BACHELOR OF SCIENCE IN COMPUTER SCIENCE - THREAD: INFORMATION INTERNETWORKS & SYSTEMS AND ARCHITECTURE

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 Systems and Architecture thread is where many of the practical skills of computing are learned. Like Theory, Systems and Architecture lies at the center of computing. It prepares students to create and evaluate computer architectures, systems, and languages across a variety of paradigms and approaches.

The Information Internetworks thread is where computing meets the data enterprise and all that this implies. The thread prepares students for all levels of information management by helping them to capture, represent, organize, transform, communicate, and present data so that it becomes information.

Wellness

APPH 1040  Scientific Foundations of Health  2
or APPH 1050  The Science of Physical Activity and Health

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  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  1  2  4
Lab Science  2  4
MATH 1551  Differential Calculus  2
MATH 1554  Linear Algebra  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
POL 1101  Government of the United States
PUBP 3000  American Constitutional Issues
Any SS (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e)

Core F - Courses Related to Major

Lab Science  2  4
CS 1100  Freshman Leap Seminar  1  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
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 2200  Computer Systems and Networks  1  4
CS 3210  Design of Operating Systems  1  3
CS 3220  Computer Structures: Hardware/Software Codesign of a Processor  1  3
CS 3510  Design and Analysis of Algorithms  1  3
or CS 3511  Design and Analysis of Algorithms, Honors

ECE 2031  Digital Design Laboratory  1  2
Select six credit hours of the following:  1  6

CS 3251  Computer Networking I
CS 4235  Introduction to Information Security
CS 4400  Introduction to Database Systems
Select one of the following:  1  3

CS 4237  Computer and Network Security
CS 4251  Computer Networking II
CS 4255  Introduction to Network Management
CS 4261  Mobile Applications and Services for Converged Networks
CS 4270  Data Communications Laboratory
CS 4365  Introduction to Enterprise Computing
CS 4420  Database System Implementation
CS 4440  Emerging Database Technologies and Applications
CS 4675  Internet Computing Systems, Services and Applications
CS 3300  Introduction to Software Engineering  1  3
or CS 4240  Compilers, Interpreters, and Program Analyzers
Select one of the following:  1  3

CS 4210  Advanced Operating Systems
CS 4220  Programming Embedded Systems
CS 4290  Advanced Computer Organization

Other Required Courses

MATH 3012  Applied Combinatorics  3
Select one of the following:  3

MATH 3215  Introduction to Probability and Statistics
Bachelor of Science in Computer Science - Thread: Information Internetworks & Systems and Architecture

MATH 3670 Probability and Statistics with Applications
CEE 3770 Statistics and Applications
ISYE 3770 Statistics and Applications
or ISYE 202 Probability with Applications & ISYE 2021 and Basic Statistical Methods

Free Electives
Free Electives 11

Total Credit Hours 126

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

1. Minimum grade of C required.
2. Two of three labs 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 - CS 4699 or LMC 4699 (4 credit hours), LMC 4701, LMC 4702.
   - Option 3 - ECE VIP courses (ECE 3811, ECE 3812, ECE 4811, ECE 4812) and LMC 3403.

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 four semesters of VIP. (VIP 1 + VIP 2 + VIP 3) (for a total of 5 credit hours) + VIP 4 (3 credit hours) = 8 hours of VIP credit. VIP 4 must be taken after 90 credit hours at the 4000 level and be on the same project as 2 of VIP 1-3s.

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

Cooperative Programs

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

- Undergraduate Cooperative Plan (http://www.catalog.gatech.edu/specialacademic/divpro.php)
- Graduate Cooperative Plan (http://www.catalog.gatech.edu/specialacademic/coop.php)

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.

Research Option

To complete the Research Option in the College of Computing, students must:

1. Complete at least nine units of undergraduate research

   a. Over at least two, preferably three terms
   b. Research may be for either pay or credit;
2. Write an undergraduate thesis/report of research on their findings;
3. Take
   a. LMC 4701: Undergraduate Research Proposal Writing (taken during the first or second semester of research)
   b. LMC 4702: Undergraduate Research Thesis Writing (taken during the thesis writing semester).

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>

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)