Department of Computer Science Proposal

Bachelor of Arts in Computer Science

- Traditional in-class
- BA vs BS
- Separate EAS admission requirement
- Similar to successful programs at UC Boulder and UC Denver
- Could launch as early as August 2020





Motivation

Computer Science workforce of the future will consist of multiple skill sets

- BSCS: Theory and Science of Computing, Technical Depth, Math Intensive
- BACS: Software Development and Applications, Math through Stats
- IT: Management of Computer Networks, Commonly a 2-3 year program

Target student population

- New Students (UC Boulder major has 1153 students)
- PPPC Cyber students seeking a 4-year degree
- Engineering Intent students (350 in 2019, 646 in 2018)
- Veterans retooling as the enter civilian life
- Dual-Majors



Degree Design (120 credit hours)

- Applications based
- 4 tracks
 - Cybersecurity
 - Artificial Intelligence/Machine Learning (AE/ML)
 - Game Design
 - Computer Science (Selections from each track)
- 12 hours of math: (21 credits of Math for BS)
 - College Algebra (Math 1040) or Calc I (Math 1350)
 - CS2310 Discrete
 - CS2300 Computational Linear Algebra
 - CS2200 Computational Statistics
- Compass Curriculum





Demand

- Bureau of Labor Statistics for CS jobs: 0.8M 2016 to 1.1M in 2026
- 2017 mean salary: \$102k
- Job Searches Indeed.com
 - Computer
 - Software
 - Information Technology
 - Software Engineer
 - Computer Science
 - Software Developer
 - Computer Security

15,436 8,601 4,704 3,716 2,750 4,993

28,278





Similar Programs in the Region

Colorado College Colorado State University Colorado State University Pueblo Colorado Technical College Metropolitan State College of Denver University of Colorado Denver University of Colorado Boulder BA Computer Science BS Applied Computing Technology BS in Information Systems BS in Data Science BS in Computer Information Technology BS in CS+ BA Computer Science (Sp2013 222 students, Sp2019 1152 students)





Revenue (Student Tuition)

By 2024-25 ~150 in-state and 18 GUE out-of-state students and 18 foreign Students for a total of 186 majors (Boulder program would suggest significantly faster growth)

Cost

Initially: 1 GTA (Tuition and pay) in Year 2, 2 GTAs in Year 3.

Later: 1 faculty member and 1 GTA for each 35 new students

Infrastructure

- Currently CS Department has 720 students
- Once BACS hits ~40-60 students we will need to expand computer lab capacity or utilize other UCCS resources for additional students





Proforma

College of Engineering and Applied Science											
Wages & Salaries											
Tenure/Tenure Track (Assistant Professors)		\$	-	\$	-	\$	110,000	\$	226,600	\$	350,097
NTTF (Instructor at equal to or <50% FTE)		\$	-	\$	-	\$	-	\$	82,000	\$	85,000
Benefits at 29.2% Campus Rate (for applicable pos)	\$ -	\$	-	\$	-	\$	32,120	\$	90,111	\$	127,048
University Staff											
Benefits at 36.6% Campus Rate (for applicable pos)	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-
Classified Staff (Administrative Assistant)								\$	50,000	\$	51,500
Benefits at 45% Campus Rate (for applicable pos)	\$ -	\$	-	\$	-	\$	-	\$	22,500	\$	23,175
Lecturer(s)		\$	12,000	\$	40,000	\$	40,000	\$	30,000	\$	12,000
Benefits at 16.8% Campus Rate (for applicable pos)	\$ -	\$	2,016	\$	6,720	\$	6,720	\$	5,040	\$	2,016
Other (GTA)		\$	-	\$	25,750	\$	79,568	\$	109,273	\$	140,689
Student (hourly)											
Subtotal College Expenses		\$	14,016	\$	72,470	\$	268,408	\$	615,524	\$	791,525
Operating Expenses											
Supplies											
Printing/Postage											
Telephones											
Marketing		\$	5,000	\$	5,000	\$	5,000	\$	-	\$	-
Other - Start up and lab couse equipment											
Travel to Professional Meeting											
Library Materials											
Institutional Aid		\$	30,000	\$	62,500	\$	97,500	\$	132,500	\$	157,500
Subtotal Operating		\$	35,000	\$	67,500	\$	102,500	\$	132,500	\$	157,500
Subtotal Home College Expenditures		\$	49,016	\$	139,970	\$	370,908	\$	748,024	\$	949,025
Home college ONE TIME Expenditures-start up funds											
TOTAL Home CollegeExpenditures		\$	49,016	\$	139,970	\$	370,908	\$	748,024	\$	949,025
LAS Major Partner (see Table F)	\$-	\$	-	\$	-	\$	-	\$	-	\$	-
LAS Service Hours (see Table E)		\$	48,319	\$	87,422	\$	117,834	\$	151,364	\$	185,386
LAS ONE Time Expenditures (see Table F)		\$	-	\$	-	\$	-	\$	-	\$	-
TOTAL LAS EXPENDITURES		\$	48,319	\$	87,422	\$	117,834	\$	151,364	\$	185,386
TOTAL ACADEMIC PROGRAM EXPENDITURES	\$ -	\$	97,335	\$	227,392	\$	488,742	\$	899,388	\$	1,134,411
REVENUE		\$	299,112	\$	660,675	\$	1,123,214	\$	1,686,378	\$	2,096,808
REVENUE AFTER DIRECT EXPENDITURES	\$ -	\$	201,777	\$	433,283	\$	634,472	\$	786,990	\$	962,397
Indirect Exp (42.6%, 3 YR S&U avg.)	\$ -	\$	127,422	\$	281,448	\$	478,489	\$	718,397	\$	893,240
NET ACADEMIC PROGRAM EXPENDITURES			74,355		151,835		155,983		68,593		69,157
Total Contribution to Campus	\$ -	\$	74,355	\$	151,835	\$	155,983	\$	68,593	\$	69,157
All Base budget increments only if College & LAS meet a rolling 3-YEAR average of overall fall enrollment targets set by campus in addition to this growth (1)							1 (1)				
Annual Base Budget Increment		\$	97,335	\$	130,057	\$	261,349	\$	410,646	\$	235,023
(1) Students matriculate into the " " College No base budgets will be available and the students matriculate into the "	ailable to LAS or the Colle	ane						1			

















Five generalizations of computing

Discipline	Technical Areas	Primary Academic Names
Business	Data Bases, Spreadsheets, Statistics, Analytics	Information Systems
IT (Information Tech)	Servers, Networks, Maintenance, Security	Computer Technology, Computer Information Systems
Web Sites	Interactivity, Java or HTML Programming	Graphic Design, Computer Information Technology
Engineering	Firmware, Programming, Embedded Software, Controllers, Real Time Systems, Hardware Interface	Computer, Software Electrical, Mechanical, Systems, and Communications Engineering
Computer Science	Programming, Compilers, Software Development, Algorithms	Computer Science Data Analytics Game Design





Bachelor of Science vs Bachelor of Innovation vs Bachelor of Arts*

BS

- Standard in our Industry
- Design and Analysis
- Analytical Depth
- Industry or Graduate School



BI

- Technical Core
- Team Based
- Business and Innovation
- Entrepreneurial



BA

- Applied Degree
- Math through Statistics
- Development
- Industry





Number of Class Sections to be Taught

CS Classes	Freshman	Sophomore	Junior	Senior	Total Sections Needed
Year	3 (CS 1120, 1150, 2150)	4 (1450, 2300, 2060, 2200)	7 (3020, UD-1, Core-2, TR-3)	8 (Core-3, Ele-1, TR-4)	
1	3				3
2	6	4			10
3	6	4	7, cut down to 3.5 by sharing with BS/BI		14
4	9	8	7, cut down to 3.5	8, cut down to 4 by sharing	25
5	9	8	7	8, cut down to 4	28



