BACHELOR OF SCIENCE IN COMPUTER SCIENCE - THREAD: DEVICES & PEOPLE

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 Devices thread is concerned with embedded computational artifacts that interact with people or the physical world. In this thread, one learns how to create and evaluate devices that operate under physical constraints such as size, power, and bandwidth. Examples include PDAs, cell phones, robots, jet engines, and intelligent appliances.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CS 1100</td>
<td>Freshman Leap Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CS 1331</td>
<td>Introduction to Object Oriented Programming</td>
<td>3</td>
</tr>
</tbody>
</table>

Bachelor of Science in Computer Science - Thread: Devices & People

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 3

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

or CS 4726 Privacy, Technology, Policy, and Law

or SLS 311 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 3251 Computer Networking 1 3

ECE 2031 Digital Design Laboratory 1 2

PSYC 2015 Research Methods 1 4

Select one of the following for Building Devices: 1 4

CS 3651 Prototyping Intelligence Appliances

ECE 4180 Embedded Systems Design

Select one of the following for the Devices in the Real World: 1,3 3

CS 3630 Introduction to Perception and Robotics

CS 4261 Mobile Applications and Services for Converged Networks

CS 4605 Mobile and Ubiquitous Computing

CS 4476 Introduction to Computer Vision

Select one of the following for Algorithm Fundamentals: 1 3

CS 3240 Languages and Computation

CS 3510 Design and Analysis of Algorithms

CS 3511 Design and Analysis of Algorithms, Honors

Select one of the following for Social/Behavioral Science for Computing: 1 3

PSYC 2210 Social Psychology

PSYC 2760 Human Language Processing

PSYC 3040 Sensation and Perception

CS 3750 Human Computer Interface Design and Evaluation 1 3

Select two of the following for Human-Centered Technology: 1,3 6

CS 3790 Introduction to Cognitive Science

CS 4660 Introduction to Educational Technology

CS 4460 Introduction to Information Visualization

CS 4470 Introduction to User Interface Software

CS 4605 Mobile and Ubiquitous Computing

CS 4472 Design of Online Communities

CS 4745 Information and Communication Technologies and Global Development

Other Required Courses

MATH 3012 Applied Combinatorics 3

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**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).

<table>
<thead>
<tr>
<th>Select one of the following:</th>
<th>3</th>
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<tbody>
<tr>
<td>MATH 321 Introduction to Probability and Statistics</td>
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<tr>
<td>MATH 3670 Probability and Statistics with Applications</td>
<td></td>
</tr>
<tr>
<td>CEE 3770 Statistics and Applications</td>
<td></td>
</tr>
<tr>
<td>ISYE 3770 Statistics and Applications</td>
<td></td>
</tr>
<tr>
<td>or ISYE 2 Probability with Applications</td>
<td></td>
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<tr>
<td>&amp; ISYE 2 and Basic Statistical Methods</td>
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**Free Electives**

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<tr>
<th>Free Electives</th>
<th>6</th>
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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 labs MUST be a sequence.
3. If CS 4605 is successfully completed, both requirements are fulfilled, and three credits are added to Free Electives.
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.

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 for junior design take at least 6 hours of CREATE-X Start-up 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.

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://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)

**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:

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<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>
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<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>
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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).

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

Students who want to pursue the BS/MS option must apply to the MSCS program after completing at least 60 hours of work towards the BSCS degree. Applicants should have a cumulative GPA of at least 3.4. This GPA must be maintained for the student to take graduate level courses.

Students admitted to the program will take 6 hours during their final undergraduate year to double count in both their BSCS and MSCS degrees; they should choose 3 hours of MS Core or Elective hours their fall semester and 3 hours of MS Core or Elective hours their spring semester that can count toward their thread hours and CS Specialization hours.

Visit College of Computing (https://www.cc.gatech.edu) for more information.