Proposal for a

Combined BS + MS Five Year Degree Program in Computational Data Science

January 25, 2026
Proposed by the Faculty of the Computational Data Science Program
University of California, Riverside
Riverside, CA 92521

1. Introduction

The Computational Data Science program proposes a new degree offering that allows students to earn a joint BS/MS through an integrated five-year plan of study. The M.S. in Computational Data Science is offered by the Department of Computer Science and Engineering (within the Bourns College of Engineering). Since Data Science integrates Computer Science, Statistics, and other fields of study, students may develop a stronger interest in the computational aspects and choose to pursue a Master's degree with that emphasis. Therefore, we propose a Combined BS + MS Degree Program that allows students with a BS in Data Science (DS) to earn an MS in Computational Data Science (CDS) in a normative five years. [1]

The proposed program follows the framework established by the UCR Committee on Educational Policy and the UCR Graduate Council in 2007. It is designed to prepare students for careers requiring specialized knowledge in Data Science, and to lay the foundation for pursuing doctoral degrees. This Joint BS+MS program is open to UCR BS in Data Science majors only. In the future, we plan to design BS+MS in Computational Data Science from other B.S. degree pathways.

Participation in the combined degree programs is initiated through an application for admission prior to the student's senior year. Neither the Graduate Division nor the Computer Science and Engineering Department or the Electrical and Computer Engineering Department provide full financial support for students enrolled in the BS+MS program.

Motivation: As noted in the document, "Establishment of Combined Programs at UCR"[2] "Combined programs can better attract top high school graduates, transfer students, and

[1] In parallel, for students earning a BS in Data Science who may develop a stronger interest in Statistics and decide to pursue a Master's degree in Statistics, a separate proposal has been submitted (by our colleagues in Statistics and with the full support of the DS program) for a combined Data Science BS + Statistics MS program. Both these efforts will provide the DS majors with more opportunities for graduate studies.

[2] https://senate.ucr.edu/about/policies/establishment_of_combined_programs_at_ucr.html
alternate link: https://ucr-senate-public.s3.amazonaws.com/committees/10/committee_resource/establishment-of-combined-programs-at-ucr-60df796d88e04-.pdf

returning students, especially those interested in advanced degrees. Thus, UCR departments can expect a higher proportion of good undergraduates. Combined program students will be more inclined to stay at UCR for their Masters studies instead of applying to other institutions. Thus, UCR departments can better retain these students." UC has placed an increased emphasis on attracting transfer students from community colleges and the joint BS+MS program provides a unique opportunity for these students.

In sum, the program should attract top students into both the BS and MS programs.

Method: The MSinCDS is a 49-unit program typically completed in four quarters. The combined BS+MS program allows UCR students to earn both a BS in Data Science and an MS in Data Science in five years. This is accomplished by:

- Allowing up to 8 units (two 4-unit courses) of graduate coursework taken as an undergraduate Data Science major, to apply toward the MSinCDS degree. These two graduate courses will also be counted toward satisfying the BSinDS elective requirements.
- Furthermore, UCR DS students in the B.S.+M.S. program are not required to take the Data Science Ethics (CS/STAT 212) core course, as they already satisfy this requirement by taking the undergraduate equivalent, CS/STAT108 (which is a core course for the Data Science major). As per the UCR catalog, "Credit is awarded for one of the following CS/STAT 108, CS/STAT 212". As a result, students that complete CS 108/STAT 108 as a UCR undergraduate must complete 45 vs 49 credits to finish the MSinCDS degree.

Relation to existing programs. The combined BS+MS program involves no new courses.

Contributions to diversity. Since the new program will allow well prepared students to obtain a master degree within one year after they obtain a B.S. degree, it can help reduce their financial burden and therefore attract more underrepresented students who are usually from low-income families. For example, we plan to recruit more students from community colleges, who transfer to UCR and then complete the BS+MS program, and encourage underrepresented students to apply to our BS+MS program. Student clubs from the pathway major such as Association for Computing Machinery, Society for Women Engineers, Women in Computer Science, Highlander Statistics Society, Data Science Society, Statistics GSA and Mu Sigma Rho will also help us recruit and retain the underrepresented students by investing in each student's success, sense of belonging, and cultural competency. The above diversity goals for students can be measured by the broader demographics of eligibility pools, applicants, and enrollments, improved graduation rates and time to graduation for disadvantaged groups, and 2nd-year retention rates.

Interrelation with other UC institutions. The proposed program would be unique among Data Science programs nationally. Consequently, beyond making the respective BS and MS programs more attractive, the program does not directly compete nor interrelate with other UCR or UC

programs or institutions. It may indirectly recruit top students into the UCR (or other UC) data science and computing PhD programs via the MS program.

Department that will administer the program. The BS portion will be administered by the Department of Computer Science and Engineering (within the Bourns College of Engineering), and the Department of Statistics (within the College of Natural and Agricultural Sciences). The MS portion will be administered by the Department of Computer Science and Engineering and the Department of Electrical and Computer Engineering.

Timetable for development. The new program will start for the Fall 2026 entry term. Existing students in the BSinDS major will be allowed to apply for the BS+MS provided that they have taken the two graduate elective courses by their senior year.

Historical development of the field. There is a strong and consistent demand for data scientists across private industry, government, institutional services, and research sectors. According to the Bureau of Labor Statistics, employment for data scientists is projected to grow by **36%** by 2033. Many of these roles require applicants to hold a master's degree in data science, computer science, or a related field. As a result, the job prospects for M.S. graduates in Computational Data science remain exceptionally favorable, driven by the increasing need for expertise in data analytics, machine learning, and artificial intelligence across a wide range of industries.

Plan for evaluation of the program. The effectiveness of the program will be evaluated by monitoring the extent to which it increases the quality of students in the Data Science BS and Computational Data Science MS programs. The metrics of evaluation will include GPA, graduation rates, job placement, and acceptance to advanced degree programs.

2. Program

Admission Criteria. The proposed 5-year combined BS + Computational Data Science MS program will have two time frames for admission, one of which is for conditional admission: 1) preliminary conditional admission as an incoming lower division student, and 2) admission as a senior meeting admission criteria. We propose to offer outstanding freshmen in the Data Science major the opportunity to apply for preliminary (conditional) admission into the combined BS + Computational Data Science MS program based on their undergraduate admission qualifications. This can serve as a recruiting tool as well as increase participation in the DS major. Official admittance (application via the graduate division) would still require meeting the course and GPA criteria and satisfactory progress in the undergraduate major.

Preliminary Conditional Admission Criteria (High School applicants)

- High School GPA >3.6
- Satisfy Entry-Level Writing requirement prior to matriculation

- Sufficient math preparation to enroll in calculus upon arrival
- Seeks Preliminary Conditional Admission Criteria (BS) as a senior undergraduate

Preliminary Conditional Admission Criteria (DS major – apply in the beginning of the senior year)

- Overall GPA of 3.4 or higher
- A preliminary "core" course GPA of 3.2 in at least three of the following five "core" requirements with no grade less than a B-: (1) CS 100, (2) CS 141, (3) MATH 031 (or EE 020B), (4) MATH 010A, (5) STAT 155 or EE 114 or STAT 156A (or equivalent)
- Pursuing a major in Data Science
- One letter of recommendation from a UCR faculty member in their program

Matriculation into the combined program occurs in the Fall term following senior year, provided:

- Enrolled in the UCR Data Science Major
- Overall GPA 3.4 or higher
- A final "core" course GPA of 3.2 in the following five "core" requirements with no grade less than a B-: (1) CS 100, (2) CS 141, (3) MATH 031 (or EE 020B), (4) MATH 010A, (5) STAT 155 or EE 114 or STAT 156A (or equivalent)
- By the end of senior year, the student completes the DS B.S. degree requirements.

To complete the BS+MS in five years, it is strongly recommended that students complete two graduate courses selected from the MSinCDS elective list A or B, by the end of the senior year (these two courses will be counted towards the electives in the BSinDS and the electives in the MSinCDS).

Combined BS + Computational Data Science MS Degree Requirements.

The existing Computational Data Science MS requires a total of 49 units. More specifically, to earn the Computational Data Science MS degree, students must earn 20 units of **Core** Courses (CS 252A/EE 251A, CS 252B/EE 251B or CS 224/EE242A, CS 226 or CS 236, CS 235, CS/STAT 212) and 24 units of Elective Courses. At least four of the **electives** must be taken from Elective List A (CS 205, CS222, CS 225, CS 226 or CS 236, CS 227, CS/EE 228, CS 229/EE242B, CS 242, CS/EE 248, EE227/CS258, EE 231, EE 236, EE240, EE 244, EE 268, EE269) and the remaining two **electives** can be from Elective List B (CS 210, CS 211, CS/EE 217, CS 234, EE 241, EE 243, EE 250, EE267). In addition, there are 4 units of Capstone Experience (CS/EE 279) and 1 unit of Professional Development (typically satisfied by attending a weekly seminar (CS287) for one quarter).

To facilitate the BS+MS 5-year program, students from the UCR Data Science B.S. will need to take 45 units for the M.S. in Computational Data Science as they satisfy the CS/STAT 212 (Data Science Ethics) requirement by having taken CS/STAT108 (Data Science Ethics) which is a core course for the Data Science major (according to the catalog credit is awarded for one of the CS/STAT 212 and CS/STAT 108). In addition, students in the UCR Data Science Major can take two graduate courses from the above elective List A or List B and count them as electives toward the M.S. in Computational Data Science electives; these graduate courses will also be

counted towards the elective requirements in the Data Science B.S. For the BS+MS students, these two elective graduate courses must be earned prior to matriculation to graduate status. During the MS portion of the program, students must maintain a GPA of at least 3.0 for all coursework. If the GPA falls below 3.0, they may be dropped from the program.

Sample Combined BS + Computational Data Science MS Degree Program. The following table outlines a sample program for students in the proposed combined Data Science BS + Computational Data Science MS program. In the example below, CS/STAT 108 is counted towards the CS/STAT 212, while CS226 and CS205 are counted towards both BSinDS and MSinCDS electives.

Sample Joint Data Science BS/ MS in Computational Data Science Course Plan

	FALL	**WINTER**	**SPRING**
1ST YEAR	CS 010A (4) ENGL 001A (4) MATH 009A (4) H/SS Breadth (4) 16 UNITS	CS 010B (4) ENGL 001B (4) MATH 009B (4) H/SS Breadth (4) 16 UNITS	CS 010C (4) MATH 009C (4) Physical Sci Breadth (5) 13 UNITS
2ND YEAR	CS 100 (5) MATH 031 (5) STAT 010 (5) Bio Sci Breadth (4) 19 UNITS	MATH 010A (4) CS/MATH 011 (4) STAT 011 (5) Nat Sci Breadth (5) 18 UNITS	CS 105 (4) CS 111 (4) Nat Sci Breadth (5) 13 UNITS
3RD YEAR	STAT 156A (4) CS 141 (4) STAT 107 (4) H/SS Breadth (4) 16 UNITS	STAT 156B (4) CS 166 or CS 167 (4) **CS/STAT 108 (4)** H/SS Breadth (4) 16 UNITS	STAT 167 or CS171/EE142 (4) STAT 169 (4) H/SS Breadth (4) 12 UNITS
4TH YEAR	STAT 170 (4) Application Course Seq. (4) DS Technical Elective (4) ENGL 001C or ENGR 180W (4) 16 UNITS	Application Course Seq. (4) H/SS Breadth (4) ***CS 226 (4)*** 12 UNITS	STAT 183 or CS 179 (E-Z) (4) DS Technical Elective (4) ***CS 205 (4)*** 12 UNITS
5TH YEAR (MS)	CS252A/EE251A (4) CS226 or CS236 (4) MS Elective (4) CS287 (1) 13 UNITS	CS 224 (4) MS Elective (4) MS Elective (4) 12 UNITS	CS 235 (4) CS/EE 279 (4) MS Elective (4) 12 UNITS

Normative time from matriculation to degree. Five years.

Catalog entry (appears under the Master in Computational Data Science Degree program)

Combined B.S. + M.S. Five-Year Program

BCOE offers a combined five-year B.S. + M.S. program in Computational Data Science. The program is designed to allow successful UCR Data Science B.S. graduates to also complete the Master of Science degree in Computational Data Science in one extra year.

Students from the UCR Data Science major will take 45 units to complete the M.S. in Computational Data Science using CS/STAT 108 from the B.S. program to satisfy the CS/STAT 212 requirement for the M.S. program. Further, they may take two graduate courses from the M.S. elective List A or List B and also count them as electives in the B.S. program.

Data Science B.S. students may apply at the beginning of their senior year to the Computational Data Science M.S. program if they meet the following admission requirements:

- a cumulative GPA of at least 3.4
- completion of at least three of the following “core” courses with a GPA of 3.2 and no course with a grade less than B-: (1) CS 100, (2) CS 141, (3) MATH 031 (or EE 020B), (4) MATH 010A, (5) STAT 155 or EE 114 or STAT 156A (or equivalent).

The application to the M.S. program must include at least one recommendation letter from a UCR Academic Senate faculty member in their program. GRE scores are recommended but not required.

Matriculation into the combined program occurs in the Fall term following senior year, provided: (a) the M.S. application is accepted, (b) throughout the senior year, the student is in the Data Science major with cumulative GPA of at least 3.4, (c) no grade less than a B- and average grade at least 3.2 in all five “core” requirements listed above prior to matriculation into the program, (d) by the end of senior year, the student completes the B.S. degree requirements.

To complete the BS+MS in five years, it is strongly recommended that students complete two graduate courses selected from the MSinCDS elective list A or B, by the end of their senior year (these two courses will be counted towards the electives in the BSinDS and the electives in the MSinCDS).

Incoming students who are applying to the Data Science B.S. program may simultaneously apply for preliminary admission into the combined program (B.S. + M.S. in Computational Data Science) if their high school GPA is at least 3.6, they satisfy the Entry Level Writing requirement, and they have sufficient math preparation to enroll in calculus their first term at UCR. Preliminary admission status is maintained provided the student is in good standing in the major with a cumulative GPA of at least 3.4. Preliminarily admitted students still need to follow the formal application steps listed above in their senior year to confirm and complete admission to the joint B.S. + M.S. in Computational Data Science program.

3. Projected Need, resource requirements, student support

This combined program is primarily a recruitment tool, intended to leverage the increasing interest in graduate education and attract top UC Riverside BS in Data Science students into the Computational Data Science MS program.

For the DS majors, the prospect of completing both the BS in Data Science and the MS in Computational Data Science in a total of five years should attract students that are highly motivated and more likely than average to make it through the program. Further, we expect that the opportunity of earning a combined BS/MS in three years will be highly attractive to *community college transfer students* as well. Enrollment of community college students has recently become an urgent priority for the University of California. Combined with ongoing increases in admissions standards, this should increase both retention and the overall quality of the students.

In the MS program, we anticipate growth in combined-program enrollment initially of only a few students per year (a dozen or so). There would be no expectation of support for the participants in the combined BS/MS program. In addition, if at some point in the future, funding opportunities emerge from campus, college, department, or Graduate Division sources for MS students, then fifth-year BS/MS students would be eligible. One example could be available Reader or Teaching Assistantship positions. Each student accepted into the combined program is likely to be near the top of the applicant pool. If a student decides to continue on for a Ph.D., then full support packages would be provided.

In short, the main effect of the program should be to increase the quality and diversity of students in the Data Science BS and Computational Data Science MS programs, and achieve a modest increase in enrollment levels. Similarly, it should increase the employability of students produced by the BS and MS programs, and help meet the increasing demand for Data Science students with graduate degrees.

Resources

Note that each student in the combined program is essentially just a regular student (in the BS program, or, in fifth year, in the MS program), and requires the same resources as a regular student at the same level. Also, because of the highly selective nature of the admissions requirements, BS and MS enrollments will be modestly affected, at least initially. Therefore, the program requires no change in faculty, courses, or resources such as library, computing, equipment, space, etc. Likewise, the program requires no change in levels or mechanisms for student funding.

The program does require minor administrative support. During the BS portion of this program, students will be advised by either the CNAS Undergraduate Academic Advising Center or the BCOE Undergraduate Academic Advising Center as normal for pursuance of a BS in the Data

Science major. The administration of the program at the undergraduate level requires processing applications for preliminary acceptance, tracking preliminarily enrolled students, and identifying and informing students who will be eligible to apply at the end of their junior year. The administrative functions for admission to the Computational Data Science Graduate program are already performed by the department Graduate Admission Committee; this committee will also be responsible for administering this BS/MS program with continued support from BCOE Graduate Student Advising, which will have to track which MS students are in the combined program and account for the double-counting allowance.

Finally, only to the extent that existing resources allow, BS students with "preliminary conditional admission" status will be given additional advising appropriate for MS-bound students.

4. Changes in Senate Regulations

No changes in Senate regulations are required.

5. Implementation timeframe

We expect the new program will be open for application in May 2026 and start accepting students for the Fall 2026 entry term.

This proposal was approved by the MS in Computational Data Science faculty on January 25, 2026.

Submitted by:
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Director of the MS in Computational Data Science
co-Director of the BS in Data Science

April 30, 2026

TO: Ken Barish, Chair
Riverside Division of the Academic Senate

FROM: Evangelos (Vagelis) Christidis, Chair
BCOE Executive Committee

RE: Combined BS + MS Five Year Degree Program in Computational Data Science

The BCOE Executive Committee voted by email on April 30th, 2026. The committee approves the Combined BS + MS Five Year Degree Program in Computational Data Science.