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BACHELOR OF SCIENCE IN COMPUTER SCIENCE - THREAD: MODELING-**SIMULATION & 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	è		
Core IMPACTS	8			
Institutional P	Institutional Priority			
CS 1301	Introduction to Computing ¹	3		
Mathematics a	and Quantitative Skills			
MATH 1552	Integral Calculus	4		
Political Science and U.S. History				
HIST 2111	The United States to 1877	3		
or HIST 211	1 <i>T</i> he United States since 1877			
or INTA 120	Mamerican Government in Comparative Perspective			
or POL 110	1Government of the United States			
or PUBP 30	000merican Constitutional Issues			
Communicatin	ng in Writing			
ENGL 1101	English Composition I	3		
ENGL 1102	English Composition II	3		
Arts, Humanit	ies, and Ethics			
Any HUM		6		
Technology, M	lathematics, and Sciences			
Lab Science ²		8		
MATH 1551	Differential Calculus	2		
MATH 1554	Linear Algebra ⁵	4		
or MATH 1	5Linear Algebra with Abstract Vector Spaces			
Social Science	25			
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 Com Science	nputer		
MATH 2550	Introduction to Multivariable Calculus ⁵	2		
Major Require				
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 4002	Al, Ethics, and Society	
CS 4003	Privacy, Technology, Policy, and Law	
SLS 3110	Technology and Sustainable Community	
313 3110	Development	
Junior Design	Options (Capstone)	
Junior Design		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	
	f the following for Approaches to Intelligence:	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 Al	
Select six cre Science and E	dit hours of the following for Computational 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 Require	ed Courses	
MATH 3012	Applied Combinatorics	3
Select one of	the following:	3
MATH 321	5Introduction to Probability and Statistics	
MATH 367	0Probability and Statistics with Applications	
CEE 3770	Statistics and Applications	
ISYE 3770	Statistics and Applications	
	2 927 bability with Applications 30 29 0d Basic Statistical Methods	
Free Electives		
Free Electives	s ³	9
Total Credit H	lours	126
Pass-fail only and CS 1100	allowed for Free Electives (max 6 credit hours)	

and CS 1100.

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.
 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.