscape or travel photography, studio assistants and digital imaging lab technicians. Video production is a key component of several courses providing modern documentary and photojournalism skills. Extensive darkroom, studio and digital imaging lab work is required, using both silver-based and digital technologies in both black and white and color.

Practical location or studio assignments are required in all courses. Professional practices and production are emphasized, and students are encouraged to develop artistic appreciation and imagination in their work. Upper-level courses emphasize working with advanced techniques, portfolio preparation and business skills.

Policy Regarding Student Work: The Department reserves the right to retain copies of all student work submitted for grading for educational use or exhibition, or to select an example for its permanent collection and archive.

Costs: Students are required to supply all film, paper, digital storage media, textbooks, presentation material and other supplies. Film cameras, digital cameras, and video production equipment may be provided by the department when available. Students in 200-level courses will be advised regarding the purchase of professional equipment. Approximate supply costs appear after each course description.

Student Learning Outcomes:

Upon completion of this program graduates will be able to:

- Create photographs, videos and/or digital images to satisfy commercial clients' specifications.
- Demonstrate proficiency with camera operation, lighting, digital image processing, portfolio presentation, audio and video production.
- Evaluate their photographs in the context of historical and contemporary trends.
- Employ current business practices as applied to photographic imaging.

Program Entry Requirements: This program is open to interested students, assuming space is available. New students are normally required to take the College's placement tests at their time of entry. Students who are identified as needing developmental course work must

satisfactorily complete the appropriate English and mathematics courses as a part of their degree program.

Requirements for Graduation: To qualify for the Associate in Applied Science (A.A.S.) degree in Photographic Imaging, a student must complete at least 60 credit hours and attain a grade point average of 2.0 ("C" average).

Photographic Imaging Course Sequence (proposed)

Course Number and Name	Prereqs and Coreqs	Credits	Gen Ed Req.
First Semester			
PHOT 101 - Introduction to 35mm Film Camera and Darkroom Techniques or PHOT 105 - Introduction to Digital Photography		4	
PHOT 104 - Introduction to Video Production		3	
PHOT 111 - History of Photography or PHOT 112: Digital Technology, Art, and Culture		3	Humanities Interpretive Studies American/Global Diversity
ENGL 101 - English Composition I		3	ENGL 101
CIS 103 – Computer Technology & Concepts		3	Tech Comp
Second Semester			
PHOT 103 - Architectural and Landscape Photography	PHOT 101 or PHOT 105 with a C or better or permission of the department head	4	
PHOT 151 - Digital Imaging		3	
PHOT 152 - Introduction to Color Photography and Digital Printing	PHOT 151, which may be taken concurrently	3	
ENGL 102 – The Research Paper	ENGL 101 with a grade of "C" or better	3	ENGL 102, Info Lit

MATH 137 - Geometry for Design	FNMT 118 or higher placement	3	Mathematics
Third Semester			
PHOT 201 - Commercial Photography Basic Studio	PHOT 103	4	
PHOT 202 - Commercial Photography Portraiture	PHOT 152, which may be taken concurrently	4	
PHOT 217 - Digital Photojournalism	PHOT 104, PHOT 151; PHOT 152, which may be taken concurrently	4	
EASC 111 - Environmental Conservation or STS 101 - Introduction to Science, Technology and Society	For STS 101: FNMT 118 or higher placement	3/4	Natural Science
Fourth Semester			
PHOT 205 - Commercial Photography Advanced Studio	PHOT 152 and PHOT 201	4	
PHOT 211 - Corporate and Event Videography	PHOT 104	3	
PHOT 299 - Professional Practices in Photographic Imaging and Digital Video Production	PHOT 202 and PHOT 205 which may be taken concurrently	3	
HIST 103 - United States History: The 20th Century or GEOG 103 - Introduction to Human Geography		3	Social Science, Writing Intensive
Minimum Credits Needed to Graduate: 60			

General Education Requirements: All General Education requirements are met through required courses (as indicated above). A more detailed explanation of the College's general education requirements can be found on the degree requirements web page.

For More Information Contact: The Division of Liberal Studies, Room BR-21, 1700 Spring Garden Street, Philadelphia, PA 19130, Telephone (215) 751-8450; or the College Information Center (215) 751-8010.

Current Curriculum Map

Required Courses	Programmatic Learning Outcomes			
	Create photographs, videos and/or digital slide shows to satisfy commercial clients' specifications.	Demonstrate proficiency with camera operation, lighting, digital image processing, portfolio presentation, audio and video production.	Evaluate their photographs in the context of historical and contemporary trends.	Employ current business practices as applied to photographic imaging.
PHOT 101- Basic Photography	I, A	I, A	I, A	
PHOT 104- Intro to Video Production	I A	I, A	I, A	
PHOT 111- History of Photography			I, A	
PHOT 103- Large Format Photography	I, R, M, A	I, R, M, A	R, A	I
PHOT 151 – Digital Imaging	I, A	I, A	I, A	I
PHOT 152- Intro to Color Photography and Digital Printing	R, A	I, R, A	R, A	I, A
PHOT 201- Commercial Photography-Basic Studio	I, R, A	I, R, A	I, R, A	I, A
PHOT 202- Commercial Photography-Portraiture	I, R, M, A	I, R, M, A	I, R, M, A	I, R, M, A
PHOT 217 – Photojournalism	I, R, M, A	I, R, M, A	I, R, M, A	I, M, A
PHOT 205- Commercial Photography-Advanced Studio	I, R, M, A	I, R, M, A	I, R, M, A	R, M, A
PHOT 211- Corporate and Event Videography	I, R, M, A	I, R, M, A	I, R, M, A	I, M, A
PHOT 299-Professional Practices in Photographic Imaging	R, M, A	I, R, M, A	I, R, M, A	I, R, M, A

VIII. Proposed Curriculum Map

Required Courses	Programmatic Learning Outcomes			
	Create photographs, videos and/or digital slide shows to satisfy commercial clients' specifications.	Demonstrate proficiency with camera operation, lighting, digital image processing, portfolio presentation, audio and video production.	Evaluate their photographs in the context of historical and contemporary trends.	Employ current business practices as applied to photographic imaging.
PHOT 101: Intro to 35mm Film	I, A	I, A	I, A	
PHOT 105: Intro to Digital Photography	I, A	I, A	I, A	
PHOT 104: Intro to Video Production	I A	I, A	I, A	
PHOT 111: History of Photography			I, A	
PHOT 112: Digital Technology			I, A	
PHOT 103: Architectural and Landscape Photography	I, R, M, A	I, R, M, A	R, A	I
PHOT 151: Digital Imaging	I, A	I, A	I, A	I
PHOT 152: Intro to Color Photography and Digital Printing	R, A	I, R, A	R, A	I, A
PHOT 201: Commercial Photography-Basic Studio	I, R, A	I, R, A	I, R, A	I, A
PHOT 202: Commercial Photography-Portraiture	I, R, M, A	I, R, M, A	I, R, M, A	I, R, M, A
PHOT 217: Photojournalism	I, R, M, A	I, R, M, A	I, R, M, A	I, M, A
PHOT 205: Commercial Photography-Advanced Studio	I, R, M, A	I, R, M, A	I, R, M, A	R, M, A
PHOT 211: Corporate and Event Videography	I, R, M, A	I, R, M, A	I, R, M, A	I, M, A
PHOT 299: Professional Practices in Photographic Imaging	R, M, A	I, R, M, A	I, R, M, A	I, R, M, A

IX. Appendix

Links to Similar Programs

The photographic imaging programs listed below include both digital and analog processes:

- Temple University's Tyler School of Art: https://tyler.temple.edu/programs/photography
- Rochester Institute of Technology's College of Imaging Arts & Sciences: http://cias.rit.edu/schools/photographic-arts-sciences
- The University of the Arts: http://catalogue.uarts.edu/preview_program.php?catoid=19&poid=2817
- Drexel University's Westphal College of Media Arts & Design: http://www.drexel.edu/westphal/academics/undergraduate/PHTO/