

# COMPUTER SCIENCE, BS

The computer science program provides a strong foundation to prepare students for a career within the industry or future graduate study. Students in the program will have a broad understanding of the fundamental concepts, methodologies, tools, and applications of computer science. Through hands-on training in team projects, students will be ready to work in trending areas of computer science.

## Requirements

To earn a BS in Computer Science, a student must complete a minimum of 120 semester hours including eight core courses, four major elective courses, a capstone course, four required math courses, and other general education requirements set by the university.

- Students must maintain a 2.0 GPA in the major, and must earn grades of C- or higher in all major coursework.
- At least 30 credit hours of credit must be taken at Roosevelt University, with at least 15 of these in the major.
- At least 60 credit hours in computer science, cyber security, the natural sciences, mathematics, and/or psychology.
- Because of the rapidly changing nature of this field of study, computing courses taken more than eight years ago cannot be counted towards degree requirements unless the student has been continuously registered since the time the course was taken (excluding summers).

Code	Title	Credit Hours
<b>Core</b>		
CST 150	COMPUTER SCIENCE I	4
CST 250	COMPUTER SCIENCE II	4
CST 261	COMPUTER ORG & ASSEMBLER	3
CST 280	INTRODUCTION TO ALGORITHMS	3
CST 317	OPERATING SYSTEMS	3
CST 333	DATABASE SYSTEMS	3
CST 372	PROGRAMMING LANGUAGES	3
CST 348	SOFTWARE ENGINEERING I	3
<b>Concentration (or Electives)</b>		<b>12</b>
<b>Capstone Course</b>		
CST 399	SENIOR PROJECT	3
or CST 378	SOFTWARE ENGINEERING II	
or CST 394	COMPUTER SCIENCE INTERNSHIP	
<b>Required Math Courses</b>		
MATH 122	TRIGONOMETRY AND PRECALCULUS	3
MATH 217	ELEMENTARY STATISTICS	3
MATH 231	CALCULUS I	5
MATH 245	DISCRETE STRUCTURES	3
MATH 246	LINEAR ALGEBRA	3
<b>General Education, University Writing Requirement, and Electives</b>		
Courses to total 120		62
<b>Total Credit Hours</b>		<b>120</b>

## Concentrations

Students can choose one of the following two optional concentrations (12 credit-hours) that will appear on their transcripts: select at least 4 from the listed courses for each concentration.

### Data and Computation Concentration

Code	Title	Credit Hours
CST 309	DATA MINING	3
CST 310	GAME THEORY AND APPLICATIONS	3
CST 311	NETWORK SCIENCE	3
CST 337	THEORY OF COMPUTATION	3
CST 338	EFFICIENT COMPUTING	3
CST 355	CRYPTOGRAPHY	3
CST 381	INTELLIGENT SYSTEMS	3
CST 386	INFORMATION RETRIEVAL	3
CST 387	ALGORITHM DESIGN	3

### Computer Applications Concentration

Code	Title	Credit Hours
CST 301	COMPUTER NETWORKING	3
CST 318	INTRODUCTION TO UNIX	3
CST 343	O.O.P AND WEB SERVICES	3
CST 357	SYSTEMS PROGRAMMING	3
CST 359	INTRO TO COMPUTER SECURITY	3
CST 367	WEB-BASE DATABASE APPLICATIONS	3
CST 369	SMARTPHONE APP DEVELOPMENT	3
CST 376	DISTRIBUTED APPLICATIONS	3

## Non-Concentration Option

Students who are not pursuing a concentration must select four CST 3XX-level elective courses. Of the electives within their major students can select at most two courses from other undergraduate programs offered by the department and/or from among CST 390 Special Topics, CST 394 Internship, and CST 395 Independent Study.

## Capstone Course

Students in this major must complete a capstone course as part of the degree requirements. The capstone courses CST 378 and CST 399 will be non-individualized sections taught by a CST faculty member and organized into team projects. Each design team must complete a project assigned by the instructor with a grade of C- or better final grade, and each team will present their projects during final exams week.

## CORE Requirements (General Education)

Code	Title	Credit Hours
<b>First Year Success Course or Transfer Success Course</b>		
FYS 101	FIRST YEAR SUCCESS COURSE	1
or TRS 101	TRANSFER SUCCESS 101	
<b>Communication Requirement</b>		
ENG 101	COMPOSITION I: CRITICAL READING & WRITING	3
ENG 102	COMPOSITION II: INTRODUCTION TO ACADEMIC RESEARCH	3
COMM 101	PUBLIC SPEAKING (or program specific CORE communications course)	3

### Ideas of Social Justice

3 credits in coursework categorized as Ideas.	3
<b>Humanities and Fine and Performing Arts</b> <sup>2,3</sup>	
9 credits from the following subject areas: African-American Studies, Art History, English (excluding ENG 101 and ENG 102), History, Languages, Music, Philosophy, Theatre, Communication and Women's and Gender Studies	9
<b>Mathematics</b>	
MATH 110 QUANTITATIVE LITERACY (or above) <sup>1</sup>	3
<b>Science</b>	
One biological science and one physical science required (one must include a one credit lab).	7-8
<b>Social Sciences</b> <sup>2,3</sup>	
9 credits from the following subject areas: African-American Studies, Criminal Justice, Economics, History, Journalism, Philosophy, Political Science, Psychology, Sociology and Women's and Gender Studies	9
<b>Experiential Learning</b>	
6 credits from coursework categorized as Experiential Learning.	6
<b>Total Credit Hours</b>	<b>47-48</b>

<sup>1</sup> Higher level of Math may be required by major

<sup>2</sup> Coursework must come from outside of students' major discipline

<sup>3</sup> A maximum of 9 credits can be applied from a single discipline towards humanities and social science requirements

These quantitative requirements also apply to degrees.

- Students must earn a minimum of 120 semester hours.
- Students may apply no more than 60 credit hours of 100-level courses toward the degree.
- Students must apply no fewer than 60 credit hours of 200- and 300-level courses toward the degree.
- Students must have at least 18 credit hours (of the 60 credit hours above) at the 300 level.
- Students may transfer in no more than 70 credit hours from community colleges.
- Students earning less than 60 total hours in residence must take their final 30 hours at Roosevelt University. Note that some majors have additional requirements for RU hours.
- Students must have a grade point average of 2.0 or higher to graduate. Note that some majors have additional GPA requirements.
- Students may apply no more than 51 hours in the major (BA) or 57 hours in the major (BS)

Your degree map is a general guide suggesting courses to complete each term on the academic pathway to your degree. It is based on the most current scheduling information from your academic program. Your program's degree map is reviewed annually and updated as schedules change (although you retain the same course requirements as long as you are continuously enrolled in your degree program).

Always work closely with your academic advisor to understand curriculum requirements and scheduling, as each student's academic plan can look slightly different.

<b>Year 1</b>		
<b>Fall</b>	<b>Credit Hours Spring</b>	<b>Credit Hours</b>
ENG 101	3 ENG 102	3
FYS 101	1 MATH 217	3
MATH 121	3 CST 150	4
Social Science #1	3 Ideas of Social Justice	3
Humanities #1	3 MATH 122	3
Physical Science <sup>2</sup>	3	
	<b>16</b>	<b>16</b>

<b>Year 2</b>		
<b>Fall</b>	<b>Credit Hours Spring</b>	<b>Credit Hours</b>
CST 250	4 CST 261	3
MATH 245	3 CST 280	3
COMM 101	3 MATH 246	3
BIOL 111 or 112 <sup>2</sup>	4 Humanities #2	3
	Social Science #2	3
	<b>14</b>	<b>15</b>

<b>Year 3</b>		
<b>Fall</b>	<b>Credit Hours Spring</b>	<b>Credit Hours</b>
CST 372	3 Concentration/Major Elective <sup>4</sup>	3
CST 333	3 Concentration/Major Elective <sup>4</sup>	3
CST 317	3 Social Science #3	3
MATH 231	5 Experiential Learning #1 <sup>3</sup>	3
	General Elective <sup>1</sup>	3
	<b>14</b>	<b>15</b>

<b>Year 4</b>		
<b>Fall</b>	<b>Credit Hours Spring</b>	<b>Credit Hours</b>
CST 348	3 CST 378, 394, or 399 <sup>5</sup>	3
Concentration/Major Elective <sup>4</sup>	3 Concentration/Major Elective <sup>4</sup>	3
General Elective <sup>1</sup>	3 General Elective <sup>1</sup>	3
General Elective <sup>1</sup>	3 Humanities #3	3
General Elective <sup>1</sup>	3 General Elective <sup>1</sup>	3
	<b>15</b>	<b>15</b>

**Total Credit Hours 120**

<sup>1</sup> Or course towards an optional Minor.

<sup>2</sup> One Natural Science course must have a lab and one must come from BIOL.

<sup>3</sup> Experiential Learning class must be 200/300 level. Satisfies CORE Experiential Learning requirement.

<sup>4</sup> Courses must either meet concentration requirements (selected from list for the given concentration) or the requirements for non-concentration (four 300 level electives where at most two can be from other undergraduate programs offered by the department and where at most two from among CST 390 SPECIAL TOPICS, CST 394 COMPUTER SCIENCE INTERNSHIP, and CST 395 INDEPENDENT STUDY)

<sup>5</sup> If student selects CST 394 COMPUTER SCIENCE INTERNSHIP, student will need to replace an Elective with an Experiential Learning course at the 200/300 level.