UC RIVERSIDE

Academic Senate
Professor Kenneth Barish
Division Chair

December 5, 2025

Katherine S. Newman
Provost, University of California

Ahmet Palazoglu
Chair, Academic Council

Partho Ghosh
Chair, Coordinating Committee on Graduate Affairs

Re: Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program

On December 2, 2025, Riverside Division of the Academic Senate approved the proposal for a Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program. Per the UC Compendium, attached is the subject proposal to the attention of UC Provost Newman, Academic Council Chair Palazoglu, and the Systemwide Coordinating Committee on Graduate Affairs (CCGA) via CCGA Chair Ghosh.

Kenneth Barish, Riverside Senate Division Chair

S. Jack Hu, Riverside Chancellor

Encl.

Cc: Academic Planning & Policy Analyst Procello
Systemwide Senate Associate Director Labriola -Academic Council
Systemwide Senate Analyst Harms - CCGA
Riverside Senate Director Cortez
Riverside Associate Director Miller - GC
Riverside Senate Analyst Beatty - CEP

Received 6/24/2025
Academic Senate

To Division
10/27/2025

Approved by the Division
12/2/2025

UC RIVERSIDE

Academic Senate

EXECUTIVE COUNCIL
Kenneth Barish, Chair

October 31, 2025

To: Riverside Division

From: Ken Barish, Chair, Executive Council

Re: 2nd Round Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program

Executive Council, with no additional comments, endorsed the 2nd Round Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program proposal for inclusion on the Fall 2025 Division meeting agenda.

UC RIVERSIDE Academic Senate

COMMITTEE ON EDUCATIONAL POLICY

October 3, 2025

To: Ken Barish, Chair
Riverside Division

From: Annie Ditta, Chair
Committee on Educational Policy

Re: Second Round Review of Proposed B.S. + M.S. in Mathematics (Applied) Five Year Combined Degree Program

The Committee on Educational Policy (CEP) reviewed the revised proposal for the B.S. + M.S. in Mathematics (Applied) Five Year Combined Degree Program at their October 3, 2025 meeting and voted to support the proposal. However, the Committee recommends that the application process section be clarified for students so that the timing of admissions is clear (i.e., end vs. beginning of June). The Committee also recommends that the program be clearly advertised to students early, so that they may be able to plan for the higher courseload that the program requires immediately in the first year.

UC RIVERSIDE

Academic Senate

GRADUATE COUNCIL

October 16, 2025

To: Kenneth Barish, Chair
Riverside Division

From: Viji Santhakumar, Chair
Graduate Council

RE: [Campus Review] (Proposed Degree Program) (2nd Round) Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program

Graduate Council reviewed and discussed the proposal for a BS+MS in Mathematics Five Year 4+1 Combined-Degree Program at their October 16, 2025 meeting. Graduate Council approved the proposal.

Received 6/24/2025
Academic Senate

B.S. + M.S. in Mathematics (Applied)
Five Year (4+1) Combined-Degree Program

Proposed by the Faculty of the Mathematics Department,
College of Natural and Agricultural Sciences
University of California, Riverside, CA 92521

Catalog entry: The College of Natural and Agricultural Sciences offers a combined B.S. + M.S. program in Mathematics (Applied), enabling eligible graduates from the B.S. programs in Applied Mathematics or Computational Mathematics to complete an M.S. in Mathematics (Applied) with just one additional year of study.

Application Eligibility and Process Overview

Eligibility Criteria: To apply to the joint degree program, applicants must meet the following requirements: a cumulative GPA of at least 3.4 across all courses and a GPA of at least 3.2 in all mathematics, science, and engineering courses. Additionally, applicants must be on track to complete their undergraduate degree within four years. Meeting these minimum requirements does not guarantee admission.

Interest Form: Before applying, students are required to submit an interest form for the B.S. + M.S. program. This form helps identify any areas needing attention to ensure eligibility. Submitting the form as early as possible is recommended, as it allows more time to address any potential gaps in eligibility.

Application Process: Students must apply internally through the Mathematics Department before the start of their senior year (4th year), with a deadline of July 15. The application requires an online form, a transcript, and at least two letters of recommendation. A recruitment committee will review all applications based on academic performance, letters of recommendation, and alignment with program objectives, and students who meet these criteria will be granted admission. After being admitted, students must then apply for the M.S. portion of the program through the Graduate Division by June 1 of the following year (5th year). Matriculation into the graduate portion of the combined degree program in the fall following their senior year requires students to (1) have their M.S. application accepted, (2) maintain a cumulative GPA of 3.0 or higher throughout their final undergraduate year, and (3) complete all B.S. degree requirements by the end of their senior year. Students with strong academic records may be admitted with limited coursework deficiencies.

Program Requirements

For detailed program requirements, please refer to the **2024-25 University of California, Riverside General Catalog**, which includes information on the Breadth Requirement (page 94, in a table called College of Natural and Agricultural Sciences Breadth Requirement Unit Summary), the Natural Sciences requirement (page 476, under the section Major Requirements for the Bachelor of Arts and Bachelor of Science in Mathematics), Major Requirements for Bachelor of Science in Mathematics (page 476), Applied Mathematics programs (page 476), Computational Mathematics program (page 476), and M.S. in Mathematics (Applied) (page 477). Please note that these requirements are specific to the 2024-25 catalog and are subject to change in future editions. For the most current information, visit https://registrar.ucr.edu/registering/catalog.

Double counting is not allowed. Units applied to an undergraduate degree cannot also be counted towards a graduate degree. However, a UC campus can allow a portion (no more than half) of the required graduate degree credits to be taken by the student while an undergraduate at that campus.

Recommendations Specific to the 4+1 Program: While not mandatory prerequisites for matriculation into the graduate portion of the program, CS 100 and CS 111 are foundational courses that strongly support success in the 4+1 program. Similarly, MATH 135A, MATH 149A, and MATH 149B are highly recommended to provide essential preparation. Additionally, taking MATH 297 (Directed Research) is recommended but not required, as it offers valuable research experience that can enhance understanding and expertise in the field.

A sample course plan is included below, outlining core and elective courses available. This plan is designed to help students complete their degree efficiently while allowing flexibility to tailor their studies to specific interests within the field.

Sample Course Plan

	FALL	WINTER	SPRING
1st year	MATH 009A (First-Year Calculus 4) CS 010A (Introduction to Computer Science For Science, Mathematics, and Engineering I 4) ENGL 001A (Beginning Composition 4) (Humanities or Social Sciences Breadth 4) 16 UNITS	MATH 009B (First Year Calculus 4) CS 010B (Introduction to Computer Science For Science, Mathematics, and Engineering II 4) CS 011 (Introduction to Discrete Structures 4) ENGL 001B (Intermediate Composition 4) 16 UNITS	MATH 009C (First Year Calculus 4) CS 010C (Introduction to Data Structures and Algorithms 4) MATH 110 (An Introduction to Mathematical Proofs 4) ENGL 001C (Applied Intermediate Composition 4) 16 UNITS
2nd year	MATH 031 (Applied Linear Algebra 5) STAT 010 (Introduction to Statistics 5) CS 100 (Software Construction 5) BIOL 002 (Cellular Basis of Life 4) 19 UNITS	MATH 010A (Calculus of Several Variables 4) MATH 131 (Linear Algebra I 4) CS 111 (Discrete Structures 4) BIOL 003 (Organisms in Their Environment 4) 16 UNITS	MATH 010B (Calculus of Several Variables 4) MATH 046 (Introduction to Ordinary Differential Equations 4) STAT 011 (Introduction to Statistical Modeling 5) BIOL 005A (Introduction to Cell and Molecular Biology 4) 17 UNITS

3rd year	MATH 146A (Ordinary and Partial Differential Equations 4) MATH 149A (Probability and Mathematical Statistics 4) MATH 135A (Introduction to Numerical Analysis 1 4) PHYS 040A (General Physics 5) 17 UNITS	MATH 146B (Ordinary and Partial Differential Equations 4) MATH 149B (Probability and Mathematical Statistics 4) MATH 168 (Introduction to Mathematical Modeling 4) (Humanities or Social Sciences Breadth 4) 16 UNITS	MATH 146C (Ordinary and Partial Differential Equations 4) CS 171 / EE 142 (Introduction to Machine Learning and Data Mining 4) MATH 120 (Optimization 4) (Humanities or Social Sciences Breadth 4) 16 UNITS
4th year	MATH 206A (Theory of Probability 4) MATH 151A (Foundations of Real Analysis I 4) MATH 161a[1] (Mathematical Foundations of Machine Learning 4) (Humanities or Social Sciences Breadth 4) 16 UNITS	MATH 206B (Numerical Analysis 4) MATH 151B (Foundations of Real Analysis II 4) MATH 161b[2] (Mathematical Foundations of Deep Learning 4) (Humanities or Social Sciences Breadth 4) 16 UNITS	MATH 206C (Methods in Applied Mathematics 4) MATH 161c[2] (Mathematical Foundations of Artificial Intelligence 4) MATH 163 (Applied Dynamical Systems 4) (Humanities or Social Sciences Breadth 4) 16 UNITS
5th year (M.S.)	MATH 297 (Directed Research 4) MATH 207A (Ordinary Differential Equations 4) STAT 107 (Introduction to Statistical Computing With R 4) CS 170 (Introduction to Artificial Intelligence 4)	MATH 297 (Directed Research 6) MATH 207B (Partial Differential Equations I 4) STAT 108 (Data Science Ethics 4) MATH 401 (Professional Development in Mathematics 2)	MATH 297 (Directed Research 4) MATH 207C (Partial Differential Equations II 4) STAT 167 (Introduction to Data Science 4) CS 173 (Introduction to Natural Language Processing 4)

[1] Math 161 is pending approval to change to Math 161A

[2] Math 161B and 161C are new courses and are pending approval.

	16 UNITS	16 UNITS	16 UNITS

UC RIVERSIDE

Academic Senate
Professor Kenneth Barish
Division Chair

May 9, 2025

To: James Kelliher, Chair, Department of Mathematics

Margarita Roman, Student Services Supervisor, Department of Mathematics

From: Ken Barish, Chair, Academic Senate

RE: **Proposed Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program**

Dear James and Margarita,

I am writing to provide feedback on the proposed Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program. The proposal was reviewed by the Committee on Courses, the Committee on Educational Policy (CEP), the Committee on Planning and Budget (CPB), and the Graduate Council. CPB and Courses were fully in favor of the proposal. CEP was supportive though they made recommendations about the program.

The proposal is being returned so that it can be revised in consideration of all the feedback received. Importantly, I draw your attention to the Graduate Council's comment regarding the new systemwide policy that does not allow double counting. I have attached related information regarding double counting credits for your reference. It is my understanding that both the CCGA handbook and potentially the Compendium will soon reflect this policy more clearly. In the coming days, this information will be posted as a resource on the Graduate Council's webpage and shared with relevant campus colleagues.

Should a revised proposal be drafted, it should be sent to me via barish@ucr.edu with a courtesy copy to Senate Director Cherysa Cortez at cherysac@ucr.edu. Please indicate "[New Business]" in the subject line.

Best regards,

Ken Barish, Chair
Academic Senate

Cc: CNAS FEC Chair Tom
CNAS FEC Liaison Lizardi
Senate Analyst Beatty
Senate Analyst Miller
Senate Director Cortez

Attachment

UC RIVERSIDE

Academic Senate

GRADUATE COUNCIL

April 24, 2025

To: Kenneth Barish, Chair
Riverside Division

From: Viji Santhakumar, Chair
Graduate Council

RE: [Campus Review] (Proposed Degree Program) Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program

Graduate Council reviewed the proposed new Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program at their April 17, 2025 meeting. Graduate Council cannot approve this proposal as written due to new systemwide policies that do not allow for double-counting of courses in 4+1 programs. Additionally, systemwide requires that the master's requirements in a 4+1 program be the same as the stand-alone master's program requirements or it is considered an entirely different program. Please revise the proposal to remove all double counting, revise the requirements so they match those of the stand-alone master's program, and resubmit your proposal for reconsideration.

UC RIVERSIDE Academic Senate

COMMITTEE ON EDUCATIONAL POLICY

April 22, 2025

To: Ken Barish, Chair
Riverside Division

From: Stephen Kane, Vice Chair
Committee on Educational Policy

Re: Proposed B.S. + M.S. in Mathematics Combined Degree Program

The Committee on Educational Policy (CEP) reviewed the proposal for a B.S. + M.S. in Mathematics at their April 4, 2025 meeting. The Committee voted to support the proposal with the recommendation that a timeline be developed for students for both the application process and the projected progress through the curriculum. The Committee also recommends that the program provide greater clarity for when students can apply for the M.S. portion of the degree.

UC RIVERSIDE

Academic Senate

PLANNING AND BUDGET

April 16, 2025

To: Kenneth Barish, Chair
Riverside Division

From: Juliann Allison, Chair
Committee on Planning and Budget

RE: [Campus Review] Proposed Degree Program: *Bachelor of Science + Master of Science in Mathematics (Applied) Five Year (4+1) Combined-Degree Program*

At our meeting on April 8, 2025, the Committee on Planning and Budget (CPB) reviewed the proposal for CNAS to offer a combined B.S. + M.S. program in Mathematics (Applied), enabling eligible graduates from the B.S. programs in Applied Mathematics or Computational Mathematics to complete an M.S. in Mathematics (Applied) with just one additional year of study. CPB is generally supportive of the proposed degree program and has no comments.

UC RIVERSIDE Academic Senate

COMMITTEE ON COURSES

April 29, 2025

To: Ken Barish, Chair
Riverside Division

From: Erin Rankin, Chair
Committee on Courses

Re: Proposed B.S. + M.S. in Mathematics

The Committee on Courses reviewed the proposal for a B.S. + M.S. in Mathematics at their April 24, 2025 meeting and were generally supportive of the proposal.

Double counting credits

Undergraduate/Graduate Hybrid Degree Programs

Section II.A.1 of the section on Undergraduate/Graduate Hybrid Programs in the Compendium has the phrase that "programs require particular attention to double-counting of units". We were tasked with making this phrase less ambiguous. To that end, we researched existing policy[1] and offer the following text for consideration:

Double counting is not allowed. Units applied to an undergraduate degree cannot also be counted towards a graduate degree. However, a UC campus can allow a portion (no more than half) of the required graduate degree credits to be taken by the student while an undergraduate at that campus.

Dual Degree Programs

The CCGA's Handbook (*Appendix W - Consideration in CCGA's Review of Dual Degree Proposals) states:

"A **dual degree program** is a program of study offered collaboratively by two institutions that leads to the award of two **separate degrees from each of the participating institutions.** "

"CCGA encourages proposers to follow WASC guidance …"

"WASC requirements for dual degrees:

2) No more than 25% of the course credits being offered at the graduate level may be double-counted or overlapping between the two institutions."

As the phrase "25% of the course credits being offered" is not sufficiently specific, we suggest the following text for inclusion in the guidelines:

Of the total course credits used to satisfy the requirements for a graduate level dual degree program, no more than 25% may be double counted or overlapping between the two institutions. These double counted course credits should be used for degree requirements which are similar between the two participating degree programs and must be approved as such by a mechanism set by the dual degree program.

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[1] Perusal of websites shows that UCSD, Berkeley, UCLA Engineering, UCSB explicitly disallow double counting of a course towards both graduate and undergraduate degree credits. UCR (at least Engineering) appears to allow double counting, e.g., 12 units of undergraduate course work by the CS department.

Received 2/29/2025
Academic Senate

B.S. + M.S. in Mathematics (Applied)
Five Year (4+1) Combined-Degree Program

Proposed by the Faculty of the Mathematics Department,
College of Natural and Agricultural Sciences
University of California, Riverside, CA 92521

Catalog entry: The College of Natural and Agricultural Sciences offers a combined B.S. + M.S. program in Mathematics (Applied), enabling eligible graduates from the B.S. programs in Applied Mathematics or Computational Mathematics to complete an M.S. in Mathematics (Applied) with just one additional year of study. Students may apply up to 12 units required for the M.S. degree toward both the B.S. and M.S. degrees, allowing these units to count for both programs.

Application Eligibility and Process Overview

Eligibility Criteria: To apply to the joint degree program, applicants must meet the following requirements: a cumulative GPA of at least 3.4 across all courses and a GPA of at least 3.2 in all mathematics, science, and engineering courses. Additionally, applicants must be on track to complete their undergraduate degree within four years. Meeting these minimum requirements does not guarantee admission.

Interest Form: Before applying, students are required to submit an interest form for the B.S. + M.S. program. This form helps identify any areas needing attention to ensure eligibility. Submitting the form as early as possible is recommended, as it allows more time to address any potential gaps in eligibility.

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Approved by the CNAS Faculty Executive Committee on 2/28/25.
Approved by the department faculty on 11/18/24

[1] Math 161 is pending approval to change to Math 161A
[2] Math 161B and 161C are new courses and are pending approval.