

COMPUTER AND INFORMATION SCIENCE
AAS DEGREE

The **Game Animation and Design degree** prepares students to create animations, design and develop video games, and incorporate art assets using game industry tools.

Field of Study Code: CIS.AAS.GAMEA

| | |
|---|-----------|
| Program Requirements..... | 58 |
| Cis 1199 Introduction to Game Industry | 3 |
| Cis 1200 Game Design | 3 |
| Cis 1201 Advanced Game Design | 3 |
| Cis 1211 2D Game Development | 3 |
| Cis 1212 Game Asset Creation and File Optimization .. | 3 |
| Cis 1400 Programming Logic and Technique | 4 |
| Cis 2212 3D Game Development | 3 |
| Cis 2332 Game Animation | 3 |
| OR | |
| Mptv 2332 Game Animation | 3 |
| Cis 2290 Game Development Capstone Project | 4 |
| Mptv 1311 Introduction to Animation | 3 |
| Mptv 1313 History of Animation | 3 |
| Mptv 1320 Experimental Animation | 3 |
| Mptv 1324 Motion Graphics and Special Effects I | 3 |
| Mptv 2331 3-D Animation I | 3 |
| Art 1101 Drawing I | 3 |
| Physi 1100 Physics | 4 |
| Engli 1101 English Composition I | 3 |
| OR | |
| Engli 1105 Workplace Writing | 3 |
| Spec 1100 Fundamentals of Speech Communication | 3 |
| OR | |
| Spec 1120 Small Group Communication | 3 |
| OR | |
| Spec 1150 Introduction to Business Communication | 3 |
| General Education | 6 |
| Select one course from each category: Social and Behavioral Sciences, Mathematics (1000 level or above) | |
| Total Credits Required..... | 64 |

AAS DEGREE

The **Game Design and Development degree** prepares students to design and develop video games through application of game design elements and development tools used in the game industry.

Field of Study Code: CIS.AAS.GAMED

| | |
|---|-----------|
| Program Requirements..... | 50 |
| Cis 1199 Introduction to Game Industry | 3 |
| Cis 1200 Game Design | 3 |
| Cis 1201 Advanced Game Design | 3 |
| Cis 1211 2D Game Development | 3 |
| Cis 1212 Game Asset Creation and File Optimization .. | 3 |
| Cis 1400 Programming Logic and Technique..... | 4 |
| Cis 2211 2D Game Scripting | 3 |
| Cis 2212 3D Game Development..... | 3 |
| Cis 2541 C++ Language Programming | 4 |
| Cis 2770 Introduction to System Analysis and Design.. | 3 |
| Cis 2290 Game Development Capstone Project | 4 |
| Physi 1100 Physics..... | 4 |
| Art 1101 Drawing I | 3 |
| Engli 1101 English Composition I | 3 |
| OR | |
| Engli 1105 Workplace Writing | 3 |
| Spec 1100 Fundamentals of Speech Communication | 3 |
| OR | |
| Spec 1120 Small Group Communication | 3 |
| OR | |
| Spec 1150 Introduction to Business Communication | 3 |
| Electives | 8 |
| Select eight credits from any 1000- or 2000- level courses. (In addition to the courses listed above.) | |
| General Education | 6 |
| Select one course from each category: Social and Behavioral Sciences, Mathematics (1000 level or above) | |
| Total Credits Required..... | 64 |

AAS DEGREE

The **Game Programming and Development degree** prepares students to develop video games using programming languages and development tools used in the game industry.

Field of Study Code: CIS.AAS.GAMEP

Program Requirements..... 58-60

| | | | |
|-------|------|---|---|
| Cis | 1199 | Introduction to Game Industry | 3 |
| Cis | 1200 | Game Design | 3 |
| Cis | 1211 | 2D Game Development..... | 3 |
| Cis | 1212 | Game Asset Creation and File Optimization .. | 3 |
| Cis | 1400 | Programming Logic and Technique..... | 4 |
| Cis | 2211 | 2D Game Scripting | 3 |
| Cis | 2212 | 3D Game Development..... | 3 |
| Cis | 2220 | Game Programming Using C++ | 3 |
| Cis | 2420 | Microprocessor Assembly Language | 4 |
| Cis | 2541 | C++ Language Programming | 4 |
| Cis | 2542 | Advanced C++ with Data Structure Applications | 4 |
| Cis | 2770 | Introduction to System Analysis and Design | 3 |
| Cis | 2290 | Game Development Capstone Project | 4 |
| Physi | 1100 | Physics..... | 4 |
| Math | 1115 | Technical Mathematics I | 3 |
| | OR | | |
| Math | 1428 | College Algebra with Applications | 3 |
| | OR | | |
| Math | 1431 | Precalculus I | 5 |
| | OR | | |
| Math | 1432 | Precalculus II: Trigonometry | 3 |
| Engli | 1101 | English Composition I | 3 |
| | OR | | |
| Engli | 1105 | Workplace Writing | 3 |
| Speec | 1100 | Fundamentals of Speech Communication | 3 |
| | OR | | |
| Speec | 1120 | Small Group Communication | 3 |
| | OR | | |
| Speec | 1150 | Introduction to Business Communication | 3 |

General Education6

Select one course from each category: Social and Behavioral Sciences, Humanities and Fine Arts

Total Credits Required..... 64 to 66
AAS DEGREE

The **Software Development degree** prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

Field of Study Code: CIS.AAS.SOFTW

Program Requirements.....37

| | | | |
|-------|------|--|---|
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| Cis | 1180 | Data Communication & Networking | 3 |
| Cis | 1230 | Microcomputer Database Application | 3 |
| Cis | 1400 | Programming Logic and Technique..... | 4 |
| Cis | 1410 | Introduction to Human Computer Interaction..... | 3 |
| Cis | 1450 | Introduction to Linux/Unix Operating Systems | 3 |
| Cis | 1640 | Cybernetic Safety and Security..... | 3 |
| Cis | 2770 | Introduction to System Analysis & Design | 3 |
| Engli | 1105 | Workplace Writing | 3 |
| Manag | 2170 | Project Management..... | 3 |
| Philo | 1114 | Business Ethics..... | 3 |
| Cis | 1140 | Cloud Essentials | 3 |
| | OR | | |
| Cit | 1140 | Cloud Essentials | 3 |

Emphasis Courses16

Select any course sequences for a minimum of 16 hours.

AR/VR Emphasis12

This emphasis focuses on the creation, maintenance, and support of software applications in the AR/VR environment.

| | | | |
|-----|------|---|---|
| Cis | 2212 | 3D Game Development | 4 |
| Cis | 2214 | Augmented Reality and Virtual Reality Development | 4 |
| Cis | 2541 | C++ Language Programming | 4 |

VB .NET Emphasis15

This emphasis focuses on the creation, maintenance, and support of software applications in the VB .NET environment.

| | | | |
|-----|------|---|---|
| Cis | 1310 | HTML and CSS | 3 |
| Cis | 1510 | Graphical User Interface Programming | 4 |
| Cis | 2350 | Introduction to ASP.NET | 4 |
| Cis | 2510 | Advanced Graphical User Interface Programming | 4 |

C#.NET Emphasis.....15

This emphasis focuses on the creation, maintenance, and support of software applications in the C# .NET environment.

| | | | |
|-----|------|-------------------------------|---|
| Cis | 1310 | HTML and CSS | 3 |
| Cis | 2350 | Introduction to ASP.NET | 4 |
| Cis | 2561 | Introduction to C# .NET | 4 |
| Cis | 2562 | Advanced C# Programming..... | 4 |

C++ Emphasis8

This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.

| | | | |
|-----|------|--|---|
| Cis | 2541 | C++ Language Programming | 4 |
| Cis | 2542 | Advanced C++ with Data Structure Applications..... | 4 |

Python Emphasis8

This emphasis focuses on the creation, maintenance, and support of software applications in the Python environment.

| | | | |
|-----|------|---|---|
| Cis | 2531 | Introduction to Python Programming..... | 4 |
| Cis | 2532 | Advanced Python Programming..... | 4 |

iOS Emphasis12

This emphasis focuses on the creation, maintenance, and support of software applications in the iOS environment.

| | | | |
|-----|------|---|---|
| Cis | 2541 | C++ Language Programming | 4 |
| Cis | 2592 | iPhone/iPad Application Development..... | 4 |
| Cis | 2594 | Advanced iPhone/iPad Application Development..... | 4 |

Android Emphasis15

This emphasis focuses on the creation, maintenance, and support of software applications in the Android environment.

| | | | |
|-----|------|---|---|
| Cis | 2330 | Introduction to XML | 3 |
| Cis | 2571 | Introduction to Java | 4 |
| Cis | 2593 | Android Application Development..... | 4 |
| Cis | 2595 | Advanced Android Application Development..... | 4 |

Java Emphasis12

This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.

| | | | |
|-----|------|---------------------------------|---|
| Cis | 2571 | Introduction to Java | 4 |
| Cis | 2572 | Collections in Java | 4 |
| Cis | 2573 | Advanced Java Technologies..... | 4 |

Database Emphasis10

This emphasis focuses on the creation, maintenance, and support of databases.

| | | | |
|-----|------|--|---|
| Cis | 2710 | Database Management..... | 4 |
| Cis | 2720 | Structured Query Language (SQL) I..... | 3 |
| Cis | 2730 | Enterprise Database Development..... | 3 |

Web Emphasis14

This emphasis focuses on the creation, maintenance, and support of software applications in the Web environment.

| | | | |
|-----|------|--|---|
| Cis | 1310 | HTML and CSS | 3 |
| Cis | 2320 | JavaScript Programming | 4 |
| Cis | 2330 | Introduction to XML | 3 |
| Cis | 2360 | Introduction to PHP Programming Language | 4 |

Program Electives3

Recommended for BS Computer Science Lewis 3+1

| | | | |
|-----|------|-----------------------------|---|
| Cis | 1160 | Windows Command Shell | 3 |
|-----|------|-----------------------------|---|

General Education9

(In addition to the courses listed above.)

| | |
|---------------------------------------|---|
| Math | 3 |
| Level 1000 or above | |
| Physical/Life Science..... | 3 |
| Level 1000 or above | |
| Speech..... | 3 |
| Speec 1100, Speec 1120, or Speec 1150 | |

Total Credits Required.....64
AAS DEGREE
The Application and Technical Support Specialist degree

prepares students to provide help, support, and technical advice to computer users.

Field of Study Code: CIS.AAS.TECH
Program Requirements.....37

| | | | |
|-------|------|--|---|
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| Cis | 1160 | Windows Command Line | 3 |
| Cis | 1180 | Data Communication & Networking..... | 3 |
| OR | | | |
| Cis | 1116 | Network Essentials | 3 |
| Cis | 1205 | Office Suite Software Integration | 3 |
| Cis | 1310 | HTML and CSS | 3 |
| Cis | 1400 | Programming Logic and Technique..... | 4 |
| Cis | 1450 | Introduction to Linux/Unix Operating Systems | 3 |
| Cis | 1610 | Windows Client OS | 3 |
| Cis | 2770 | Introduction to System Analysis and Design .. | 3 |
| Busin | 1111 | Customer Service | 3 |
| Cit | 1100 | IT Fundamentals..... | 3 |
| Engli | 1105 | Workplace Writing | 3 |

Program Electives13

Select 13 credits from any CIS courses except CIS 1110. (In addition to the courses listed above.)

General Education15

(In addition to the courses listed above.)

Total Credits Required.....65

CERTIFICATE

The **Business Productivity Software certificate** requires 19 credits in the courses listed below.

Field of Study Code: CIS.CER.BUSPRO

| | |
|---|-----------|
| Total Credits Required | 19 |
| Cis 1130 Windows Basics..... | 2 |
| Cis 1150 Understanding Computers, Information and Systems | 3 |
| Cis 1205 Office Suite Software Integration..... | 3 |
| Cis 1221 Data Analysis with Spreadsheets | 3 |
| Cis 1230 Microcomputer Database Application | 3 |
| Cis 1240 Presentation Graphics – Windows Based | 2 |
| Cis 1300 Web Design Software..... | 3 |

CERTIFICATE

The **C++ Language Proficiency certificate** requires 15 credits in the courses listed below.

Field of Study Code: CIS.CER.CPLUS

| | |
|---|-----------|
| Total Credits Required | 15 |
| Cis 1150 Understanding Computers, Information and Systems | 3 |
| Cis 1400 Programming Logic and Technique..... | 4 |
| Cis 2541 C++ Language Programming | 4 |
| Cis 2542 Advanced C++ with Data Structure Applications..... | 4 |

CERTIFICATE

The **Database Proficiency certificate** requires proficiency in using Windows and 10 credits in the courses listed below.

Field of Study Code: CIS.CER.DBPRO

| | |
|---|-----------|
| Total Credits Required | 10 |
| Cis 1150 Understanding Computers, Information and Systems | 3 |
| Cis 1230 Microcomputer Database Application | 3 |
| Cis 2710 Database Management..... | 4 |

CERTIFICATE

The **Enterprise Database Proficiency certificate** requires 13 credits in the courses listed below.

Field of Study Code: CIS.CER.ENTDB

| | |
|---|-----------|
| Total Credits Required | 13 |
| Cis 1400 Programming Logic and Technique..... | 4 |
| Cis 2720 Structured Query Language (SQL) I..... | 3 |
| Cis 2725 Enterprise SQL Application | 3 |
| OR | |
| Cis 2730 Enterprise Database Development | 3 |
| Cis 2770 Introduction to System Analysis & Design | 3 |

CERTIFICATE

The **Game Design and Development certificate** will prepare the student for careers in video game design and development.

Field of Study Code: CIS.CER.GAMED

| | |
|--|-----------|
| Total Credits Required | 32 |
| Cis 1199 Introduction to Game Industry | 3 |
| Cis 1200 Game Design | 3 |
| Cis 1201 Advanced Game Design | 3 |
| Cis 1211 2D Game Development..... | 3 |
| Cis 1212 Game Asset Creation and File Optimization | 3 |
| Cis 1400 Programming Logic and Technique..... | 4 |
| Cis 2211 2D Game Scripting | 3 |
| Cis 2212 3D Game Development..... | 3 |
| Cis 2541 C++ Language Programming | 4 |
| Art 1101 Drawing I | 3 |

CERTIFICATE

The **Game Programming and Development certificate** prepares the student to program and develop video games using programming languages and development tools used in the game industry.

Field of Study Code: CIS.CER.GAMEP

| | |
|--|-----------|
| Total Credits Required | 34 |
| Cis 1199 Introduction to Game Industry | 3 |
| Cis 1200 Game Design | 3 |
| Cis 1211 2D Game Development..... | 3 |
| Cis 1400 Programming Logic and Technique..... | 4 |
| Cis 2211 2D Game Scripting | 3 |
| Cis 2212 3D Game Development..... | 3 |
| Cis 2220 Game Programming Using C++ | 3 |
| Cis 2420 Microprocessor Assembly Language | 4 |
| Cis 2541 C++ Language Programming | 4 |
| Cis 2542 Advanced C++ with Data Structure Applications | 4 |

CERTIFICATE

The **iPhone/iPad Developer Proficiency certificate** prepares the student to design and develop applications for Apple iOS platform in accordance with Apple development standards. This certificate requires 16 credits in the courses listed below.

Field of Study Code: CIS.CER.IPHPD

Total Credits Required 16

| | | | |
|-----|------|---|---|
| Cis | 1400 | Programming Logic and Technique | 4 |
| Cis | 2541 | C++ Language Programming | 4 |
| Cis | 2592 | iPhone/iPad Application Development | 4 |
| Cis | 2594 | Advanced iPhone/iPad Application Development..... | 4 |

CERTIFICATE

The **JAVA Language Proficiency certificate** requires 15 credits in the courses listed below.

Field of Study Code: CIS.CER.JAVA

Total Credits Required 15

| | | | |
|-----|------|--|---|
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| Cis | 1400 | Programming Logic and Technique | 4 |
| Cis | 2571 | Introduction to Java | 4 |
| Cis | 2572 | Collections in Java | 4 |

CERTIFICATE

The **LINUX certificate** documents proficiency in the Linux operating system and its environment. This certificate requires 16 credits in the courses listed below.

Field of Study Code: CIS.CER.LINUX

Total Credits Required 16

| | | | |
|-----|------|--|---|
| Cis | 1150 | Introduction to Computer Information Systems | 3 |
| Cis | 1400 | Programming Logic and Technique | 4 |
| Cis | 1450 | Introduction to Linux/Unix Operating Systems | 3 |
| Cis | 2440 | Shell Programming for UNIX/LINUX | 3 |
| Cis | 2455 | LINUX System Administration | 3 |

CERTIFICATE

The **Windows Network Administration certificate** for Information Technology (IT) professionals with the knowledge to design and implement a Microsoft network using Active Directory (AD). This certificate requires 21 credits in the courses listed below.

Field of Study Code: CIS.CER.NETWK

Total Credits Required 21

| | | | |
|-----|------|--|---|
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| Cis | 1180 | Data Communication & Networking..... | 3 |
| Cis | 1610 | Windows Client OS..... | 3 |

| | | | |
|-----|------|---|---|
| Cis | 1620 | Windows Server OS..... | 3 |
| Cis | 1630 | Windows Server Active Directory (AD) | 3 |
| Cis | 1660 | Managing a Microsoft Windows Server Network | 3 |
| Cis | 1670 | Planning a Microsoft Windows Server Network | 3 |

CERTIFICATE

This Windows based **Spreadsheet Proficiency Certificate** prepares students to utilize spreadsheets, analyze data, and apply business intelligence tools in business applications.

Field of Study Code: CIS.CER.SPREAD

Total Credits Required 11-12

| | | | |
|-----------|------|--|---|
| Cis | 1110 | Introduction to Informatics | 2 |
| OR | | | |
| Cis | 1130 | Windows Basics | 2 |
| OR | | | |
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| OR | | | |
| Ofti | 1200 | MS Office for Professional Staff | 3 |
| Cis | 1205 | Office Suite Software Integration | 3 |
| Cis | 1221 | Data Analysis with Spreadsheets | 3 |
| Cis | 1222 | Advanced Spreadsheets with Business Intelligence..... | 3 |

CERTIFICATE

The **UNIX Proficiency certificate** requires 16 credits in the courses listed below.

Field of Study Code: CIS.CER.UNIX

Total Credits Required 16

| | | | |
|-----|------|--|---|
| Cis | 1150 | Introduction to Computer Information Systems | 3 |
| Cis | 1400 | Programming Logic and Technique..... | 4 |
| Cis | 1450 | Introduction to Linux/Unix Operating Systems | 3 |
| Cis | 2440 | Shell Programming for UNIX/LINUX..... | 3 |
| Cis | 2450 | UNIX System Administration..... | 3 |

CERTIFICATE

The **Visual BASIC Language Proficiency certificate** requires 15 credits in the courses listed below.

Field of Study Code: CIS.CER.VB

Total Credits Required 15

| | | | |
|-----|------|--|---|
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| Cis | 1400 | Programming Logic and Technique..... | 4 |
| Cis | 1510 | Graphical User Interface Programming..... | 4 |
| Cis | 2510 | Advanced Graphical User Interface Programming..... | 4 |

CERTIFICATE

The **Web Programmer certificate** requires 31 credits in the courses listed below.

Field of Study Code: CIS.CER.WEBPRG

| | | | |
|-------------------------------------|------|---|---|
| Total Credits Required | | 32 | |
| Cis | 1120 | The Internet | 2 |
| Cis | 1130 | Windows Basics..... | 2 |
| Cis | 1150 | Understanding Computers, Information and Systems | 3 |
| Cis | 1180 | Data Communication & Networking..... | 3 |
| Cis | 1300 | Web Design Software..... | 3 |
| Cis | 1310 | HTML and CSS | 3 |
| Cis | 1400 | Programming Logic and Technique | 4 |
| Cis | 2320 | JavaScript Programming | 4 |
| Cis | 2571 | Introduction to Java | 4 |
| Cis | 2572 | Collections in Java | 4 |

CERTIFICATE

The **Web Client Developer certificate** provides the necessary skills and knowledge for client-side Web site development. Learn to develop Web sites using Hypertext Markup Language version 5 (HTML5), Cascading Style Sheets (CSS), and JavaScript. You will write code manually, as well as use graphical user interface (GUI) authoring tools, and program client-side, platform-independent solutions. This certificate requires 13 credits in the courses listed below.

Field of Study Code: CIS.CER.CLIENT

| | | | |
|-------------------------------------|------|---------------------------------------|---|
| Total Credits Required | | 14 | |
| Cis | 1300 | Web Design Software..... | 3 |
| Cis | 1310 | HTML and CSS | 3 |
| Cis | 1400 | Programming Logic and Technique | 4 |
| Cis | 2320 | JavaScript Programming | 4 |