BACHELOR OF SCIENCE IN COMPUTATIONAL MEDIA - INTELLIGENCE - INTERACTION DESIGN & EXPERIMENTAL MEDIA

The Bachelor of Science in Computational Media is a collaborative effort by the College of Computing and the School of Literature, Media, and Communication (LMC). The program offers a thorough education in all aspects of the computer as a medium: the technical, the historical-critical, and the applied. Program graduates will have both significant hands-on and theoretical knowledge of computing and an understanding of visual design and the history of media. Graduates will be uniquely positioned to plan, create, and critique new digital media forms for entertainment, education, and business communication.

The program requires 36 credit hours of courses in computer science and 30 credit hours of courses in LMC (in addition to the humanities requirement). A substantial number of required courses in each unit ensures that every student has basic competence in:

- computational principles;
- the representation and manipulation of digital media, including graphics and sound;
- software design;
- visual and interactive design;
- digital arts; and
- media theory and history.

After completing required courses, students specialize in a specific area of media computing. Typical specialty areas include:

- Interactive games design: This is one of the fastest growing areas of digital media production and is already a $7 billion industry.
- Special effects: As special effects become more complex and focused on computer-generated imagery, employment in this area will increasingly require expertise in both media and computer science.
- Culturally informed program design: As programming work is increasingly outsourced to nations offering lower labor costs, programming that adds value through a sophisticated response to the needs of specific corporate and group cultures will offer job security to American programmers.

Depending on their coursework within the BS program, students will also be qualified to enter graduate studies in computer science, digital arts, digital media studies, and human-computer interface.

Wellness
APPH 1040 Scientific Foundations of Health 2
or APPH 10 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

Core C - Humanities
Any HUM 3
Any LMC HUM 3

Core D - Science, Math, & Technology
Lab Science 8
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
PSYC 1101 General Psychology 3
Any SS (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e) 6

Core F - Courses Related to Major
CS 1331 Introduction to Object Oriented Programming 3
CS 1332 Data Structures and Algorithms for Applications 3
CS 2050 Introduction to Discrete Mathematics for Computer Science 3
CS 2340 Objects and Design 3
LMC 2700 Introduction to Computational Media 3
MATH 2550 Introduction to Multivariable Calculus 4

Major Requirement
CS 2110 Computer Organization and Programming 4
CS 4001 Computing, Society, and Professionalism 3

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

Intelligence Requirements
CS 3510 Design and Analysis of Algorithms 3
CS 3600 Introduction to Artificial Intelligence 3
CS 4510 Automata and Complexity Theory 3
Select one of the following: 3
CS 3630 Introduction to Perception and Robotics
CS 3790 Introduction to Cognitive Science
PSYC 3040 Sensation and Perception

Select two of the following: 6
CS 4495 Computer Vision
CS 4635 Knowledge-Based Artificial Intelligence
CS 4641 Machine Learning
CS 4649 Robot Intelli Planning
CS 4650 Natural Language Understanding
CS 4731 Game AI

Interaction Design & Experimental Media Requirements
LMC 2720 Principles of Visual Design 3
LMC 3710 Principles of Interaction Design 3
or LMC 473 Experimental Digital Art
Select three of the following: 9

Bachelor of Science in Computational Media - Intelligence - Interaction Design & Experimental Media
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LMC 2730  Constructing the Moving Image
LMC 3206  Communication and Culture
LMC 3406  Video Production
LMC 3705  Principles of Information Design
LMC 3710  Principles of Interaction Design
LMC 4730  Experimental Digital Art
CM or Media Courses 1,2  12

Total Credit Hours 122

Pass Fail is allowed for courses in core areas C, D, E and Free.

1 Minimum grade of C required.
2 CM or LMC courses include 2700-, 3700-, and 4700-level courses, as well as 3250-level courses, and LMC 2400, LMC 2500, LMC 3206, LMC 3314, LMC 3362, LMC 3406, and LMC 3853
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 4980 or LMC 4699 (4 credit hours), LMC 4701, LMC 4702.
   • Option 3 - ECE VIP courses 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.

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.

Two credits 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/academics/special-academic-programs/experiential-education/center-career-discovery-development)

Graduate Cooperative Plan (http://www.catalog.gatech.edu/academics/special-academic-programs/experiential-education/graduate-cooperative-plan)

International Plan
The Computational Media (CM) International Plan follows the Institute model to develop a global competence within the student’s major program of study. It thus integrates international studies and experiences with work in all aspects of the computer as a medium, preparing graduates to plan, create, and critique new digital media forms within an international professional environment.

As in the basic CM program, students following the International Plan will take credit 36 hours of courses in CS and 30 credit hours of courses in LMC (in addition to the basic humanities requirement). Students will also:

1. take three international courses, including one from each of the following categories: International Relations, Global Economics, and a course on a specific country or region;
2. spend two terms abroad engaged in any combination of study abroad, research, or internship;
3. demonstrate language proficiency equivalent to two years of college-level language study (to be determined by testing); and
4. complete a CM capstone course that links international studies with the major.

Research Option
The CM Research Plan follows the Institute model to allow students to incorporate research experiences into the major program of study. Students will complete nine hours of credit research work on various aspects of the computer as a medium, working in such areas as computational principles, the representation and manipulation of digital media, software design, visual and interactive design, digital art, and media theory and history.

As in the basic CM program, students following the Research Plan will take 36 credit hours of courses in CS and 30 credit hours of courses in LMC (in addition to the basic humanities requirement). CM students can complete the Research Option with nine CS or LMC research hours. Students cannot have a mix of both counts towards the Research Option. The breakdown of hours is as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Research</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>LMC 4701</td>
<td>Undergraduate Research Proposal Writing</td>
<td>1</td>
</tr>
<tr>
<td>LMC 4702</td>
<td>Undergraduate Research Thesis Writing</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credit Hours 11

BS/MS Computational Media and Digital Media
Students who want to pursue the five-year BS/MS combination in CM and DM must apply to the school of LMC after completing at least 75 hours of work towards the CM degree. Applicants should have a cumulative GPA of at least 3.5. This GPA must be maintained for the student to take graduate level courses. Students must start the program in the Fall to be on track with other MS students.

Students admitted to the program will take a total of twelve credit hours of graduate course work during their final undergraduate year; six credit hours of that work, in DM courses, will count towards two 4000 level LMC courses (6 hours) and will count for both undergraduate and graduate credit. During the summer term after their fourth year, students will participate in an approved internship program. During their fifth year, students will take a total of 24 credit hours, including either LMC 6800 or LMC 7000, and with no more than three courses taken outside of the DM program.