Bachelor of Computer Science and Arts (BCSA)

School of Computer Science (SCS) Concentration 111 units (minimum)

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Prerequisite
15-112 Fundamentals of Programming and Computer Science 12

Computer Science Core Requirements 56 units
15-122 Principles of Imperative Computation 10
15-150 Principles of Functional Programming 10
15-210 Parallel and Sequential Structures and Algorithms 12
15-213 Introduction to Computer Systems 12
15-251 Great Theoretical Ideas in Computer Science 12

Concepts of Mathematics 10 units
21-127 Concepts of Mathematics
(co-requisite for 15-122; prerequisite for 15-150) 10

Applications Courses or CS Electives 45 units minimum
Choose a minimum of five courses from SCS beyond the core requirements, 200-level or higher, not including 02-201, 02-223, 02-250, 02-261, 15-351, 16-223, 17-200, 17-333, 17-562. Listed below are suggested choices for these electives. Consult with the CS advisor if interested in courses not listed.

05-391 Designing Human Centered Software 12
05-418 Design Educational Games 12
11-291 Applied Computational Intelligence Lab 9
11-344 Machine Learning in Practice 12
11-411 Natural Language Processing 12
15-322 Introduction to Computer Music 9
15-323 Computer Music Systems and Information Processing 9
15-365 Experimental Animation 12
15-381 AI: Representation and Problem Solving 9
15-388 Practical Data Science 9
15-415 Database Applications 12
15-451 Algorithm Design and Analysis 12
15-458 Discrete Differential Geometry 12
15-462 Computer Graphics 12
15-463 Computational Photography 12
15-464 Technical Animation 12
15-465 Animation Art and Technology 12
15-466 Computer Game Programming 12
15-491 CMRoboBits: AI and Robots for Daily-Life Problems 12
15-494 Cognitive Robotics: The Future of Robot Toys 12
16-264 Humanoids 12
16-362 Mobile Robot Programming Laboratory 12
16-374 IDeATE: Art of Robotic Special Effects 12
16-384 Robot Kinematics and Dynamics 12
16-385 Computer Vision 9
16-423 Designing Computer Vision Apps 12
16-455 Human-Machine Virtuosity 12
16-465 Game Engine Programming 10
16-467 Human Robot Interaction 12
17-356 Software Engineering for Startups 12
17-437 Web Application Development 12

BCSA Free Electives
Take any Carnegie Mellon course. A maximum of 9 units of physical education and/or military science may be counted toward this requirement. Physical education and military science courses will not be calculated in a student’s QPA.