

Applied Computer Science Degree - no concentration – 120 credit hours

Freshman Fall			Freshman Spring		
Courses	Description	Hours	Courses	Description	Hours
MATH 174	Discrete Math	3	MATH 122	Survey of Calc	3
CSCI 125	Intro to CSCI	3	CSCI 145	Intro to Algo Design 1	4
HIST 101 or 102		3	CSCI 185	Computer Appl and Programming	3
ENGL 101		3	1 Social Behavior Science		3
Critical Inquiry		1	ENGL 102		3
		13			16
Sophomore Fall			Sophomore Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 146	Intro to Algo Design 2	4	CSCI 220	Data Structures and Algo	3
CSCI 255	Introduction to Information Security	3	CSCI 340	Mobile Application Development	3
CSCI 320	Object-Oriented Programming	3	MATH 344	Linear Algebra for Computer Science	3
COMM 201 or 241		3	CSCI 225	Web Development	3
Foreign Language		4	Foreign Language		4
		17			16
Junior Fall			Junior Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 325	System Level Programming (Unix & C)	3	CSCI 330	Programming Language Structures	3
CSCI 360 (240)	Introduction to Software Engineering	3	CSCI 350	Computer Graphics	3
CSCI 415	Data Comm & Comp Network	3	CSCI 520	Database Management Systems	3
Elective	Free	3	1 Humanities		3
1 Social Behavior Science		3	POLI 201, HIST 201, 202		3
		15			15
Senior Fall			Senior Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 521	Database Programming for CS	3	CSCI 590	Capstone	3
CSCI aaa	CSCI elective	3	CSCI bbb	CSCI Elective	3
1 Humanities		3	1 Humanities		3
1 Natural Science		4	1 Natural Science		4
		13	Elective	Free	2
					15

Applied Computer Science Degree - **Cybersecurity Concentration** - 120 credit hours

Freshman Fall			Freshman Spring		
Courses	Description	Hours	Courses	Description	Hours
MATH 174	Discrete Math	3	MATH 122	Survey of Calc	3
CSCI 125	Intro to CSCI	3	CSCI 145	Intro to Algo Design 1	4
HIST 101 or 102		3	CSCI 210	Intro to Comp Org	3
ENGL 101		3	CSCI 215	Ethics and Professional Issues	3
Critical Inquiry		1	ENGL 102		3
		<u>13</u>			<u>16</u>
Sophomore Fall			Sophomore Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 146	Intro to Algo Design 2	4	CSCI 220	Data Structures and Algo	3
CSCI 255	Intro to Information Security	3	CSCI 285	Intro to Cryptography	3
COMM 201 or 241		3	1 Social Behavior Science		3
Foreign Lanuage		4	POLI 201, HIST 201, 202		3
		<u>14</u>	Foreign Langauge		4
					<u>16</u>
Junior Fall			Junior Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 360 (formerly CSCI 240)	Software Engineering	3	CSCI 425	Network Security	3
CSCI 411	Operating Systems	3	CSCI 520	Database System Design	3
CS 415	Data Comm and Comp Networks	3	CSCI aaa	CSCI elective	3
1 Social Behavior Science		3	1 Humanities		3
Elective	Free	3	Elective	Free	3
		<u>15</u>			<u>15</u>
Senior Fall			Senior Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 515	Ethical Hacking	4	CSCI 545	Cyber Defense and Digital Forensics	3
CSCI 525	Secure Software Engineering	3	CSCI 590	Capstone	3
1 Humanities		3	1 Humanities		3
1 Natural Science		4	1 Natural Science		4
Elective	Free	3	Elective	Free	1
		<u>17</u>			<u>14</u>

Applied Computer Science Degree - **Applied Gaming concentration** - 120 credit hours

Freshman Fall			Freshman Spring		
Courses	Description	Hours	Courses	Description	Hours
MATH 174	Discrete Math	3	MATH 122	Survey of Calc	3
CSCI 125	Intro to CSCI	3	CSCI 145	Intro to Algo Design 1	4
HIST 101 or 102		3	CSCI 210	Intro to Comp Org	3
ENGL 101		3	ENGL 102		3
Critical Inquiry		1	Elective	Free	3
		13			16
Sophomore Fall			Sophomore Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 146	Intro to Algo Design 2	4	CSCI 220	Data Structures and Algo	3
CSCI 255	Intro to Information Security	3	CSCI 275*	Physics Engine Integration	3
1 Natural Science	Physics 201	4	1 Humanities	ARTS 380 3D and Animation	3
MATH 344	Linear Algebra for Computer Science	3	1 Natural Science	Physics 202	4
			1 Social Behavior Science	PSYC 101	3
		14			16
Junior Fall			Junior Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI 320	Object-Oriented Programming (Java)	3	CSCI 350	Computer Graphics	3
CSCI 360 (240)	Intro to Software Eng	3	CSCI 375	Intro to Haptics	3
PSYC 450	Sensation and Perception	3	EDET 652	Design and Evaluation of Games and Sims	3
EDET 603	Design and Dev Tools 1	3	1 Humanities		3
COMM 201/241		3	Elective	Free	3
		15			15
Senior Fall			Senior Spring		
Courses	Description	Hours	Courses	Description	Hours
CSCI aaa	CSCI elective	3	CSCI 590	Capstone	3
POLI 201, HIST 201, 202		3	1 Humanities		3
1 Social Behavior Science (3hrs)		3	Foreign Language		4
Foreign Lanuage		4	Elective	Free	3
Elective	Free	3	Elective	Free	2
		16			15

The table below helps illustrate the similarities and differences between the three tracks.
 (*course required)

		Applied Comp Sci	Cyber Security	Applied Gaming
CSCI 125	Intro to CSCI/python	*	*	*
CSCI 145	Intro to Algo Design 1	*	*	*
CSCI 146	Intro to Algo Design 2	*	*	*
CSCI 220	Data Structures and Algo	*	*	*
CSCI 255	Introduction to Information Security	*	*	*
CSCI 360	Software Engineering	*	*	*
CSCI 590	Capstone	*	*	*
CSCI 205	Computer Appl and Programming	*		
CSCI 225	Web Development	*		
CSCI 320	Object-Oriented Programming	*		*
CSCI 325	System Level Programming	*		
CSCI 330	Programming Language Structures	*		
CSCI 340	Mobile Application Development	*		
CSCI 350	Computer Graphics	*		*
CSCI 415	Data Comm & Comp Network	*	*	
CSCI 520	Database Management System Design	*	*	
CSCI 521	Database Programming for CS	*		
CSCI 210	Introduction to Computer Organization		*	*
CSCI 215	Ethics and Professional Issues		*	
CSCI 285	Intro to Cryptography		*	
CSCI 411	Operating Systems		*	
CSCI 425	Network Security		*	
CSCI 515	Ethical Hacking		*	
CSCI 525	Secure Software Engineering		*	
CSCI 545	Cyber Defense and Digital Forensics		*	
CSCI 275	Physics Engine Integration			*
CSCI 375	Introduction to Haptics			*
ARTS 381	3D and Animation			*
EDET 603	Design and Development Tools 1			*
EDET 652	Design and Evaluation of Games and Simulations			*
PHYS 201	Physics 1			*
PHYS 202	Physics 2			*
PSYC 101	Intro Psych			*
PSYC 450	Sensation and Perception			*

Course Descriptions for New Courses

Course Name	Description
CSCI 125: Intro to Computer Science	The course is designed to help students with no prior exposure to computer science or programming learn to think computationally and write programs to solve useful problems. The focus of the course is on problem analysis and the development of algorithms and computer programs in a modern high-level language. This course is for students who want to pursue major in computer science.
CSCI 185: Computer Applications and Programming	This course provides an introduction to systematic computer problem-solving using a procedural language. Emphasis is placed upon algorithm development and program implementation. The course is intended for students to learn computer Visual programming. Emphasis on the fundamentals of structured design, development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files. This course also provides exposure to applications such as spreadsheets, database management, and web-page design leading to an advanced level of competency.
CSCI 215: Ethics and Professional Issues	Covers the impact of computer use on society, the ethical use of software, and the protection of intellectual property rights. The responsibility of professionals will be discussed in the context of the IEEE/ACM professional code of ethics.
CSCI 225: Web Development	Introduction to web development. The course will explore prevailing technologies in three main components of web applications: client, server and data. It will also provide practical experiences with large-scale interactive websites development project.
CSCI 255: Introduction to Information Security	Introduction to basic security concepts and principles of information security. Topics will include history of information security; overview of system security, software security, and network security; security management.
CSCI 275: Physics Engine Integration	Few computer gaming companies write their entire code from scratch. They often use commercially available physics engines which control the way objects interact with the environment. They control characteristics such as gravity, collision detection, fabric movement, wind, etc. Understanding how to apply the engines to a scenario is a key skill.
CSCI 285: Intro to Cryptography	An introductory study for Cryptography. Topics include: symmetric cryptography, historical ciphers, the data encryption standard, the advanced encryption standard, asymmetric cryptography, topics in number theory for public-key cryptography, RSA cryptosystem, and the RSA digital signature scheme.
CSCI 325: System Level Programming	Basic concepts of Unix-like systems. Shells and scripting. System-level programming in the C language. Software development tools and techniques
CSCI 375: Intro to Haptics	Adding force feedback, or haptics, is a method to make an AR/VR/SG scenario even more realistic. Haptics can include the ability to feel the weight of a virtual object being lifted, the torque on a steering wheel, or the resistance when contacting a rigid object. Understanding how to make a scenario physically interact with the user will lead to more immersive scenarios.
CSCI 425: Network Security	Deals with tools and techniques used to defend networks including IPS/IDS, traffic flow analysis, segregation, network architecture.

CSCI 515: Ethical Hacking	This course teaches how computers can be exploited and along with that how those techniques can be selected and countered (e.g. scanning, mapping, and password attacks, and more advanced attacks if time allows).
CSCI 525: Secure Software Engineering	This course introduces the fundamentals for constructing secure software by applying security principles to the software development processes. Some software vulnerabilities and possible attacks that exploit them will be considered.
CSCI 545: Cyber Defense and Digital Forensics	This course introduces the tools and techniques for monitoring and preventing illegal accesses to computer systems that contain confidential or sensitive information. In addition, this course also introduces digital forensic tools and techniques to collect, analyze, document, and present evidences for malicious activities or computer-related crimes.
MATH 344: Linear Equations for Computer Science	This course introduces preliminary concepts and basic computational techniques of linear algebra that are important to science and to different branches of Computer Science. Contents include Vector spaces, linear transformations and matrices, Determinants, Systems of equations, Inversion, matrix decomposition and other topics applicable to Computer Science.