

# Computer Science, BS

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## Computer Science, BS Requirements:

- All students are encouraged to see an advisor after completion of 24 credits.
- Computer Science, BS degree requires 128 credit hours.
- 39 of 128 credit hours must be taken at 300 level or higher (39 credits includes courses taken at the 300+ level in major, minor (if chosen), Pre professional area and electives).
- A transfer student must complete a minimum of 18 hours of CS courses at UAH in order to obtain a degree in Computer Science.
- 12 of the last 18 credit hours must be taken at UAH, with an overall 25% of coursework taken at UAH.
- Unless otherwise noted a C- or better is required for all College of Science prerequisite courses.
- No more than 64 credit hours from a two-year college can be applied toward a UAH degree.
- For graduation application instructions, see here (<http://catalog.uah.edu/undergrad/policies-procedures/application-graduation/>).

## Degree Requirements

Charger Foundations Requirements

\*Please see Area V for CoS requirements that can also be used to fulfill Charger Foundations Requirements.

Code	Title	Semester Hours
<b>Area I: Freshman Composition</b>		<b>3-6</b>
EH 101 or EH 101S	COLLEGE WRITING I COLLEGE WRITING I W/STUDIO	
EH 102	COLLEGE WRITING II	
EH 103	ACCELERATED COLLEGE WRITING	
EH 105	HONORS ENGLISH SEMINAR	
<b>Area II: Humanities and Fine Arts*</b>		<b>12</b>
Fine Arts		3
ARH 100	ARH SURV:ANCIENT-MEDIEVAL	
ARH 101	ARH SURV:RENAISSANCE-MODERN	
ARH 103	ARH SUR: WORLD ART	
ARS 160	DRAWING: FOUNDATIONS	
TH 122	THEATRE APPRECIATION	
TH 123	INTRO TO FILM STUDIES	
MU 100	INTRO TO MUSIC LITERATURE	
Literature		3-6
EH 207	READINGS LITERATURE/CULTURE I	
EH 208	READINGS LITERATURE/CULTURE 2	
EH 209	HONORS SEM READINGS LIT/CUL I	
EH 210	HONORS SEM READINGS LIT/CUL 2	
EH 242	MYTHOLOGY	
Humanities and Fine Arts		3-6
CM 113	Intro to Rhetorical Communication	
WLC 101S or WLC 101A or WLC 101F or WLC 101G or WLC 101J or WLC 101R	INTRO FOREIGN LANG I: SPANISH INTRO FOREIGN LANG I: ARABIC INTRO FOREIGN LANG I:FRENCH INTRO FOREIGN LANG I:GERMAN INTRO FOREIGN LANG I:JAPANESE INTRO FOREIGN LANG I:RUSSIAN	
WLC 102S or WLC 102A or WLC 102F or WLC 102G or WLC 102J	INTRO FOREIGN LANG II:SPANISH INTRO FOREIGN LANG II: ARABIC INTRO FOREIGN LANG II:FRENCH INTRO FOREIGN LANG II:GERMAN INTRO FOREIGN LANG II:JAPANESE	

or WLC 102R	INTRO FOREIGN LANG II:RUSSIAN
WLC 201S	INTERM FOREIGN LANG:SPANISH
or WLC 201A	INTERM FOREIGN LANG I: ARABIC
or WLC 201F	INTERM FOREIGN LANG:FRENCH
or WLC 201G	INTERM FOREIGN LANG:GERMAN
or WLC 201J	INTERM FOREIGN LANG: JAPANESE
or WLC 201R	INTERM FOREIGN LANG:RUSSIAN
WLC 202S	INTERM FOREIGN LANG II:SPANISH
or WLC 202A	INTERM FOREIGN LANG II: ARABIC
or WLC 202F	INTERM FOREIGN LANG II:FRENCH
or WLC 202G	INTERM FOREIGN LANG II:GERMAN
or WLC 202J	INTERM FORGN LANG II:JAPANESE
or WLC 202R	INTERM FOREIGN LANG II:RUSSIAN
WLC 204	INTERNATIONAL CINEMA
PHL 101	INTRODUCTION TO PHILOSOPHY
PHL 102	INTRO TO ETHICS
PHL 103	INTRODUCTION TO LOGIC
PHL 150	TECH, SCIENCE & HUMAN VALUES
WGS 200	INTRO WOMEN'S & GENDER STUDIES
AMS 229	ANCIENT & MEDIEVAL WORLDS
ARH 100	ARH SURV:ANCIENT-MEDIEVAL
ARH 101	ARH SURV:RENAISSANCE-MODERN
ARH 103	ARH SUR: WORLD ART
ARS 160	DRAWING: FOUNDATIONS
TH 122	THEATRE APPRECIATION
TH 123	INTRO TO FILM STUDIES
MU 100	INTRO TO MUSIC LITERATURE

**Area III: Mathematics and Sciences****11-12**

Mathematics		3-4
MA 105	NATURE OF MATHEMATICS	
MA 107	ALGEBRA WITH APPLICATIONS	
MA 110	FINITE MATHEMATICS	
MA 112	PRECALCULUS ALGEBRA	
MA 113	PRECALCULUS TRIGONOMETRY	
MA 115	PRECALCULUS ALGEBRA & TRIG	
MA 120	MATH PROFESSIONAL APPLICATIONS	
MA 171	CALCULUS A	
Natural Sciences (Lab)		8
AST 100	SURVEY OF ASTRONOMY	
AST 106	EXPLORING THE COSMOS I	
AST 107	EXPLORING THE COSMOS II	
BYS 109	FUNDAMENTALS OF BIOLOGY	
BYS 119	PRINCIPLES OF BIOLOGY	
BYS 120	ORGANISMAL BIOLOGY	
BYS 215	HUMAN ANATOMY & PHYSIOLOGY I	
CH 101 & CH 105	INTRO TO CHEMISTRY and INTRO CHEMISTRY LAB	
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	
CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II	
CH 151 & CH 105	GENERAL, ORGANIC, BIOCHEMISTRY and INTRO CHEMISTRY LAB	

ESS 103	ENVIRONMENTAL EARTH SCIENCE	
ESS 111	WEATHER, CLIMATE & GLOBAL CHNG	
PH 100	CONCEPTUAL PHYSICS	
PH 101	GENERAL PHYSICS I	
PH 102	GENERAL PHYSICS II	
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I	
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II	
PH 113 & PH 116	GEN PHYSICS W/CALC III and GENERAL PHYSICS LAB III	
<b>Area IV: History and Social and Behavioral Sciences*</b>		<b>12</b>
History		3-6
HY 103	WORLD HISTORY TO 1500	
HY 104	WORLD HISTORY SINCE 1500	
HY 221	UNITED STATES TO 1877	
HY 222	UNITED STATES SINCE 1877	
Social and Behavioral Sciences		6-9
ECN 142	PRINC OF MACROECONOMICS	
ECN 143	PRINC OF MICROECONOMICS	
GS 200	GLOBAL SYSTEMS AND CULTURES	
ESS 105	WORLD REGIONAL GEOGRAPHY	
ESS 110	PRINCIPLES OF HUMAN GEOGRAPHY	
PSC 101	INTRO TO AMERICAN GOVERNMENT	
PSC 102	INTRO TO COMPARATIVE POLITICS	
PSC 260	INTRODUCTION TO INTERNATIONAL RELATIONS	
PY 101	GENERAL PSYCHOLOGY I	
PY 201	LIFE-SPAN DEVELOPMENT	
SOC 100	INTRO TO SOCIOLOGY	
SOC 102	ANALYSIS OF SOCIAL PROBLEMS	
SOC 103	INTRO TO CRIMINOLOGY	
SOC 105		

\* Take either 1 EH (Area II) + 2 HY (Area IV) <OR> 2 EH (Area II) + 1 HY (Area IV). Take no more than six hours in a single discipline in Area II or Area IV.

#### Area V: Pre Professional Requirements

Code	Title	Semester Hours
Courses in this area may also be used to fulfill Charger Foundations requirements		
<b>Communications</b>		<b>3</b>
CM 113	Intro to Rhetorical Communication	
<b>Two course sequence in a Natural Science including labs: choose one sequence</b>		<b>8</b>
BYS 119 & 119L & 119R	PRINCIPLES OF BIOLOGY and LABORATORY and RECITATION	
and		
BYS 120 & 120L & 120R	ORGANISMAL BIOLOGY and ORGANISMAL BIOLOGY LAB and RECITATION	
OR		
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	
and		

CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II	
<b>OR</b>		
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I	
and		
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II	
<b>Third Lab Science: choose any of the above not already taken or one of the following</b>		<b>4</b>
AST 106 & 106L	EXPLORING THE COSMOS I and ASTRONOMY LABORATORY	
ESS 103 & 103L	ENVIRONMENTAL EARTH SCIENCE and LABORATORY	
ESS 111 & 111L	WEATHER, CLIMATE & GLOBAL CHNG and LABORATORY	
PH 113 & PH 116	GEN PHYSICS W/CALC III and GENERAL PHYSICS LAB III	
<b>Required Mathematics</b>		<b>17-18</b>
MA 171	CALCULUS A	
MA 172	CALCULUS B	
MA 244	INTRO TO LINEAR ALGEBRA	
MA 385	INTRO TO PROBABILITY & STATIST	
MA 200+ level or higher course. (For a Math minor, choose MA 201 to fulfill this requirement.) <sup>5</sup>		
<b>Computer Science: choose one</b>		<b>3</b>
CS 102	INTRO TO C PROGRAMMING	
or CS 103	INTRO PROGRAMMING USING JAVA	
or CS 104	INTRO TO CS USING PYTHON	
<b>Technical Writing</b>		<b>3</b>
EH 301	TECHNICAL WRITING	
Major Requirements		
<b>Code</b>	<b>Title</b>	<b>Semester Hours</b>
<b>Computer Science Core:</b>		<b>31</b>
CS 105	COMP SCI SEM:ETH/PROFESS	
CS 121	COMPUTER SCIENCE I	
CS 214	INTRO DISCRETE STRUCTURE	
CS 221	COMP SCI II: DATA STRUCTURES	
CS 309 & 309L	COMPUTER ORG & SWTCHNG THRY and LABORATORY	
CS 317	INTRO DESIGN/ANALYSIS OF ALG	
CS 321	INTRO OBJECT-ORIENTED PROG JAV	
CS 413 & 413L	INTRO DIGITAL COMP ARCHITECTUR and LABORATORY	
CS 424	PRINCIPLES PROGRAMMING LANG	
CS 490	INTRO TO OPERATING SYSTEMS	
CS 499	SR PROJ:TEAM SOFTWARE DESIGN	
<b>CS 300+ or 400+ elective courses.</b>		<b>9</b>
CS 300+ or 400+ level course		
CS 300+ or 400+ level course		
CS 300+ or 400+ level course		
Choose CS courses at the 300 or 400 level not listed in required courses above, Ex: CS 330, CS 347, CS 371, CS 390, CS 445		
<b>CS 400+ elective courses.</b>		<b>6</b>
CS 400+ level course		

CS 400+ level course

Choose CS courses at the 400 level not listed in required courses above, Ex: CS 403, CS 443, CS 445, CS 453, CS 454, CS 465, CS 487

**Technical Elective: Choose one** **3**

Any College of Science Course 300+ or 400+ level. Example, MA 433 or an additional CS 300+ or 400+ course.

The final MA 300+ course for a math minor may fulfill the Technical Elective requirement.<sup>5</sup>

CPE 412	INTRO TO PARALLEL PROGRAMMING
CPE 436	INTERNALS OF MODERN OPER SYS
PHL 317	PHILOSOPHY OF MIND
PHL 320	SYMBOLIC LOGIC
IS 422	SUPPLY CHAIN MANAGEMENT SYSTEM
IS 460	NETWORKING & IT INFRASTRUCTURE
IS 463	DIGITAL FORENSICS
IS 471	BUSINESS ANALYTICS & AI
IS 477	NETWORK DEFENSE & SECURITY

Elective Requirements

Code	Title	Semester Hours
<b>Elective Courses</b>		<b>13-14</b>

Additional Elective courses 100+ level to reach 128 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credits of 100 level HPE courses can count toward degree requirements.

Overall Requirements

Code	Title	Semester Hours
All College of Science degrees must have at least 128 credits.		
At least 39 of the 128 credits must be at the 300+ level. These may be taken in any area including electives.		
<b>Total Semester Hours</b>		<b>128</b>

- <sup>1</sup> Students must take one literature and one history course. Students must also take either a second literature or history course to complete a sequence. Acceptable Literature sequences must include one early literature (EH 207 or EH 242 or EH 209) and one later literature (EH 208 or EH 210). Acceptable history sequences are (HY 103 + HY 104), or (HY 221 + HY 222)
- <sup>2</sup> Based on Math placement (<http://www.uah.edu/science/departments/math/undergraduate-students/placement/>), prerequisite (MA 112 and/or MA 113) Mathematics courses may be required.
- <sup>3</sup> No more than 6 hours can be taken in a single discipline.
- <sup>4</sup> For choices see the World Languages and Cultures (<http://catalog.uah.edu/undergrad/colleges-departments/arts-humanities-social-sciences/foreign-languages-literatures/#coursestext>) department.
- <sup>5</sup> To complete Math minor, choose MA 201 and take one additional MA 300+ course. This course may fulfill the Technical Elective requirement in the major as well.

**Sample four year plan for Computer Science, BS degree:**

Note: This is only an example and variations are possible.

**Year 1**

Fall		Semester Hours
FYE 101S	CHARGER SUCCESS - SCIENCE	1
CS 102	INTRO TO C PROGRAMMING	3
or CS 103	or INTRO PROGRAMMING USING JAVA	
or CS 104	or INTRO TO CS USING PYTHON	
CS 105	COMP SCI SEM:ETH/PROFESS	1
MA 171	CALCULUS A	4
EH 101	COLLEGE WRITING I	3
Lab Science		4

See Requirements tab for approved list.

	Term Semester Hours:	16
<b>Spring</b>		
CS 121	COMPUTER SCIENCE I	3
MA 172	CALCULUS B	4
EH 102	COLLEGE WRITING II	3
CM 113	Intro to Rhetorical Communication	3
Lab Science		4
See Requirements tab for approved list.		

Term Semester Hours: 17

**Year 2****Fall**

CS 214	INTRO DISCRETE STRUCTURE	3
CS 221	COMP SCI II: DATA STRUCTURES	3
MA 201	CALCULUS C	4
Lab Science		4
See Requirements tab for approved list.		
Literature		3
See Requirements tab for approved list.		

Term Semester Hours: 17

**Spring**

CS 309 & 309L	COMPUTER ORG & SWTCHNG THRY and LABORATORY	3
CS 321	INTRO OBJECT-ORIENTED PROG JAV	3
MA 244	INTRO TO LINEAR ALGEBRA	3
Social and Behavioral Science		3
See Requirements tab for approved list.		
Fine Art		3
See Requirements tab for approved list.		
Elective		1
Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credit hours of 100 level HPE courses can count toward degree requirements.		

Term Semester Hours: 16

**Year 3****Fall**

CS 317	INTRO DESIGN/ANALYSIS OF ALG	3
CS 300+ Elective Course		3
Choose CS courses at the 300 level not listed in required courses, Ex: CS 330, CS 347, CS 371, CS 390		
MA 385	INTRO TO PROBABILITY STATIST	3
History		3
See Requirements tab for approved list.		
Social and Behavioral Science		3
See Requirements tab for approved list.		
Elective		1
Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credit hours of 100 level HPE courses can count toward degree requirements.		

Term Semester Hours: 16

**Spring**

CS 413 & 413L	INTRO DIGITAL COMP ARCHITECTUR and LABORATORY	3
CS 300+ Elective Course		3
Choose CS courses at the 300 level not listed in required courses, Ex: CS 330, CS 347, CS 371, CS 390		
MA 300+ level or higher course or Elective		3
For a Math minor take MA 300+ level course or choose an Elective. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credit hours of 100 level HPE courses can count toward degree requirements.		
Humanities, 2nd Fine Art or 2nd Literature		3
See Requirements tab for approved list.		
2nd History or 3rd Social and Behavioral Science		3
See Requirements tab for approved list.		
Term Semester Hours:		15
<b>Year 4</b>		
<b>Fall</b>		
CS 490	INTRO TO OPERATING SYSTEMS	3
CS 424	PRINCIPLES PROGRAMMING LANG	3
CS 300+ Elective course		3
Choose CS courses at the 300 level not listed in required courses. Ex: CS 330, CS 347, CS 371, CS 390		
EH 301	TECHNICAL WRITING	3
Technical Elective		3
Choose any 300+ level or higher course in the College of Science. Ex: IS 400+ course, CPE 412, CPE 436, or PHL 320		
Elective		1
Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credit hours of 100 level HPE courses can count toward degree requirements.		
Term Semester Hours:		16
<b>Spring</b>		
CS 499	SR PROJ:TEAM SOFTWARE DESIGN	3
CS 400+ Elective course		3
CS 400+ Elective course		3
Choose CS courses at the 400+ level not listed in required courses. Ex: CS 403, CS 443, CS 445, CS 453, CS 454, CS 465, CS 487		
Elective		3
Elective		3
Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credit hours of 100 level HPE courses can count toward degree requirements.		
Term Semester Hours:		15
Total Semester Hours:		128