# COMPUTER INFORMATION SYSTEMS

pcc.edu/programs/computer-info/

#### CAREER AND PROGRAM DESCRIPTION

Computer Information Systems are the lifeblood of the 21st century. The mainstream languages, tools, technologies and techniques used in training will allow students to pursue careers in either the computer networking or information software fields. On the networking side, computer configuration, network installation, network systems administration, security, forensics and wireless networking are some career choices. On the software side, student career choices include all phases of application development, database programming, software quality assurance, and project management on both desktop and World Wide Web platforms.

Computer Information Systems AAS Degree: This degree prepares students for computer information systems related careers. Students will take classes in the CIS Department that include software analysis, design, programming (in two or more languages), database modeling, Windows or Unix operating systems, data communications and an extensive selection of electives. Emphasis is on developing enduring skills and knowledge, rather than on training students to use specific tools and applications that may be "fashionable," but that haven't established a foothold in industry.

Computer Information Systems: Network Administration AAS Degree: This degree prepares students for computer networking related careers. Students will take classes in the CIS Department including data communications, Windows and Linux network administration, network security and an extensive selection of electives. Students earning this degree will be well on their way to several network administration certifications from Microsoft and Comp TIA.

Computer Information Systems: Cybersecurity AAS Degree: This degree prepares students for a variety of cybersecurity-focused careers in the field of computer information systems. Students will take classes in the CIS Department that include cybersecurity concepts, networking, server administration, programming, database modeling, and web development. Emphasis is on applying cybersecurity concepts in a variety of business computing environments. Students earning this degree will be prepared to meet the growing nationwide shortage of cybersecurity professionals.

Computer Information Systems: Web Development and Design AAS Degree: This degree prepares students for a variety of web development and design careers. This cross-discipline degree includes classes on web development programming (HTML, CSS, Java, JavaScript), mobile app development, Windows or Unix operating systems, database modeling and secure coding as well as classes in UX/UI design concepts, generative art and data visualization. Emphasis is on applying web development and design concepts to build successful solutions to business challenges. Students earning this degree will be prepared to meet the growing nationwide need for web development and design professionals.

Computer Information Systems One-Year Certificate: This certificate provides students with a foundation in computer information systems concepts. Students seeking this certificate often have various primary roles in their organizations and are taking on additional responsibilities involving information systems.

# **DEGREES AND CERTIFICATES OFFERED**ASSOCIATE OF APPLIED SCIENCE DEGREE

Computer Information Systems
Computer Information Systems: Network Administration Option
Cybersecurity
Web Development and Design

#### **ONE-YEAR CERTIFICATE**

Computer Information Systems

#### LESS THAN ONE-YEAR CERTIFICATE

Advanced Windows Network Security
C# Application Programming
Cybersecurity Foundations
Database Design and SQL
Java Application Programming
Network Administration: Linux Server
Network Administration: Microsoft Server
Network Security - Linux
Network Security - Windows
Secure Programming
Web Application Development

#### **Academic Prerequisites**

- Cybersecurity AAS is a limited entry degree.
- The Less Than One-Year Certificates are limited entry certificates.

### **Academic Requirements**

- Computer Information Systems AAS: Students must satisfactorily complete all courses with a CIS and CS prefix in the degree with a grade of "C" or "P" or better.
- Computer Information Systems: Network Administration AAS
  Degree: Students must satisfactorily complete all courses with
  a CIS and CS prefix in the degree with a grade of "C" or "P" or
  better.
- Computer Information Systems: Cybersecurity AAS
   Degree: Students must satisfactorily complete all courses with a
   CIS, CS and CJA prefix in the degree with a grade of "C" or "P" or
   better.
- Computer Information Systems: Web Development and Design AAS Degree: Students must satisfactorily complete all courses with a CIS, CS, MM, and MUC prefix in the degree with a grade of "C" or "P" or better.
- Computer Information Systems One-Year Certificate: All required courses in this program apply toward the credits needed to obtain an AAS degree in Computer Information Systems or CIS Network Administration. Students must satisfactorily complete all courses with a CIS and CS prefix with a grade of "C" or "P" or better.
- The Less Than One-Year Certificates: These certificates begin at an advanced level and are designed for individuals already working in, or have worked in, an information technology position.
  - Students must satisfactorily complete all courses with a CIS and CS prefix with a grade of "C" or "P" or better.
  - Students must contact a CIS advisor for correct placement in any of these certificate programs.
- Reading, writing and math readiness is critical for all Computer Information System (CIS) degrees and certificates. Talk to a CIS Department advisor for clarification regarding what constitutes math competency. Students with insufficient preparation to enter at this level may need to extend the time it takes to complete the program. CIS Department advisors will provide information regarding options to those students who may need to take preparatory course work.

#### **Non-Academic Prerequisites**

None

#### **Non-Academic Requirements**

None

#### ASSOCIATE OF APPLIED SCIENCE DEGREE

Computer Information Systems (p. 2)

Computer Information (p. 3)	on Systems: Network Administration Option		CIS 133N	Introduction to Programming Using C#.NET	4
Cybersecurity (p. 4)			CIS 133W	JavaScript for Web Developers	4
Web Development a	and Design (p. 5)		CIS 133Y	Python Programming I	4
COMPUTER IN DEGREE	IFORMATION SYSTEMS AAS		CIS 135M	Mobile Application Programming for Android	4
	Ctudents must also most Associate Degree		CIS 140L	Introduction to Linux/UNIX	4
	Students must also meet Associate Degree guirements and Associate of Applied Science		CIS 140M	Operating Systems I: Microsoft	4
Requirements. Stud	ents must complete a total of four courses of Some courses specified within the program may	,	CIS 145	Microcomputer Hardware and Troubleshooting	4
	Education. In addition to required courses in		CIS 182	Introduction to Cloud Computing	4
the program of stud	y, students must satisfy MTH 58/65 competency		CIS 188	Introduction to Wireless Networking	4
Students should cor	nsult with program advisors for course planning.		CIS 189	Wireless Security	4
Computer Info	rmation Systems Degree Courses		CIS 195H	HTML and CSS	4
Code	Title Credi	ts	CIS 195N	JavaScript Programming Using Node.js I	4
CIS 121	Information Systems and Programming *	4	CIS 195P	PHP Web Development I	4
CIS 122	Introduction to Programming Logic *	4	CS 133U	C Programming	4
CIS 140M	Operating Systems I: Microsoft	4	CS 160	Exploring Computer Science *	4
or CIS 140L	Introduction to Linux/UNIX		CS 161	Computer Science I *	4
CIS 179	Data Communication Concepts I	4	CS 161A	Programming and Problem Solving I	4
CIS 184C	Introduction to Information Security	4	CS 161B	Programming and Problem Solving II	4
CIS 234A	Real-World Programming	4	EET 178	Computing Environments for Technicians	4
or CIS 280D	Cooperative Education: Application	7	Advanced Courses		
01 013 2000	Development		CIS 225	End User Support	4
CIS 244	Systems Analysis	4	CIS 233J	Java Programming II	4
CIS 275	Data Modeling and SQL Introduction	4	CIS 233N	Intermediate C#.NET Programming	4
WR 121	Composition I (WR121=WR121Z) Z	4	CIS 233W	JavaScript for Web Developers II	4
WR 122	Composition II (WR122=WR122Z) Z	4	CIS 233Y	Python Programming II	4
or WR 227	Technical Writing (WR227=WR227Z)	4	CIS 234A		4
	4	22		Real-World Programming	
CIS Program Electiv		32	CIS 234R	Secure Coding	4
CIS Programming E		8	CIS 240L	Linux Installation and Configuration	4
CIS Program Busine General Education:		6	CIS 240M	Managing a Windows Server Environment	4
Total Credits		92	CIS 244	Systems Analysis	4
*	Š	<i>1</i> 2	CIS 245	Project Management - Information Systems	4
Could be used as G	eneral Education		CIS 275	Data Modeling and SQL Introduction	4
1			CIS 276	Advanced SQL	4
CIS Program Electiv	es - 32 credits total from Introductory Electives of	r	CIS 277A	Data Analytics	4
Advanced Electives	. A minimum of 16 credits from Advanced		CIS 2770	Advanced Database Concepts in Oracle	4
Electives.			CIS 277S	Introduction to Data Science	4
2			CIS 277T	Web Business Intelligence Application	4
For the Computer In	formation Systems AAS Degree, eight credits			Development	
	ctives must be a two-term sequence from the		CIS 278	Data Communication Concepts II	4
Programming Elective	ve List.		CIS 278A	Cisco 1: Introduction to Networks	4
Z			CIS 279L	Linux Network Administration	4
following courses ar			CIS 280D	Cooperative Education: Application Development <sup>1</sup>	4
WR 121 and WR 12			CIS 284C	Cybersecurity Concepts	4
WR 122 and WR 123			CIS 285E	Ethical Hacking	4
WR 227 and WR 22	14		CIS 286	Computer Forensics	4
COMPUTER IN	IFORMATION SYSTEMS PROGRAM	/	CIS 287M	Microsoft Server Security	4
ELECTIVES			CIS 288M	Microsoft Network Administration	4
	Tiala	1	CIS 289M	Microsoft Active Directory Administration	4
Code	Title Credi	ιS	CIS 295N	JavaScript Programming Using Node.js II	4
Introductory Course		,	CIS 295P	PHP Web Development II	4
CIS 120	Digital Literacy	4	CS 162	Computer Science II *	4
CIS 125D	Database Application Development I	4	CS 201	Computer Systems	4
CIS 133J	Java Programming I	4		1	•

### **COMPUTER INFORMATION SYSTEMS**

CS 260	Data Structures	4	CIS 145	Microcomputer Hardware and	4
CS 261	Programming Systems	4	010 170	Troubleshooting	4
*			CIS 179 CIS 182	Data Communication Concepts I	4
Could be used a	s General Education			Introduction to Cloud Computing	4
1			CIS 184C	Introduction to Information Security	4
Λ maximum of fo	our CIS 280D credits can be applied toward t	ha CIS	CIS 240M	Managing a Windows Server Environment	4
	ial credits, up to a maximum of eight, may be		or CIS 240L		
	ee, but must be approved by a CIS Departme		CIS 288M	Linux Installation and Configuration Microsoft Network Administration	4
			or CIS 279L	Linux Network Administration	4
	INFORMATION SYSTEMS		WR 121	Composition I (WR121=WR121Z) Z	4
PROGRAMN	MING ELECTIVES		WR 121	Composition II (WR122=WR122Z) Z	4
Code	Title	Credits	or WR 227	Technical Writing (WR227=WR227Z)	4
CIS 133J	Java Programming I	8			00
& CIS 233J	and Java Programming II			inistration Degree Electives 1	28
CIS 133N	Introduction to Programming Using	8	CIS Program Busi		6
& CIS 233N	C#.NET			ogramming Elective	4
	and Intermediate C#.NET Programming		General Education	n: 2 courses	
CIS 133W	JavaScript for Web Developers	8	Total Credits		92
& CIS 233W	and JavaScript for Web Developers II		*		
CIS 133Y & CIS 233Y	Python Programming I and Python Programming II	8	Could be used as	General Education.	
CS 161B	Programming and Problem Solving II	8	1	Serioral Eddodism	
& CS 161B	and Computer Science II	0	Notwork Administr	ration Electives - 28 credit total, 16 credits n	aust be
	·		at the 200 level.	ation Electives - 26 credit total, 16 credits in	iusi be
	INFORMATION SYSTEMS PROC	3RAM			
BUSINESS I	ELECTIVES		Z This source is per	t of Oregon Common Course Numbering. T	20
Code	Title	Credits	following courses		IE
BA 111	Introduction to Accounting	3	WR 121 and WR 1		
BA 205	Business Communication Using Technology	4	WR 122 and WR12 WR 227 and WR22	22Z	
BA 205 BA 206	Technology	4	WR 122 and WR12 WR 227 and WR22	22Z 27Z	VODIA
BA 206	Technology Management Fundamentals	4	WR 122 and WR1: WR 227 and WR2:	22Z 27Z INFORMATION SYSTEMS NETV	VORK
	Technology  Management Fundamentals  Principles of Financial Accounting	4 3 4	WR 122 and WR1: WR 227 and WR2:	22Z 27Z	VORK
BA 206 BA 211 BA 212	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II	4	WR 122 and WR1: WR 227 and WR2:	22Z 27Z INFORMATION SYSTEMS NETV	VORK Credits
BA 206 BA 211 BA 212 BA 213	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting	3 4 3 4	WR 122 and WR1: WR 227 and WR2: COMPUTER ADMINISTRA	<sup>22Z</sup> <sup>27Z</sup> INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES	
BA 206 BA 211 BA 212 BA 213 BA 216A	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau	4 3 4 3 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER ADMINISTRA Code	22Z 27Z INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES Title	Credits
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing	4 3 4 3 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER ADMINISTRA Code CIS 120	22Z 27Z INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES Title Digital Literacy	Credits 4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I	4 3 4 3 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER ADMINISTRA Code CIS 120 CIS 188 CIS 189	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security	Credits 4 4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing	4 3 4 3 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER ADMINISTRA Code CIS 120 CIS 188	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support	Credits 4 4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics:	4 3 4 3 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server	Credits 4 4 4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics	4 3 4 3 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment	Credits
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics:	4 3 4 3 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M CIS 244	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis	Credits
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics:	4 3 4 3 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M CIS 244 CIS 245	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems	Credits
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202 * Could be used a	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Macroeconomics	4 3 4 3 4 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M CIS 244 CIS 245 CIS 275	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction	Credits
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202 * Could be used a	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Macroeconomics  Seeneral Education  ADMINISTRATION AAS DEGREE	4 3 4 3 4 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M CIS 244 CIS 245	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems	Credits 4 4 4 4 4 4 4 4
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BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202  * Could be used at NETWORK A Minimum 92 created Comprehensive Requirements. S	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Microeconomics Seconomics Addition  ADMINISTRATION AAS DEGREE  Citis. Students must also meet Associate Degree Requirements and Associate of Applied Scie tudents must complete a total of four courses	4 3 4 4 4 4 4 4	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M CIS 244 CIS 245 CIS 275 CIS 278	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction Data Communication Concepts II Cisco 1: Introduction to Networks Cisco 2: Switching, Routing, and	Credits 4 4 4 4 4 4 4 4 4 4 4 4
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BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202 * Could be used a NETWORK A Minimum 92 cree Comprehensive Requirements. S General Education be used as General	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Macroeconomics Seconomics Administration Administration Ads Degree Dits. Students must also meet Associate Degree Requirements and Associate of Applied Scie tudents must complete a total of four courses on. Some courses specified within the prograeral Education. In addition to required course	4 3 4 4 4 4 4 4 4 free ence s of im may s in	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA  Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M  CIS 244 CIS 245 CIS 275 CIS 278 CIS 278A	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction Data Communication Concepts II Cisco 1: Introduction to Networks Cisco 2: Switching, Routing, and Wireless Essentials Cisco 3: Enterprise Networking, Security	Credits 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202 * Could be used a NETWORK A Minimum 92 crea Comprehensive Requirements. S General Education be used as General education the program of se	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Macroeconomics Seconomics Addition  ADMINISTRATION AAS DEGREE  dits. Students must also meet Associate Deging Requirements and Associate of Applied Scie tudents must complete a total of four courses on. Some courses specified within the progra eral Education. In addition to required course tudy, students must satisfy MTH 58/65 comp	4 3 4 4 4 4 4 4 4  free ence s of im may s in etency.	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M CIS 244 CIS 245 CIS 275 CIS 278 CIS 278 CIS 278B CIS 278C	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction Data Communication Concepts II Cisco 1: Introduction to Networks Cisco 2: Switching, Routing, and Wireless Essentials Cisco 3: Enterprise Networking, Security and Automation	Credits 4 4 4 4 4 4 4 4 7, 4
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BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202  * Could be used at NETWORK A Minimum 92 cree Comprehensive Requirements. S General Education be used as Students should be used as General Education be us	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Microeconomics Principles of Economics: Macroeconomics  See General Education  ADMINISTRATION AAS DEGREE  Citis. Students must also meet Associate Degree Requirements and Associate of Applied Sciet tudents must complete a total of four courses cons. Some courses specified within the prograe aral Education. In addition to required course tudy, students must satisfy MTH 58/65 comp consult with program advisors for course pla	4 3 4 4 4 4 4 4 4  free ence s of im may s in etency.	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA  Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M  CIS 244 CIS 245 CIS 275 CIS 278 CIS 278 CIS 278B CIS 278C CIS 279L CIS 280D	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction Data Communication Concepts II Cisco 1: Introduction to Networks Cisco 2: Switching, Routing, and Wireless Essentials Cisco 3: Enterprise Networking, Security and Automation Linux Network Administration Cooperative Education: Application Development	Credits 4 4 4 4 4 4 4 4 4 4 4 4 4 1-4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202 * Could be used a NETWORK A Minimum 92 crea Comprehensive Requirements. S General Education be used as General Education be used as General Education Students should Network Ad	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Macroeconomics  Sequeral Education  ADMINISTRATION AAS DEGREE  dits. Students must also meet Associate Degine Requirements and Associate of Applied Scietudents must complete a total of four courses on. Some courses specified within the prograeral Education. In addition to required course tudy, students must satisfy MTH 58/65 comp consult with program advisors for course platements and Degree Courses  ministration Degree Courses	4 3 4 4 4 4 4 4 4  free ence s of im may s in etency. nning.	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA  Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 244 CIS 245 CIS 275 CIS 278 CIS 278B CIS 278C CIS 279L CIS 284C	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction Data Communication Concepts II Cisco 1: Introduction to Networks Cisco 2: Switching, Routing, and Wireless Essentials Cisco 3: Enterprise Networking, Security and Automation Linux Network Administration Cooperative Education: Application Development Cybersecurity Concepts	Credits 4 4 4 4 4 4 4 4 7, 4 1-4
BA 206 BA 211 BA 212 BA 213 BA 216A BA 223 BA 226 EC 201 EC 202 * Could be used a NETWORK A Minimum 92 crea Comprehensive Requirements. S General Education be used as General Education be used as General Education Code Network Ad Code	Technology Management Fundamentals Principles of Financial Accounting Principles of Accounting II Managerial Accounting Data Analytics with Excel and Tableau Principles of Marketing Business Law I Principles of Economics: Microeconomics Principles of Economics: Microeconomics Principles of Economics: Macroeconomics s General Education  ADMINISTRATION AAS DEGREE dits. Students must also meet Associate Degine Requirements and Associate of Applied Scie tudents must complete a total of four courses on. Some courses specified within the programinal Education. In addition to required course tudy, students must satisfy MTH 58/65 componsult with program advisors for course plateministration Degree Courses Title	4 3 4 4 4 4 4 4 4 4 Cree ence s of im may s in etency. nning.	WR 122 and WR1: WR 227 and WR2: COMPUTER I ADMINISTRA  Code CIS 120 CIS 188 CIS 189 CIS 225 CIS 240L CIS 240M  CIS 244 CIS 245 CIS 275 CIS 278 CIS 278 CIS 278B CIS 278C CIS 279L CIS 280D	INFORMATION SYSTEMS NETV TION DEGREE ELECTIVES  Title Digital Literacy Introduction to Wireless Networking Wireless Security End User Support Linux Installation and Configuration Managing a Windows Server Environment Systems Analysis Project Management - Information Systems Data Modeling and SQL Introduction Data Communication Concepts II Cisco 1: Introduction to Networks Cisco 2: Switching, Routing, and Wireless Essentials Cisco 3: Enterprise Networking, Security and Automation Linux Network Administration Cooperative Education: Application Development	Credits 4 4 4 4 4 4 4 4 4 4 4 4 4 1-4

CIS 287M

Microsoft Server Security

4

CIS 140M

Operating Systems I: Microsoft

CIS 288M	Microsoft Network Administration	4		Programming Elective	4
CIS 289M	Microsoft Active Directory Administration	n 4		urity Degree Electives 1	23
COMPUTER II BUSINESS EL	NFORMATION SYSTEMS PRO ECTIVES	GRAM	CIS Cybersecu	urity Advanced Electives urity Business Electives ation: 2 courses	8 6
Code	Title	Credits	Total Credits	ation. 2 courses	91
BA 111	Introduction to Accounting	3	Total Credits		91
BA 205	Business Communication Using	4	*	l as General Education.	
BA 206	Technology  Management Fundamentals	3	1	ras deficial Education.	
BA 211	Principles of Financial Accounting	4	Cyboroccurity	Floatives at least 9 gradits must be at the 200	Novel
BA 211	Principles of Accounting II	3	Cybersecurity	Electives - at least 8 credits must be at the 200	ievei.
BA 213	Managerial Accounting	4	Z		
BA 216A	Data Analytics with Excel and Tableau	4		part of Oregon Common Course Numbering. T ses are equivalent:	ne
BA 223	Principles of Marketing	4	WR 121 and W		
BA 226	Business Law I	4	WR 227 and W	/R227Z	
EC 201	Principles of Economics: Microeconomics	4	CIS FIRST	TERM PROGRAMMING ELECTIVE	Ξ
EC 202	Principles of Economics:	4	Code	Title	Credits
20 202	Macroeconomics *		CIS 133J	Java Programming I	4
*			CIS 133N	Introduction to Programming Using C#.NET	4
Could be used as 0	General Education		CIS 133W	JavaScript for Web Developers	4
COMPLITED	NFORMATION SYSTEMS		CIS 133Y	Python Programming I	4
			CIS 195P	PHP Web Development I	4
PROGRAMIMII	NG ELECTIVES		CS 161B	Programming and Problem Solving II	4
Code	Title	Credits	CVDEDCE/		
CIS 133J & CIS 233J	Java Programming I	8		CURITY DEGREE ELECTIVES	
& CIS 2333 CIS 133N	and Java Programming II Introduction to Programming Using	8	Code	Title	Credits
& CIS 233N	C#.NET	O	CIS 120	Digital Literacy	4
	and Intermediate C#.NET Programming		CIS 135M	Mobile Application Programming for Android	4
CIS 133W & CIS 233W	JavaScript for Web Developers and JavaScript for Web Developers II	8	CIS 145	Microcomputer Hardware and Troubleshooting	4
CIS 133Y	Python Programming I	8	CIS 182	Introduction to Cloud Computing	4
& CIS 233Y	and Python Programming II	0	CIS 188	Introduction to Wireless Networking	4
CS 161B & CS 162	Programming and Problem Solving II and Computer Science II	8	CIS 189	Wireless Security	4
	·		CIS 225	End User Support	4
	RITY AAS DEGREE		CIS 233J	Java Programming II	4
	s. Students must also meet Associate Deg		CIS 233N	Intermediate C#.NET Programming	4
	quirements and Associate of Applied Scie dents must complete a total of four course		CIS 233W	JavaScript for Web Developers II	4
	. Some courses specified within the progra		CIS 233Y	Python Programming II	4
	Il Education. In addition to required course		CIS 234A	Real-World Programming	4
	dy, students must satisfy MTH 58/65 comp		CIS 234R	Secure Coding	4
Students should co	onsult with program advisors for course pla	anning.	CIS 244	Systems Analysis	4
Cybersecurity	Degree Courses		CIS 275	Data Modeling and SQL Introduction	4
Code	Title	Credits	CIS 276	Advanced SQL	4
CIS 121	Information Systems and Programming	* 4	CIS 278	Data Communication Concepts II	4
CIS 122	Introduction to Programming Logic *	4	CIS 278A	Cisco 1: Introduction to Networks	4
CIS 140L	Introduction to Linux/UNIX	4	CIS 279L	Linux Network Administration	4
CIS 140M	Operating Systems I: Microsoft	4	CIS 280D	Cooperative Education: Application Development	1-4
CIS 179	Data Communication Concepts I	4	CIS 285E	Ethical Hacking	4
CIS 184C	Introduction to Information Security	4	CIS 286	Computer Forensics	4
CIS 240L	Linux Installation and Configuration	4	CIS 287M	Microsoft Server Security	4
CIS 240M	Managing a Windows Server	4	CIS 288M	Microsoft Network Administration	4
010.00.10	Environment		CIS 289M	Microsoft Active Directory Administration	
CIS 284C	Cybersecurity Concepts	4	CIS 295P	PHP Web Development II	4
WR 121	Composition I (WR121=WR121Z) Z	4		•	

Technical Writing (WR227=WR227Z) Z

WR 227

CJA 117	Introduction to Homeland Security	3
CS 162	Computer Science II	4

#### CYBERSECURITY ADVANCED ELECTIVES

Code	Title	Credits
CIS 234R	Secure Coding	4
CIS 285E	Ethical Hacking	4
CIS 286	Computer Forensics	4
CIS 287M	Microsoft Server Security	4

#### CYBERSECURITY BUSINESS ELECTIVES

Code	Title	Credits
BA 111	Introduction to Accounting	3
BA 205	Business Communication Using Technology	4
BA 206	Management Fundamentals	3
BA 211	Principles of Financial Accounting	4
BA 213	Managerial Accounting	4
BA 216A	Data Analytics with Excel and Tableau	4
BA 226	Business Law I	4

### WEB DEVELOPMENT AND DESIGN AAS DEGREE

Minimum 92 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. In addition to required courses in the program of study, students must satisfy MTH 58/65 competency. Students should consult with program advisors for course planning.

### **Web Development and Design Degree Courses**

Code	Title	Credits
CIS 121	Information Systems and Programming *	4
CIS 122	Introduction to Programming Logic *	4
CIS 125D	Database Application Development I	4
CIS 133W	JavaScript for Web Developers	4
CIS 140M	Operating Systems I: Microsoft	4
or CIS 140L	Introduction to Linux/UNIX	
CIS 184C	Introduction to Information Security	4
CIS 195H	HTML and CSS	4
CIS 195N	JavaScript Programming Using Node.js I	4
CIS 195P	PHP Web Development I	4
CIS 233W	JavaScript for Web Developers II	4
CIS 234A	Real-World Programming	4
or CIS 280D	Cooperative Education: Application	
010.00.10	Development	
CIS 234R	Secure Coding	4
CIS 275	Data Modeling and SQL Introduction	4
CIS 277A	Data Analytics	4
MM 120	Multimedia Design	2
MUC 218	Digital Arts & Equity	4
MUC 261	Data Visualization & Sonification	4
MUC 262	Interface Design	4
WR 121	Composition I (WR121=WR121Z) Z	4
WR 122	Composition II (WR122=WR122Z) Z	4
or WR 227	Technical Writing (WR227=WR227Z)	
Web Development a	and Design 2nd Year Electives: 2 courses	8
General Education:	2 courses	
Total Credits		92

Could be used as General Education

Ζ

This course is part of Oregon Common Course Numbering. The following courses are equivalent:

WR 121 and WR 1217

WR 121 and WR 121Z WR 122 and WR 122Z WR 227 and WR 227Z

### WEB DEVELOPMENT AND DESIGN 2ND YEAR ELECTIVES

Code	Title	Credits
BA 216A	Data Analytics with Excel and Tableau	4
CIS 133J	Java Programming I	4
CIS 133N	Introduction to Programming Using C#.NET	4
CIS 133Y	Python Programming I	4
CIS 181	CMS Web Development	4
CIS 182	Introduction to Cloud Computing	4
CIS 233J	Java Programming II	4
CIS 233N	Intermediate C#.NET Programming	4
CIS 233Y	Python Programming II	4
CIS 277S	Introduction to Data Science	4
CIS 295N	JavaScript Programming Using Node.js	II 4
MUC 206	Body Interface Design	4
MUC 278	Generative Art on the Web	4

#### **ONE-YEAR CERTIFICATE**

Computer Information Systems (p. 5)

### LESS THAN ONE-YEAR CERTIFICATE

Advanced Windows Network Security
C# Application Programming (p. 7)
Cybersecurity Foundations (p. 7)
Database Design and SQL (p. 7)
Java Application Programming (p. 7)
Network Administration: Microsoft Server (p. 7)
Network Administration: Linux Server (p. 7)
Network Security - Linux (p. 7)
Network Security - Windows (p. 8)
Secure Programming (p. 8)
Web Application Development (p. 8)

### COMPUTER INFORMATION SYSTEMS ONE-YEAR CERTIFICATE

Minimum 47 credits. Students must meet all certificate requirements.

### **Computer Information Systems Certificate Courses**

Code	Title	Credits
CIS 121	Information Systems and Programming §	4
CIS 122	Introduction to Programming Logic §	4
CIS 140M	Operating Systems I: Microsoft	4
or CIS 140L	Introduction to Linux/UNIX	
CIS 179	Data Communication Concepts I	4
CIS 184C	Introduction to Information Security	4
WR 121	Composition I (WR121=WR121Z) Z	4
WR 122	Composition II (WR122=WR122Z) §,Z	4
or WR 227	Technical Writing (WR227=WR227Z)	
CIS Program Electiv	ves (see list below)	12
CIS Program Busine	ess Electives (see list below)	3

### **COMPUTER INFORMATION SYSTEMS**

Related Instruction	Human Relations Elective (see list below)	§ 4	CIS 2770	Advanced Database Concepts in Oracle	4
Total Credits	, ,	47	CIS 277S	Introduction to Data Science	4
§		77	CIS 277T	Web Business Intelligence Application Development	4
	lated Instruction and cannot be substitute	d with	CIS 278	Data Communication Concepts II	4
another course; Rela	ated Instruction details can be viewed her	e.	CIS 278A	Cisco 1: Introduction to Networks	4
Z			CIS 279L	Linux Network Administration	4
	of Oregon Common Course Numbering. The	ne	CIS 279L CIS 280D		-
following courses ar			CIS 200D	Cooperative Education: Application Development 1	4
WR 121 and WR 12	1Z <sup>'</sup>		CIS 284C	Cybersecurity Concepts	4
WR 122 and WR 122			CIS 285E	Ethical Hacking	4
WR 227 and WR 227	7Z			<u> </u>	
			CIS 286	Computer Forensics	4
COMPUTER IN	IFORMATION SYSTEMS PROC	3RAM	CIS 287M	Microsoft Server Security	4
ELECTIVES			CIS 288M	Microsoft Network Administration	4
Code	Title	Credits	CIS 289M	Microsoft Active Directory Administration	4
Introductory Course		Ordano	CIS 295N	JavaScript Programming Using Node.js II	4
CIS 120	Digital Literacy	4	CIS 295P	PHP Web Development II	4
CIS 125D	Database Application Development I	4	CS 162	Computer Science II	4
CIS 123D			CS 201	Computer Systems	4
	Java Programming I	4	CS 260	Data Structures	4
CIS 133N	Introduction to Programming Using C#.NET	4	CS 261	Programming Systems	4
CIS 133W	JavaScript for Web Developers	4	*		
CIS 133Y	Python Programming I	4	Could be used as 0	General Education	
CIS 135M	Mobile Application Programming for Android	4	1		010
CIS 140L	Introduction to Linux/UNIX	4		CIS 280D credits can be applied toward the credits, up to a maximum of eight, may be a	
CIS 140M	Operating Systems I: Microsoft	4		but must be approved by a CIS Departmen	
CIS 145	Microcomputer Hardware and	4	•	NFORMATION SYSTEMS PROGI	
010 100	Troubleshooting		BUSINESS EL		I I/\IVI
CIS 182	Introduction to Cloud Computing	4			
CIS 188	Introduction to Wireless Networking	4	Code		Credits
CIS 189	Wireless Security	4	BA 111	Introduction to Accounting	3
CIS 195H	HTML and CSS	4	BA 205	Business Communication Using	4
CIS 195N	JavaScript Programming Using Node.js		D.1. 000	Technology	
CIS 195P	PHP Web Development I	4	BA 206	Management Fundamentals	3
CS 133U	C Programming	4	BA 211	Principles of Financial Accounting	4
CS 160	Exploring Computer Science	4	BA 212	Principles of Accounting II	3
CS 161	Computer Science I *	4	BA 213	Managerial Accounting	4
CS 161A	Programming and Problem Solving I	4	BA 216A	Data Analytics with Excel and Tableau	4
CS 161B	Programming and Problem Solving II	4	BA 223	Principles of Marketing	4
EET 178	Computing Environments for Technician	s 4	BA 226	Business Law I	4
Advanced Courses			EC 201	Principles of Economics:	4
CIS 225	End User Support	4		Microeconomics	
CIS 233J	Java Programming II	4	EC 202	Principles of Economics:	4
CIS 233N	Intermediate C#.NET Programming	4		Macroeconomics	
CIS 233W	JavaScript for Web Developers II	4	*		
CIS 233Y	Python Programming II	4	Could be used as (	Reneral Education	
CIS 234A	Real-World Programming	4		20110101 200001011	
CIS 234R	Secure Coding	4	COMPUTER II	NFORMATION SYSTEMS RELAT	ED
CIS 240L	Linux Installation and Configuration	4	INSTRUCTION	I HUMAN RELATIONS ELECTIVE	ES
CIS 240M	Managing a Windows Server	4	Code		Credits
0.0 2 10171	Environment	-	CG 191	Exploring Identity and Diversity for	4
CIS 244	Systems Analysis	4	35.51	College Success	-
CIS 245	Project Management - Information	4	PSY 101	Psychology and Human Relations	4
	Systems		PSY 201A	Introduction to Psychology - Part 1	4
CIS 275	Data Modeling and SQL Introduction	4	PSY 202A	Introduction to Psychology - Part 2	4
CIS 276	Advanced SQL	4	PSY 214	Introduction to Personality	4
CIS 277A	Data Analytics	4	PSY 215	Human Development	4

PSY 216	Social Psychology	
PSY 222	Family & Intimate Relationships	
PSY 231	Foundations of Human Sexuality	
PSY 232	Human Sexuality in Social Context	
PSY 236	Psychology of Adult Development and Aging	
PSY 239	Introduction to Abnormal Psychology	
PSY 240	Personal Awareness and Growth	
SOC 204	Introduction to Sociology	
SOC 205	Social Change	
SOC 206	Social Problems	
SOC 213	Diversity in the United States	
SOC 218	Sociology of Gender	
SOC 232	Death and Dying: Culture and Issues	
WS 101	Women's Studies	

### C# APPLICATION PROGRAMMING LESS THAN ONE-YEAR CERTIFICATE

Minimum 16 credits. Students must meet all certificate requirements.

### **C# Application Programming Certificate Courses**

Code	Title	Credits
CIS 122	Introduction to Programming Logic	4
CIS 133N	Introduction to Programming Using C#.NET	4
CIS 233N	Intermediate C#.NET Programming	4
CIS 234A	Real-World Programming	4
Total Credits		16

### ADVANCED WINDOWS NETWORK SECURITY LESS THAN ONE-YEAR CERTIFICATE

Minimum 28 credits. Students must meet all certificate requirements.

### **Advanced Windows Network Security Certificate Courses**

Code	Title	Credits
CIS 189	Wireless Security	4
CIS 240M	Managing a Windows Server Environment	4
CIS 278	Data Communication Concepts II	4
CIS 284C	Cybersecurity Concepts	4
CIS 287M	Microsoft Server Security	4
CIS 288M	Microsoft Network Administration	4
CIS 289M	Microsoft Active Directory Administration	4
Total Credits		28

### CYBERSECURITY FOUNDATIONS LESS THAN ONE-YEAR CERTIFICATE

Minimum 28 credits. Students must meet all certificate requirements.

### **Cybersecurity Foundations Certificate Courses**

Code	Title	Credits
CIS 121	Information Systems and Programming	4
CIS 122	Introduction to Programming Logic	4
CIS 140L	Introduction to Linux/UNIX	4
CIS 140M	Operating Systems I: Microsoft	4
CIS 179	Data Communication Concepts I	4
CIS 184C	Introduction to Information Security	4

CIS 284C	Cybersecurity Concepts	4
Total Credits		28

4

4

4

### DATABASE DESIGN AND SQL LESS THAN ONE-YEAR CERTIFICATE

Minimum 12 credits. Students must meet all certificate requirements.

#### **Database Design and SQL Certificate Courses**

Code	Title	Credits
CIS 125D	Database Application Development I	4
CIS 275	Data Modeling and SQL Introduction	4
CIS 276	Advanced SQL	4
Total Credits		12

### JAVA APPLICATION PROGRAMMING LESS THAN ONE-YEAR CERTIFICATE

Minimum 16 credits. Students must meet all certificate requirements.

### Java Application Programming Certificate Courses

Code	Title	Credits
CIS 122	Introduction to Programming Logic	4
or CIS 135M	Mobile Application Programming for And	Iroid
CIS 133J	Java Programming I	4
CIS 233J	Java Programming II	4
CIS 234A	Real-World Programming	4
Total Credits		16

### NETWORK ADMINISTRATION: LINUX SERVER LESS THAN ONE-YEAR CERTIFICATE

Minimum 16 credits. Students must meet all certificate requirements.

#### **Linux Server Certificate Courses**

Code	Title	Credits
CIS 179	Data Communication Concepts I	4
CIS 240L	Linux Installation and Configuration	4
CIS 279L	Linux Network Administration	4
CS 140U	Introduction to UNIX	4
Total Credits		16

### NETWORK ADMINISTRATION: MICROSOFT SERVER ADMINISTRATION LESS THAN ONE-YEAR CERTIFICATE

Minimum 24 credits. Students must meet all certificate requirements.

### **Microsoft Server Certificate Courses**

Code	Title	Credits
CIS 140M	Operating Systems I: Microsoft	4
CIS 179	Data Communication Concepts I	4
CIS 240M	Managing a Windows Server Environment	4
CIS 287M	Microsoft Server Security	4
CIS 288M	Microsoft Network Administration	4
CIS 289M	Microsoft Active Directory Administration	4
Total Credits		24

### NETWORK SECURITY - LINUX LESS THAN ONE-YEAR CERTIFICATE

Minimum 20 credits. Students must meet all certificate requirements.

### **Network Security - Linux Certificate Courses**

Code	Title	Credits
CIS 189	Wireless Security	4
CIS 240L	Linux Installation and Configuration	4
CIS 278	Data Communication Concepts II	4
CIS 279L	Linux Network Administration	4
CIS 284C	Cybersecurity Concepts	4
Total Credits		20

# NETWORK SECURITY - WINDOWS LESS THAN ONE-YEAR CERTIFICATE

Minimum 16 credits. Students must meet all certificate requirements.

### **Network Security - Windows Certificate Courses**

Code	Title	Credits
CIS 189	Wireless Security	4
CIS 240M	Managing a Windows Server Environment	4
CIS 278	Data Communication Concepts II	4
CIS 284C	Cybersecurity Concepts	4
Total Credits		16

### SECURE PROGRAMMING LESS THAN ONE-YEAR CERTIFICATE

Minimum 24 credits. Students must meet all certificate requirements.

### **Secure Programming Certificate Courses**

Code	Title	Credits
CIS 184C	Introduction to Information Security	4
CIS 234R	Secure Coding	4
CIS 275	Data Modeling and SQL Introduction	4
CS 140U	Introduction to UNIX	4
CIS Programming E	lectives <sup>1</sup>	8
Total Credits		24

Eight credits of programming electives must be a two-term sequence from the Programming Elective List.

## WEB APPLICATION DEVELOPMENT LESS THAN ONE-YEAR CERTIFICATE

Minimum 12 credits. Students must meet all certificate requirements.

### **Web Application Development Certificate Courses**

Code	Title	Credits
CIS 133W	JavaScript for Web Developers	4
CIS 135M	Mobile Application Programming for Android	4
CIS 195P	PHP Web Development I	4
Total Credits		12