

# BACHELOR OF SCIENCE IN COMPUTATIONAL MEDIA - MEDIA-INTERACTION DESIGN

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.

Code	Title	Credit Hours
<b>Wellness</b>		
APPH 1040	Scientific Foundations of Health	2
	or APPH 10 The Science of Physical Activity and Health	
<b>Core A - Essential Skills</b>		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
MATH 1552	Integral Calculus	4
<b>Core B - Institutional Options</b>		
CS 1301	Introduction to Computing <sup>1</sup>	3
<b>Core C - Humanities</b>		

Any HUM		3
Any LMC HUM		3
<b>Core D - Science, Math, &amp; Technology</b>		
Lab Science		8
MATH 1551	Differential Calculus	2
MATH 1554	Linear Algebra <sup>4</sup>	4
	or MATH 1555 Linear Algebra with Abstract Vector Spaces	
<b>Core E - Social Sciences</b>		
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	( <a href="http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e">http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e</a> )	9
<b>Core F - Courses Related to Major</b>		
CS 1331	Introduction to Object Oriented Programming <sup>1</sup>	3
CS 1332	Data Structures and Algorithms for Applications <sup>1</sup>	3
CS 2050	Introduction to Discrete Mathematics for Computer Science <sup>1</sup>	3
CS 2340	Objects and Design <sup>1</sup>	3
LMC 2700	Introduction to Computational Media <sup>1</sup>	3
MATH 2550	Introduction to Multivariable Calculus <sup>4</sup>	2
<b>Major Requirement</b>		
CS 2261	Media Device Architectures	4
CS 4001	Computing, Society, and Professionalism	3
	or CS 4726 Privacy, Technology, Policy, and Law	
	or SLS 3110 Technology and Sustainable Community Development	
<b>Junior Design Options (Capstone)</b>		
Junior Design Option <sup>1,3</sup>		6
<b>Media Requirements</b>		
CS 3451	Computer Graphics	3
Media Technology (select two): <sup>1</sup>		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	
<b>Interaction Design Requirements</b>		
LMC 3710	Principles of Interaction Design <sup>1</sup>	3
LMC 4813	Special Topics (Media/Design Capstone) <sup>1</sup>	3
Design course: <sup>1</sup>		3
LMC 2720	Principles of Visual Design	
LMC 3705	Principles of Information Design	
LMC 4730	Experimental Digital Art	
Design and Culture courses: <sup>1</sup>		9
LMC 2730	Constructing the Moving Image	
LMC 3206	Communication and Culture	

LMC 3314	Technologies of Representation	
LMC 3705	Principles of Information Design	
LMC 4730	Experimental Digital Art	
CM or LMC Courses <sup>1</sup>		9
LMC 2400	Introduction to Media Studies	
LMC 2500	Introduction to Film	
LMC 3206	Communication and Culture	
LMC 3314	Technologies of Representation	
LMC 3354		
LMC 3362		
LMC 3406	Video Production	
LMC 3402	Graphic and Visual Design	
LMC 3853	Special Topics in Film	
Any LMC 27XX, 37XX, 47XX, 325X		
<b>Free Electives</b>		
Free Electives		9
Total Credit Hours		122

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

<sup>1</sup> Minimum grade of C required.

<sup>3</sup> 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.

<sup>4</sup> 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/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 count towards the Research Option. The breakdown of hours is as follows:

Code	Title	Credit Hours
Undergraduate Research		9
LMC 4701	Undergraduate Research Proposal Writing	1
LMC 4702	Undergraduate Research Thesis Writing	1
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.