Program Requirements

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 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.

Other Requirements

- None

Associate of Applied Science Degree

Computer Information Systems (p. 1)
Computer Information Systems: Network Administration Option

Minimum 94 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of sixteen credits 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.

Computer Information Systems AAS Degree

Computer Information Systems (p. 1)

AAS Degree: 32 credits

CIS 120 Computer Concepts I 4
CIS 121 Computer Concepts II 4
CIS 122 Introduction to Programming Logic 4
CIS 140M Operating Systems I: Microsoft 4
or CS 140U Introduction to UNIX 4
CIS 179 Data Communication Concepts I 4
CIS 234A Real-World Programming 4
or CIS 280D Cooperative Education: Application Development 4
CIS 244 Systems Analysis 4
CIS 275 Data Modeling and SQL Introduction 4
WR 121 English Composition 4
WR 122 English Composition 4
or WR 227 Technical and Professional Writing 1
CIS Program Electives 32
COMPUTER INFORMATION SYSTEMS

<table>
<thead>
<tr>
<th>COURSES</th>
<th>SEMESTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 287X</td>
<td>Microsoft Exchange Management</td>
</tr>
<tr>
<td>CIS 288M</td>
<td>Microsoft Network Administration</td>
</tr>
<tr>
<td>CIS 289M</td>
<td>Microsoft Active Directory Administration</td>
</tr>
<tr>
<td>CIS 289P</td>
<td>PHP Web Development II</td>
</tr>
<tr>
<td>CS 133U</td>
<td>C Programming</td>
</tr>
<tr>
<td>CS 140U</td>
<td>Introduction to UNIX</td>
</tr>
<tr>
<td>CS 160*</td>
<td>Exploring Computer Science</td>
</tr>
<tr>
<td>CS 161*</td>
<td>Computer Science I</td>
</tr>
<tr>
<td>CS 162*</td>
<td>Computer Science II</td>
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<td>CS 201</td>
<td>Computer Systems</td>
</tr>
<tr>
<td>CS 260</td>
<td>Data Structures</td>
</tr>
<tr>
<td>CS 261</td>
<td>Programming Systems</td>
</tr>
<tr>
<td>EET 178</td>
<td>Computing Environments for Technicians</td>
</tr>
</tbody>
</table>

COMPUTER INFORMATION SYSTEMS PROGRAM ELECTIVES

<table>
<thead>
<tr>
<th>COURSES</th>
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<tbody>
<tr>
<td>CIS 280D</td>
<td>4</td>
</tr>
<tr>
<td>CIS 279L</td>
<td>4</td>
</tr>
<tr>
<td>EC 201*</td>
<td>Principles of Economics: Microeconomics</td>
</tr>
<tr>
<td>EC 202*</td>
<td>Principles of Economics: Macroeconomics</td>
</tr>
</tbody>
</table>

COMPUTER INFORMATION SYSTEMS PROGRAM BUSINESS ELECTIVES

<table>
<thead>
<tr>
<th>COURSES</th>
<th>SEMESTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 206</td>
<td>Management Fundamentals</td>
</tr>
<tr>
<td>BA 211</td>
<td>Principles of Accounting I</td>
</tr>
<tr>
<td>BA 212</td>
<td>Principles of Accounting II</td>
</tr>
<tr>
<td>BA 213</td>
<td>Managerial Accounting</td>
</tr>
<tr>
<td>BA 223</td>
<td>Principles of Marketing</td>
</tr>
<tr>
<td>BA 226</td>
<td>Business Law I</td>
</tr>
<tr>
<td>BA 245</td>
<td>Principles of Accounting II</td>
</tr>
<tr>
<td>BA 267</td>
<td>Business Law I</td>
</tr>
</tbody>
</table>

NETWORK ADMINISTRATION AAS DEGREE

Minimum 94 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of sixteen credits 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.

<table>
<thead>
<tr>
<th>COURSES</th>
<th>SEMESTERS</th>
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</thead>
<tbody>
<tr>
<td>CIS 120*</td>
<td>Computer Concepts I</td>
</tr>
<tr>
<td>CIS 121*</td>
<td>Computer Concepts II</td>
</tr>
<tr>
<td>CIS 122*</td>
<td>Introduction to Programming Logic</td>
</tr>
<tr>
<td>CIS 140M</td>
<td>Operating Systems I: Microsoft</td>
</tr>
<tr>
<td>CIS 145</td>
<td>Microcomputer Hardware and Troubleshooting</td>
</tr>
<tr>
<td>CIS 179</td>
<td>Data Communication Concepts I</td>
</tr>
</tbody>
</table>

* Could be used as General Education
1 CIS Program Electives - 32 credits total, 16 credits must be at the 200 level.
2 For the Computer Information Systems AAS Degree, eight credits of programming electives must be a two-term sequence from the Programming Elective List.
COMPUTER INFORMATION SYSTEMS

CIS 240M Managing a Windows Server Environment 4
or CIS 240L Linux Installation and Configuration
CIS 244 Systems Analysis 4
CIS 280D Cooperative Education: Application Development 4
CIS 288M Microsoft Network Administration 4
or CIS 279L Linux Network Administration
CS 140U Introduction to UNIX 4
WR 121 English Composition 4
WR 122 English Composition 4
or WR 227 Technical and Professional Writing 1
CIS Network Administration Degree Electives 1 24
CIS Program Business Electives 6
CIS Programming Electives 2 4
Remaining General Education 8
Total Credits 94

* Could be used as General Education.
1 Network Administration Electives - 24 credit total, 16 credits must be at the 200 level.
2 Students enrolled in the Network Administration AAS Degree are required to take only one course for 4 credits from the eight courses listed in the CIS Programming Elective lists.

COMPUTER INFORMATION SYSTEMS NETWORK ADMINISTRATION DEGREE ELECTIVES
CIS 188 Introduction to Wireless Networking 4
CIS 189 Wireless Security 4
CIS 225 End User Support 4
CIS 240L Linux Installation and Configuration 4
CIS 240M Managing a Windows Server Environment 4
CIS 245 Project Management - Information Systems 4
CIS 275 Data Modeling and SQL Introduction 4
CIS 278 Data Communication Concepts II 4
CIS 279L Linux Network Administration 4
CIS 284 Network Security 4
CIS 284C Cybersecurity Concepts 4
CIS 286 Computer Forensics 4
CIS 287I Web Server Administration 4
CIS 287M Microsoft Server Security 4
CIS 287X Microsoft Exchange Management 4
CIS 288M Microsoft Network Administration 4
CIS 289M Microsoft Active Directory Administration 4

COMPUTER INFORMATION SYSTEMS PROGRAM BUSINESS ELECTIVES
BA 206 Management Fundamentals 3
BA 211 Principles of Accounting I 3
BA 212 Principles of Accounting II 3
BA 213 Managerial Accounting 4
BA 223 Principles of Marketing 3
BA 226 Business Law I 4
EC 201 Principles of Economics: Microeconomics 4
EC 202 Principles of Economics: Macroeconomics 4

* Could be used as General Education

COMPUTER INFORMATION SYSTEMS PROGRAMMING ELECTIVES
CS 161 Computer Science I 8
& CS 162 and Computer Science II 8
CIS 133J Java Programming I 8
& CIS 233J and Java Programming II 8
CIS 133N Introduction to Programming Using C#.NET 8
& CIS 233N and Intermediate C#.NET Programming 8
CIS 133W JavaScript for Web Developers 8
& CIS 233W and JavaScript for Web Developers II 8

ONE-YEAR CERTIFICATE
Computer Information Systems (p. 3)

LESS THAN ONE-YEAR CERTIFICATE
C# Application Programming (p. 4)
Database Design and SQL (p. 4)
Java Application Programming (p. 4)
Network Administration: Microsoft Server (p. 5)
Network Administration: Linux Server (p. 5)
Web Application Development (p. 5)

COMPUTER INFORMATION SYSTEMS ONE-YEAR CERTIFICATE
Minimum 47 credits. Students must meet all certificate requirements.

COMPUTER INFORMATION SYSTEMS CERTIFICATE COURSES
CIS 120 § Computer Concepts I 4
CIS 121 § Computer Concepts II 4
CIS 122 § Introduction to Programming Logic 4
CIS 140M Operating Systems I: Microsoft 4
or CS 140U Introduction to UNIX 4
WR 121 English Composition 4
WR 122 § English Composition 4
or WR 227 Technical and Professional Writing 1 4
CIS Program Electives (see list below) 16
CIS Program Business Electives (see list below) 3
Related Instruction Human Relations Elective (see list below) § 4
Total Credits 47

§ Course cannot be substituted with another course.

COMPUTER INFORMATION SYSTEMS PROGRAM ELECTIVES
CAS 206 Principles of HTML and CSS 4
CAS 215 Intermediate CSS and Preprocessors 4
CIS 125D Database Application Development I 4
CIS 133J Java Programming I 4
CIS 133N Introduction to Programming Using C#.NET 4
CIS 133W JavaScript for Web Developers 4
CIS 135A 4
CIS 135M Mobile Application Programming for Android 4
CIS 135T XML and HL7 4
CIS 140M Operating Systems I: Microsoft 4
CIS 145 Microcomputer Hardware and Troubleshooting 4
CIS 178 Applied Internet Concepts 4
CIS 179 Data Communication Concepts I 4
CIS 188  Introduction to Wireless Networking  4  
CIS 189  Wireless Security  4  
CIS 195P  PHP Web Development I  4  
CIS 225  End User Support  4  
CIS 233J  Java Programming II  4  
CIS 233N  Intermediate C# .NET Programming  4  
CIS 233W  JavaScript for Web Developers II  4  
CIS 234A  Real-World Programming  4  
CIS 235W  Introduction to Web Analytics  4  
CIS 240L  Linux Installation and Configuration  4  
CIS 240M  Managing a Windows Server Environment  4  
CIS 243  E-ssentials of E-Commerce Information Systems  4  
CIS 244  Systems Analysis  4  
CIS 245  Project Management - Information Systems  4  
CIS 275  Data Modeling and SQL Introduction  4  
CIS 276  Advanced SQL  4  
CIS 277D  Database Security  4  
CIS 277O  Advanced Database Concepts in Oracle  4  
CIS 277T  Web Business Intelligence Application Development  4  
CIS 278  Data Communication Concepts II  4  
CIS 279L  Linux Network Administration  4  
CIS 280D  Cooperative Education: Application Development  4  
CIS 284  Network Security  4  
CIS 284C  Cybersecurity Concepts  4  
CIS 286  Computer Forensics  4  
CIS 287I  Web Server Administration  4  
CIS 287M  Microsoft Server Security  4  
CIS 287X  Microsoft Exchange Management  4  
CIS 288M  Microsoft Network Administration  4  
CIS 289M  Microsoft Active Directory Administration  4  
CIS 295P  PHP Web Development II  4  
CS 133U  C Programming  4  
CS 140U  Introduction to UNIX  4  
CS 160  Exploring Computer Science  4  
CS 161  Computer Science I  4  
CS 162  Computer Science II  4  
CS 201  Computer Systems  4  
CS 260  Data Structures  4  
CS 261  Programming Systems  4  
EET 178  Computing Environments for Technicians  5  
CIS 135M  Mobile Application Programming for Android  4  
CIS 133J  Java Programming I  4  
CIS 233J  Java Programming II  4  
CIS 234A  Real-World Programming  4  
CIS 188  Introduction to Wireless Networking  4  
CIS 189  Wireless Security  4  
CIS 195P  PHP Web Development I  4  
CIS 225  End User Support  4  
CIS 233J  Java Programming II  4  
CIS 233N  Intermediate C# .NET Programming  4  
CIS 233W  JavaScript for Web Developers II  4  
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CIS 240M  Managing a Windows Server Environment  4  
CIS 243  E-ssentials of E-Commerce Information Systems  4  
CIS 244  Systems Analysis  4  
CIS 245  Project Management - Information Systems  4  
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CIS 276  Advanced SQL  4  
CIS 277D  Database Security  4  
CIS 277O  Advanced Database Concepts in Oracle  4  
CIS 277T  Web Business Intelligence Application Development  4  
CIS 278  Data Communication Concepts II  4  
CIS 279L  Linux Network Administration  4  
CIS 280D  Cooperative Education: Application Development  4  
CIS 284  Network Security  4  
CIS 284C  Cybersecurity Concepts  4  
CIS 286  Computer Forensics  4  
CIS 287I  Web Server Administration  4  
CIS 287M  Microsoft Server Security  4  
CIS 287X  Microsoft Exchange Management  4  
CIS 288M  Microsoft Network Administration  4  
CIS 289M  Microsoft Active Directory Administration  4  
CIS 295P  PHP Web Development II  4  
CS 133U  C Programming  4  
CS 140U  Introduction to UNIX  4  
CS 160  Exploring Computer Science  4  
CS 161  Computer Science I  4  
CS 162  Computer Science II  4  
CS 201  Computer Systems  4  
CS 260  Data Structures  4  
CS 261  Programming Systems  4  
EET 178  Computing Environments for Technicians  5

* Could be used as General Education

1 A maximum of four CIS 280D credits can be applied toward the CIS degree. Additional credits, up to a maximum of eight, may be applied toward the degree, but must be approved by a CIS Department chair.

**COMPUTER INFORMATION SYSTEMS PROGRAM BUSINESS ELECTIVES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<td>Management Fundamentals</td>
<td>3</td>
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<td>BA 211</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>BA 212</td>
<td>Principles of Accounting II</td>
<td>3</td>
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<tr>
<td>BA 213</td>
<td>Managerial Accounting</td>
<td>3</td>
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<tr>
<td>BA 223</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BA 226</td>
<td>Business Law I</td>
<td>4</td>
</tr>
<tr>
<td>EC 201*</td>
<td>Principles of Economics: Microeconomics</td>
<td>4</td>
</tr>
<tr>
<td>EC 202*</td>
<td>Principles of Economics: Macroeconomics</td>
<td>4</td>
</tr>
</tbody>
</table>

* Could be used as General Education

**COMPUTER INFORMATION SYSTEMS RELATED INSTRUCTION**

**HUMAN RELATIONS ELECTIVES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CG 191</td>
<td>Exploring Identity and Diversity for College</td>
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<tr>
<td>PSY 101</td>
<td>Psychology and Human Relations</td>
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<tr>
<td>PSY 201A</td>
<td>Introduction to Psychology - Part 1</td>
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<tr>
<td>PSY 202A</td>
<td>Introduction to Psychology - Part 2</td>
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<tr>
<td>PSY 214</td>
<td>Introduction to Personality</td>
<td>4</td>
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<tr>
<td>PSY 215</td>
<td>Human Development</td>
<td>4</td>
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<tr>
<td>PSY 216</td>
<td>Social Psychology</td>
<td>4</td>
</tr>
<tr>
<td>PSY 222</td>
<td>Family &amp; Intimate Relationships</td>
<td>4</td>
</tr>
<tr>
<td>PSY 231</td>
<td>Human Sexuality</td>
<td>4</td>
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<tr>
<td>PSY 232</td>
<td>Human Sexuality</td>
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<tr>
<td>PSY 236</td>
<td>Psychology of Adult Development and Aging</td>
<td>4</td>
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<tr>
<td>PSY 239</td>
<td>Introduction to Abnormal Psychology</td>
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<tr>
<td>PSY 240</td>
<td>Personal Awareness and Growth</td>
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<tr>
<td>SOC 204</td>
<td>Sociology in Everyday Life</td>
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<td>SOC 205</td>
<td>Social Change in Societies</td>
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<td>SOC 206</td>
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<td>SOC 213</td>
<td>Diversity in the United States</td>
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<td>SOC 218</td>
<td>Sociology of Gender</td>
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<td>SOC 232</td>
<td>Death and Dying: Culture and Issues</td>
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<tr>
<td>WS 101</td>
<td>Women's Studies</td>
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</table>

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

Minimum 16 credits. Students must meet all certificate requirements.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CIS 122</td>
<td>Introduction to Programming Logic</td>
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<tr>
<td>CIS 133N</td>
<td>Introduction to Programming Using C# .NET</td>
<td>4</td>
</tr>
<tr>
<td>CIS 233N</td>
<td>Intermediate C# .NET Programming</td>
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</tr>
<tr>
<td>CIS 234A</td>
<td>Real-World Programming</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits 16

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

Minimum 12 credits. Students must meet all certificate requirements.

**DATABASE DESIGN AND SQL CERTIFICATE COURSES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CIS 125D</td>
<td>Database Application Development I</td>
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<tr>
<td>CIS 275</td>
<td>Data Modeling and SQL Introduction</td>
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<tr>
<td>CIS 276</td>
<td>Advanced SQL</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits 12

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

Minimum 16 credits. Students must meet all certificate requirements.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 122</td>
<td>Introduction to Programming Logic</td>
<td>4</td>
</tr>
<tr>
<td>or CIS 135M</td>
<td>Mobile Application Programming for Android</td>
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</tr>
<tr>
<td>CIS 133J</td>
<td>Java Programming I</td>
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</tr>
<tr>
<td>CIS 233J</td>
<td>Java Programming II</td>
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</tr>
<tr>
<td>CIS 234A</td>
<td>Real-World Programming</td>
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</tr>
</tbody>
</table>

Total Credits 16
COMPUTER INFORMATION SYSTEMS 2017-18

NETWORK ADMINISTRATION: LINUX SERVER LESS THAN ONE-YEAR CERTIFICATE
Minimum 16 credits. Students must meet all certificate requirements.

LINIX SERVER CERTIFICATE COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 179</td>
<td>Data Communication Concepts I</td>
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</tr>
<tr>
<td>CIS 240L</td>
<td>Linux Installation and Configuration</td>
<td>4</td>
</tr>
<tr>
<td>CIS 279L</td>
<td>Linux Network Administration</td>
<td>4</td>
</tr>
<tr>
<td>CS 140U</td>
<td>Introduction to UNIX</td>
<td>4</td>
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<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>16</strong></td>
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</tbody>
</table>

NETWORK ADMINISTRATION: MICROSOFT SERVER ADMINISTRATION LESS THAN ONE-YEAR CERTIFICATE
Minimum 24 credits. Students must meet all certificate requirements.

MICROSOFT SERVER CERTIFICATE COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CIS 140M</td>
<td>Operating Systems I: Microsoft</td>
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</tr>
<tr>
<td>CIS 179</td>
<td>Data Communication Concepts I</td>
<td>4</td>
</tr>
<tr>
<td>CIS 240M</td>
<td>Managing a Windows Server Environment</td>
<td>4</td>
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<tr>
<td>CIS 287M</td>
<td>Microsoft Server Security</td>
<td>4</td>
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<tr>
<td>CIS 288M</td>
<td>Microsoft Network Administration</td>
<td>4</td>
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<tr>
<td>CIS 289M</td>
<td>Microsoft Active Directory Administration</td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

WEB APPLICATION DEVELOPMENT LESS THAN ONE-YEAR CERTIFICATE
Minimum 12 credits. Students must meet all certificate requirements.

WEB APPLICATION DEVELOPMENT CERTIFICATE COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 133W</td>
<td>JavaScript for Web Developers</td>
<td>4</td>
</tr>
<tr>
<td>CIS 135M</td>
<td>Mobile Application Programming for Android</td>
<td>4</td>
</tr>
<tr>
<td>CIS 195P</td>
<td>PHP Web Development I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

CIS 120. Computer Concepts I. 4 Credits.
Introduces computing fundamentals from older, mature technologies through recent and emerging technologies. Utilizes key applications, such as word processing, spread sheet, database, and presentation software, to solve realistic problems. Explores the benefits and risks of the online environment. Recommended: basic computer skills equivalent to CAS 133 or BA 131. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

CIS 121. Computer Concepts II. 4 Credits.
Covers evaluation, selection and application of computer technology to solve practical problems in web page design, database design, networking and programming. Addresses security and ethical issues associated with technology. Recommended: CIS 120. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

CIS 122. Introduction to Programming Logic. 4 Credits.
Covers the logic of programming and how to break problems down into algorithmic solutions. Includes problem solving, basic logic constructs, testing and debugging programs, modular programming, and secure coding. Emphasizes development of secure, well-designed software projects. Recommended: CIS 120 or CIS 121 or CAS 133 or BA 131. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.
CIS 188. Introduction to Wireless Networking. 4 Credits.
Introduces wireless networking theory and its practical application. Explores a variety of current and emerging wireless Local, Metropolitan, and Wide Area Networking technologies. Topics may include: WiFi (802.11a/b/g/n), Bluetooth, WiMAX (802.16), 3G Cellular, and others. Includes hands-on design of wireless networks and the configuration of wireless Access Points. Prerequisite: CIS 179, or instructor permission. Audit available.

CIS 189. Wireless Security. 4 Credits.
Introduces wireless security intrusion, policies, tools, and solutions. Prerequisite: CIS 179 or instructor permission. Recommended: CIS 188. Audit available.

CIS 195P. PHP Web Development I. 4 Credits.
Introduces the server-side scripting language, PHP, and its use in the development of websites. Includes web server, PHP and MySQL database installation, scripting, techniques, database manipulation, user authentication, tracking and session management and e-commerce techniques. Prerequisite: CIS 122 or CAS 225. Audit available.

CIS 225. End User Support. 4 Credits.
Prepares computer professionals for providing training and support to end users. Includes the roles and responsibilities of the end-user support person; characteristics of the adult learner; and strategies and techniques for developing instruction, teaching technical subject matter, troubleshooting and providing ongoing technical support. Prerequisites: CIS 120 or instructor permission. Audit available.

CIS 233J. Java Programming II. 4 Credits.
Covers the use of Java to access databases and files including XML. Includes creating collections and arrays and using inheritance in Java programs. Prerequisites: CIS 133J. Prerequisites/concurrent: CIS 275. Audit available.

CIS 233N. Intermediate C#.NET Programming. 4 Credits.
Utilizes C#.NET to access streams and relational databases. Includes how to follow UML diagrams to create objects, arrays and collections that solve advanced, real world, business oriented problems. Introduces building an interactive web page using ASP.NET. Includes writing test plans to evaluate software quality. Continues use of object oriented design techniques. Prerequisites: CIS 133N. Prerequisite/concurrent: CIS 275 or instructor permission. Audit available.

CIS 233W. JavaScript for Web Developers II. 4 Credits.
Covers advanced programming concepts to build practical, real-world web applications using JavaScript, AJAX, and jQuery. Covers Object-Oriented Design and Programming, User Interface (UI) design and implementation, and communicating with a web server back-end. Covers using these techniques to create dynamic, interactive web applications, as well as the language-specific details needed to implement them in JavaScript. Prerequisites: CIS 133W. Audit available.

CIS 234A. Real-World Programming. 4 Credits.
Introduces real-world programming using agile software development methodologies. Includes a comprehensive team project utilizing object-oriented programming languages and relational databases. Prerequisites: (CIS 233J or CIS 233N or CIS 233W or CIS 295P), and CIS 275; or instructor permission. Audit available.

CIS 235W. Introduction to Web Analytics. 4 Credits.
Focuses on the collection and analysis of user web traffic data for the optimization and monetization of web sites. Covers the content and format of web server logs, and techniques for enriching this data using cookies, Javascript, and user registration. Illustrates how web content can be aggregated by type and used to create saleable inventory for generating ad revenue. Shows how web metrics can be used to determine web site stickiness, effective content on the site, and to identify and fix navigational bottlenecks that cause user churn. CAS 180 is recommended prior to taking this course. Prerequisites: CIS 122 or instructor permission. Audit available.

CIS 240L. Linux Installation and Configuration. 4 Credits.
Introduces the administration of systems utilizing the Linux operating system. Focuses on knowledge and skills necessary for day-to-day operations on a Linux system using the command line. This is the first course of a two course sequence. Prerequisite: CS 140U or instructor permission. Audit available.

CIS 240M. Managing a Windows Server Environment. 4 Credits.
Covers preparation for an entry-level systems administrator position utilizing Microsoft server operating systems. Focuses on the knowledge and skills necessary to install, configure and manage an Active Directory domain consisting of Microsoft Windows servers and workstations. Prerequisites: CIS 140M or instructor permission. Audit available.

CIS 248. E-essentials of E-Commerce Information Systems. 4 Credits.
Encompasses the multi-faceted aspects of e-commerce information systems. Combines study of network, database and programming concepts with hands on skills. Provides a framework for the analysis of information system based e-commerce solutions to issues surrounding B2B, B2C, and intra-organizational trade. Provides a solid background in critical issues and technologies related to e-commerce. Recommended: CIS 120 and one programming class or instructor permission. Audit available.

CIS 244. Systems Analysis. 4 Credits.
Provides overview of the system development life cycle (SDLC) emphasizing analytical techniques to develop the correct definition of business problems and user requirements. Students will prepare a feasibility assessment and develop system requirements for an assigned project. Recommended: One class in a high-level programming language and WR 227. One 200-level business administration course. Additional lab hours may be required. Audit available.

CIS 245. Project Management - Information Systems. 4 Credits.
Study practical approaches for managing, planning, organizing and implementing Information Systems projects using modern management techniques. Complete hands-on projects requiring management of project resources, scope, time-line, cost, scheduling, human and other resources. Use Microsoft Project and other project monitoring tools. This course is one of the Project Management series that includes CAS 220, MDS 279, and BA 255. Project management is a broad term that can include many areas of business. Recommend: CIS 220, MDS 279, and CAS 220. Audit available.

CIS 275. Data Modeling and SQL Introduction. 4 Credits.
Introduces the design, uses, and terminology of a database management system. Includes data modeling using Entity-Relationship modeling tools and Semantic Object modeling tools, normalization rules, relational database technology, program/query development, multi-user database issues (including the Internet) and data administration. Prerequisite: CIS 133N or CIS 133J or CIS 133W or CIS 195P or CIS 161 or CIS 125D or instructor permission. Audit available.

CIS 276. Advanced SQL. 4 Credits.
Focuses on design, development and implementation of SQL programming for all types of relational database applications including client/server and Internet databases. Covers the writing of complicated interactive and embedded SQL statements and the implications of multi-user database applications. Recommended: two-term programming language sequence. Prerequisites: CIS 275 and (CIS 133B or CIS 133N or CIS 133J or CIS 133W or CIS 195P or CIS 161 or CIS 125D) or instructor permission. Audit available.

CIS 277D. Database Security. 4 Credits.
Covers all aspects of securing a database. Uses Oracle database security to explain concepts in a relational database. Topics covered include: the importance of a database policy, identification and authorization methods (including web applications), securing connection pools and proxy authorization, identity management and enterprise users, authorizations and auditing, fine-grained access control (including application contexts security, views, row-level security, virtual private database, Oracle label security and database encryption). Recommended: CIS 276. Additional lab hours may be required. Audit available.

CIS 277O. Advanced Database Concepts in Oracle. 4 Credits.
Covers concepts with Oracle including PL/SQL programming concepts review. Includes design considerations for PL/SQL program units and packages. Advanced interface methods, features for PL/SQL, performance and tuning, and advanced features of Oracle supplied packages also covered. Recommended: CIS 276. Audit available.

CIS 277T. Web Business Intelligence Application Development. 4 Credits.
Introduces fundamentals of Oracle Application Express 4.0, Web Application Development and Business Intelligence reporting using the newest ANSI 99 standard’s features for SQL and DML. Covers fundamentals of Web Business Intelligence reporting and Web User Development. Recommended: CIS 276 or equivalent database experience. Audit available.

CIS 278. Data Communication Concepts II. 4 Credits.
Provides in-depth concepts of data communications, and networking. Explores network architectures, complex network designs and network hardware configuration. Includes a close look at network/telephone company interfaces. Includes configuring operating Cisco routers and other data communication equipment in order to build functional networks. Prerequisite: CIS 179, or instructor permission. Audit available.

CIS 279L. Linux Network Administration. 4 Credits.
Second of a two-term sequence designed to prepare students for an entry-level position as a system administrator of a network utilizing the Linux network operating system. Covers networking, TCP/IP, DNS, DHCP, NFS and Samba. Prerequisite: CIS 240L or instructor permission. Audit available.
CIS 280D. Cooperative Education: Application Development. 1-4 Credit. Develop career objectives by linking course work with off-campus learning experiences in computer information systems of the public/private sector organizations. Successful completion of 16 CIS course credit hours in CIS declared major with a letter grade of C or better, and instructor permission.

CIS 284. Network Security. 4 Credits. Continues exploring the role of network administrator. Focuses on the knowledge and skills necessary to maintain system security and to install, configure and maintain a local area network with common internet applications. Emphasizes the use of Open Source software and CompTIA’s Security+ content. Prerequisite: CIS 240M or CIS 279L or instructor permission. Audit available.

CIS 284C. Cybersecurity Concepts. 4 Credits. Provides an introduction to cybersecurity. Explores security trends, vulnerabilities, threats to those vulnerabilities, and current techniques and tools used to fortify network defenses. Examines legal issues associated with information security, as well as how those issues are addressed within the context of an organization. Prerequisites: CIS 179 and (CIS 140M or CS 140U) or instructor permission. Audit available.

CIS 286. Computer Forensics. 4 Credits. Introduces computer security administrators to computer forensics. Includes setup and use of an investigator’s laboratory, computer investigations using digital evidence controls, processing crime and incident scenes, performing data acquisition, computer forensic analysis, e-mail investigations, image file recovery, investigative report writing, and expert witness testimony. Includes maps to the IACIS certification. Prerequisite: CIS 140U and either CIS 240L or CIS 240M, or instructor permission. Audit available.

CIS 287I. Web Server Administration. 4 Credits. Provides systems administrators with the knowledge and skill sets to install, configure, implement, and manage a web server running Windows server or Linux operating system (does not cover publishing web page content). Prerequisites: CIS 240M or CIS 240L or instructor permission. Audit available.

CIS 287M. Microsoft Server Security. 4 Credits. Prepares IT security professionals working in medium to large computing environments to implement authorization and authentication strategies, use certificates and certificate authorities, use Encrypting File System, create secure baselines, use Software Update Services, enhance data transmission security, wireless network security, perimeter security and secure remote access. Focuses on Windows Server with some client content. Prerequisites: CIS 240M or instructor permission. Audit available.

CIS 287X. Microsoft Exchange Management. 4 Credits. Covers preparation for an entry-level position as a systems administrator for a network utilizing Microsoft Exchange Server for email administration. Focuses on the knowledge and skills necessary to design, install, configure and manage a Microsoft Exchange Server email system. Prerequisite: CIS 240M or instructor permission. Audit available.

CIS 288M. Microsoft Active Directory Administration. 4 Credits. Covers preparation for an entry-level systems administrator position utilizing Microsoft server operating systems. Focuses on the knowledge and skills necessary to design, install, configure, and administer a network infrastructure that uses Microsoft Windows Server products. Prerequisites: CIS 240M or instructor permission. Audit available.

CIS 289M. PHP Web Development II. 4 Credits. Introduces the advanced capabilities and features of PHP for Web site development. Includes using the object-oriented features of PHP, developing applications for security and portability, advanced features of MySQL, creating efficient applications by implementing business logic within the database itself using stored procedures and triggers. Prerequisite: CIS 195P. Prerequisite/Concurrent: CIS 275. Audit available.