BACHELOR OF SCIENCE IN COMPUTER SCIENCE - THREAD: INTELLIGENCE & MEDIA

The Threads™ represent partial paths through the curriculum. Thus, a student weaves a degree from these Threads. Students are not forced to make Thread decisions very early in their academic careers; however, they may if they want. We define the Threads so they are flexible enough to allow for a variety of technical and creative experiences. Threads are coherent enough that students develop computing skills even if their focus shifts as they go along.

The Media thread is where computing meets design. This thread prepares students by helping them to understand the technical and computational capabilities of systems in order to exploit their abilities to provide creative outlets.

The Intelligence thread is where computing models intelligence. This thread is concerned with computational models of intelligence from top to bottom. To this end, we emphasize designing and implementing artifacts that exhibit various levels of intelligence as well as understanding and modeling natural cognitive agents such as humans, ants, or bees. Students acquire the technical knowledge and skills necessary for expressing, specifying, understanding, creating, and exploiting computational models that represent cognitive processes. It prepares students for fields as diverse as artificial intelligence, machine learning, perception, and cognitive science, as well as for fields that benefit from applications of techniques from those fields.

Wellness
APPH 1040 Scientific Foundations of Health or APPH 10 The Science of Physical Activity and Health 2

Core A - Essential Skills
ENGL 1101 English Composition I 3
ENGL 1102 English Composition II 3
MATH 1552 Integral Calculus 4

Core B - Institutional Options
CS 1301 Introduction to Computing 1
or CS 1315 Introduction to Media Computation 3

Core C - Humanities
Any HUM (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-c) 6

Core D - Science, Math, & Technology
PHYS 2211 Introductory Physics I 2 4
Lab Science 2 4
MATH 1551 Differential Calculus 2
MATH 1554 Linear Algebra 4 4

Core E - Social Sciences
Select one of the following: 3
HIST 2111 The United States to 1877
HIST 2112 The United States since 1877
INTA 1200 American Government in Comparative Perspective

Other Required Courses
POL 1101 Government of the United States
PSYC 1101 General Psychology
Any SS (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e) 6

Core F - Courses Related to Major
Lab Science 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 4 2

Major Requirements
CS 2340 Objects and Design 1 3
CS 4001 Computing, Society, and Professionalism 1 3
or CS 4002 Robots and Society

Junior Design Options (Capstone)
Junior Design Option 1,3 6

Concentration
CS 2110 Computer Organization and Programming 1 4
CS 3451 Computer Graphics 1 3
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
Select one of the following for Computational Complexity: 1 3
CS 3240 Languages and Computation
CS 4510 Automata and Complexity Theory
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 six credit hours of the following for Approaches to Intelligence: 1 6
CS 4635 Knowledge-Based Artificial Intelligence
CS 4476 Introduction to Computer Vision
CS 4641 Machine Learning
CS 4649 Robot Intelli Planning
CS 4650 Natural Language Understanding
CS 4731 Game AI
Select six credit hours of the following for Media Technology: 1 6
CS 4455 Video Game Design and Programming
CS 4460 Introduction to Information Visualization
CS 4464 Computational Journalism
CS 4475 Computational Photography
CS 4480 Digital Video Special Effects
CS 4496 Computer Animation
CS 4590 Principles and Applications of Computer Audio

Bachelor of Science in Computer Science - Thread: Intelligence & Media
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 2170 Probability with Applications & ISYE 2171 Basic Statistical Methods

Free Electives
Free Electives 14
Total Credit Hours 126

Pass-fail only allowed for Free Electives (max 6 credit hours), CS 1100, and CS 1171 (if required).

1 Minimum grade of C required.
2 Two of three lab sciences MUST be a sequence.
3 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.

Six credits of the Junior Design option are used as Major Requirements and the average 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.

2 Two credit hours of MATH 1554 may count along with MATH 2550 to give Area F 18 credit hours.

Research Classes
The following classes count toward fulfillment of the Research Option:

Research for Credit

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 2699</td>
<td>Undergraduate Research (Freshman and Sophomore)</td>
<td>1-12</td>
</tr>
<tr>
<td>CS 4699</td>
<td>Undergraduate Research (Junior and Senior)</td>
<td>1-12</td>
</tr>
<tr>
<td>CS 4980</td>
<td>Research Capstone Project</td>
<td>1-21</td>
</tr>
</tbody>
</table>

Research for Pay (Audit only)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 2698</td>
<td>Undergraduate Research Assistantship (Freshman and Sophomore)</td>
<td>1-12</td>
</tr>
<tr>
<td>CS 4698</td>
<td>Undergraduate Research Assistantship (Junior and Senior)</td>
<td>1-12</td>
</tr>
</tbody>
</table>

research option

To get credit toward completion of the Research Option for research for pay, students must be registered for the appropriate audit-only research for pay class (CS 2698 or 4698). If work on research for pay begins after the close of registration and the student has not signed up for the appropriate class, unfortunately it is not possible to get credit toward the Research Option for work that term.

A research project will also fulfill the capstone design requirement if the student registers for CS 4980 for one of the research terms. This is typically done the last semester of research, while taking LMC 4702.

Completion of the Research Option is noted on the student’s transcript. For more information, see www.urop.gatech.edu (http://www.urop.gatech.edu).

Contact Us

General Research Option Information (http://www.catalog.gatech.edu/academics/special-academic-programs/undergraduate-research-opportunities-program)

Cooperative Programs

The College of Computing participates in the undergraduate and graduate Cooperative Programs. See links below for further Information:

- Undergraduate Cooperative Plan (http://catalog.gatech.edu/academics/special-academic-programs/experiential-education/center-career-discovery-development)
- Graduate Cooperative Plan (http://catalog.gatech.edu/academics/special-academic-programs/experiential-education/graduate-cooperative-plan)

International Plan

The College of Computing (http://www.cc.gatech.edu) has an approved BS CS International Plan that accommodates the unique requirements of this option discussed in the International Plan section of the catalog (http://www.catalog.gatech.edu/academics/special-academic-programs/international-plan).

However, due to the flexible nature of the Threads curriculum, the International Plan designation may not be available with all of the Thread combinations. Efforts will be made to work with interested students to accommodate their individual circumstances with regard to the International Plan designator for the Bachelor of Science in Computer Science.