BACHELOR OF SCIENCE IN COMPUTER SCIENCE - THREAD: MODELING-SIMULATION & ARTIFICIAL INTELLIGENCE

Code	Title	Credit Hours
Wellness Requirement		
APPH 1040	Scientific Foundations of Health	2
or APPH 10	The Science of Physical Activity and Health	
or APPH 10	Flourishing: Strategies for Well-being and Resilience	
Core IMPACTS		
Institutional Priority		
CS 1301	Introduction to Computing [1]	3
Mathematics and Quantitative Skills		
MATH 1552	Integral Calculus	4
Political Science and U.S. History		
HIST 2111	The United States to 1877	3
or HIST 2112	The United States since 1877	
or INTA 1200	American Government in Comparative Perspective	
or POL 1101	Government of the United States	
or PUBP 3000	American Constitutional Issues	
Communicating in Writing		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
Arts, Humanities, and Ethics		
Any HUM		6
Technology, Mathematics, and Sciences		
Lab Science [2]		8
MATH 1551	Differential Calculus	2
MATH 1554	Linear Algebra [5]	4
or MATH 15	Linear Algebra with Abstract Vector Spaces	
Social Sciences		
Any SS [6]		9
Field of Study		
PHYS 2211	Principles of Physics I [2]	4
CS 1100	Freshman Leap Seminar	1
CS 1331	Introduction to Object Oriented Programming [1]	3
CS 1332	Data Structures and Algorithms for Applications [1]	3
CS 2050	Introduction to Discrete Mathematics for Computer Science [1]	3
or CS 2051	Honors - Induction to Discrete Mathematics for Computer Science	
MATH 2550	Introduction to Multivariable Calculus [5]	2
Major Requirements		
CS 2340	Objects and Design [1]	3
Select one for Profesionalism/Ethics requirement: [1]		3
CS 3001	Computing, Society, and Professionalism	
CS 4001	Computing, Society, and Professionalism	
CS 4002	Robots and Society	
CS 4003	AI, Ethics, and Society	
CS 4726	Privacy, Technology, Policy, and Law	
SLS 3110	Technology and Sustainable Community Development	
Junior Design Options (Capstone)		
Junior Design Option [1,4]		6
Concentration		
CS 2110	Computer Organization and Programming [1]	4
CS 2200	Computer Systems and Networks [1]	4
CS 3510	Design and Analysis of Algorithms [1]	3
or CS 3511	Design and Analysis of Algorithms, Honors	
CS 3600	Introduction to Artificial Intelligence [1]	3
MATH 2552	Differential Equations [1]	4
Select one of the following for Embodied Intelligence: [1]		3
CS 3630	Introduction to Perception and Robotics	
CS 3790	Introduction to Cognitive Science	
PSYC 3040	Sensation and Perception	
Select three of the following for Approaches to Intelligence: [1,3]		9
CS 4635	Knowledge-Based Artificial Intelligence	
CS 4476	Introduction to Computer Vision	
CS 4510	Automata and Complexity Theory	
CS 4641	Machine Learning	
CS 4644	Deep Learning	
CS 4646	Machine Learning for Trading	
CS 4649	Robot Intelli Planning	
CS 4650	Natural Language Understanding	
CS 4731	Game AI	
Select six credit hours of the following for Computational Science and Engineering: [1,3]		6
CS 4641	Machine Learning	
CX 4140	Computational Modeling Algorithms	
CX 4220	Introduction to High Performance Computing	
CX 4230	Computer Simulation	
CX 4640	Numerical Analysis I	
Other Required Courses		
MATH 3012	Applied Combinatorics	3
Select one of the following:		3
MATH 3215	Introduction to Probability and Statistics	
MATH 3670	Probability and Statistics with Applications	
CEE 3770	Statistics and Applications	
ISYE 3770	Statistics and Applications	
or ISYE 2027 & ISYE 3030	Probability with Applications and Basic Statistical Methods	
Free Electives		
Free Electives [3]		9
Total Credit Hours		**126**

[1] Minimum grade of C required.

[2] Two of three lab sciences MUST be a sequence.

[3] If CS 4641 is successfully completed, it counts toward both requirements, and an addition 3 credit hours Free Elective is required.

[4] Junior Design Options are as follows (students must pick one option and may not change):

- Option 1 - LMC 3432, LMC 3431, CS 3311,CS 3312.
- Option 2 - ECE VIP courses and LMC 3403.
- Option 3 - Satisfy Georgia Tech Research Option.
- Option 4- CS 2701 (3 hours), CS 4699-I2P (3 hours), LMC 3403 (3 hours) = 9 hours OR CS 4699- I2P (6 hours), LMC 3403 (3 hours) = 9 hours
- Option 5 - CS 4723 (3 hours), LMC 3403 (3 hours) = 6 hours

Six credits of the Junior Design option are used as Major Requirements and the overage credits of research/VIP (5 credit hours/2 credit hours) may be used as free electives. Students completing VIP for their junior design requirement will be required to complete at least three semesters of VIP. (VIP 1 + VIP 2 + VIP 3) (for a total of 5 credit hours) + LMC 3403 = 8 hours of VIP credit.

Students using CREATE-X (option 4) for junior design take at least 6 hours of CREATE-X Start-ip Lab and Idea 2 Prototype (I2P) and 3 of the 6 hours must be I2P. Students take these 6 hours with LMC 3403 (3 hours) for a total of 9 hours. Extra three hours for CREATE-X option can be used in free electives.

[5] Two credit hours of MATH 1554 may count along with MATH 2550 to give Field of Study 18 credit hours.

[6] PSYC 1101 is highly encouraged as this course serves as a pre-requisite to other required courses.