



November 12, 2020

To: Jason Stajich, Chair
Graduate Council

From: James Borneman
Professor and Vice Chair, Department of Microbiology and Plant Pathology

Re: Proposed Joint Microbiology BS/Microbiology MS Five-Year Combined Degree Program.

The Department of Microbiology and Plant Pathology is proposing a new degree program that allows students to obtain both a BS and an MS degree in Microbiology through an integrated 5-year plan of study. The justification is that many UCR MS programs require up to twelve units of preparatory undergraduate coursework that may be necessary for undergraduates from other institutions but redundant for undergraduates coming from an appropriate UCR program. Students in the combined BS+MS program will receive the requisite background in their undergraduate curriculum.

Sincerely,

James Borneman
Professor and Vice Chair, Department of Microbiology and Plant Pathology

PROPOSAL FOR A JOINT Microbiology BS / Microbiology MS Five-Year Combined-Degree Program

October 2020

Proposed by the Faculty of
Microbiology Major and Microbiology Graduate Program
College of Natural and Agricultural Sciences
University of California, Riverside
Riverside, CA 92521

1. INTRODUCTION

The Department of Microbiology and Plant Pathology is proposing a new degree program that allows students to obtain both a BS and an MS degree in Microbiology through an integrated 5-year plan of study. The proposed program is within the framework established by UCR's Committee on Educational Policy and the UCR Graduate Council in 2007. This program prepares students for careers that require knowledge of microbiology and for pursuing subsequent medical or doctoral degrees. The Joint BS+MS Program is open to UCR Microbiology undergraduates only.

Participation in the joint degree program is initiated through an application for admission prior to the students' senior year. There are two options: (i) **Thesis** and (ii) **Comprehensive Exam**. Students interested in the Thesis option should begin identifying potential research labs by the end of their junior year. This would allow students to begin thesis research early in their senior year by taking Microbiology research units (MCBL 197). The Graduate Division and the Department of Microbiology do not provide financial support for students enrolled in this program.

Motivation: Quoting from the document "Establishment of Combined Programs at UCR"¹ "Combined programs can better attract top high school graduates, transfer students, and returning students, especially those interested in advanced degrees. Thus, UCR departments can expect a higher proportion of the best 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.

¹Online at http://senate.ucr.edu/about/policies/establishment_of_combined_programs_at_ucr.pdf.

Method for the Thesis Option: To make it possible to complete both degrees in five years for the **Thesis Option** – but not for the **Comprehensive Exam Option** – the combined programs will allow up to 12 units of upper division 100 level MCBL electives, which were used for the undergraduate degree, to be double-counted and therefore used for the MS degree as well.

The justification is that many UCR MS programs require up to twelve units of preparatory undergraduate coursework that may be necessary for undergraduates from other institutions but redundant for undergraduates coming from an appropriate UCR program. Students in the combined BS+MS program will receive the requisite background in their undergraduate curriculum.

Relation to existing programs. These new programs will complement the existing Plan I Thesis MS program in the Microbiology graduate program, whose applicant pool is almost entirely comprised of students who received their undergraduate degrees elsewhere. As the primary motivation for the program is simply the recruitment of top students, the program involves no new courses or requirements.

Department that will administer the program. The BS and MS portions of the program will be administered by the Department of Microbiology and Plant Pathology in the College of Natural and Agricultural Sciences.

Timetable for development. Based on the levels of participation in the Microbiology BS program over the 2012-2020 period, we expect approximately 3-12 students to participate in the joint BS+MS program per year.

Historical development of the field. There is a consistent strong demand for individuals with BS and MS degrees in Microbiology in private industry, education, government and institutional service, as well as research across a range of fields. Individuals with additional experience in the lab and classroom are highly suited for these positions and are highly sought after for their ability to adapt to rapidly changing work environments. However, many of these positions do not require the extensive training provided by the Ph.D. For example, a recent USDA report estimates are that only 61% of the expected openings in agriculture, food, renewable natural resources, or the environment will be filled due to a paucity of students graduating with degrees in these areas (Goecker et al 2015)². Students with a BS and MS in Microbiology would be excellent candidates to fill these positions. Thus, demand for, and awareness of, graduate-level training is increasing, making it a good time to leverage interest in the MS program and to facilitate entry into it.

²Goecker, AD, E. Smith, JM Fernandez, R Ali, and R Goetz. 2015. *Employment Opportunities for College Graduates in Food, Agriculture, Renewable Natural Resources, and the Environment United States, 2015-2020*. <https://www.purdue.edu/usda/employment/> (Accessed 3 Nov 2017)

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 BS and 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 joint BS+MS program in Microbiology will have two timeframes for admission, one of which is for conditional admission: 1) preliminary conditional admission as an incoming lower division student, and 2) admission as a junior meeting admission criteria. The Department of Microbiology and Plant Pathology proposes to offer outstanding freshman the opportunity to apply for preliminary (conditional) admission into the joint BS+MS program in Microbiology based on their undergraduate admission qualifications. This can serve as a recruiting tool as well as increase participation in the program. Official admittance would still require meeting the course and GPA criteria and satisfactory progress in the undergraduate major.

Preliminary Conditional Admission Criteria

- Intent to enroll in the UCR Microbiology Program
- High School GPA > 3.6
- UCR will stop using SAT and ACT for undergraduate admission. Replacements will be things like high school A-G course scores and AP course scores. We obtained this information from UCR's Committee on Undergraduate Admissions. We will stay in contact with them to have our admission criteria similar to the campus criteria.

Official Admission Criteria

- Enrolled in the UCR MS Program
- 3.3 GPA in major (upper division classes only, minimum of 11 units to be completed by the end of junior year)
- 3.0 GPA overall³

³*Transfer students would need to have a combined overall GPA (UCR and prior institution) of 3.0.*

Thesis Option. Prospective BS+MS students will be performing research to complete their thesis. Students are responsible for selecting an eligible faculty member to serve as their thesis advisor. At the time of application, students must provide written commitment by the proposed mentor that they will serve as the thesis advisor and that they will not be on sabbatical leave for more than two quarters of the scheduled BS+MS project.

Eligible faculty mentors include any faculty within the Department of Microbiology and Plant Pathology, Microbiology Undergraduate Program, or Microbiology Graduate Program (Professor Emeritus, Distinguished Professor, Professor, Associate Professor, Assistant Professor, Cooperative Extension Specialist) or faculty with cooperating faculty status in the Microbiology Graduate Program and/or the Microbiology and Plant Pathology Department. If the proposed research member does not fall into one of these categories, the student will need to have a PI from one of these categories serve as co-chair. The co-chair's responsibility will be to assess the proposed and ongoing research and ensure that the research is relevant to the field of Microbiology.

Joint BS + MS Degree Program Requirements. The BS program course requirements remain as currently outlined in the general catalog. Additional research unit requirements for both the **Thesis Option** and the **Comprehensive Exam Option** are outlined below and sample programs are provided.

THESIS OPTION

The joint BS+MS program requires a total of 36 units. A minimum of 24 research units (a combination of MCBL 197 and MCBL 297/299) over 6 consecutive quarters is required – using a maximum of 3 quarters of MCBL 197 and a minimum of 3 quarters of MCBL 297/299. Students receive units towards this requirement by completing MCBL 197 as an undergraduate senior and MCBL 297/299 as a graduate student. As is the case for all Microbiology graduate programs, the program's seminar, MCBL 250, is required during all quarters of the MS portion of the program, however it does not count toward the 36-unit requirement. Remaining course requirements can be fulfilled by taking a minimum of 8 units of graduate courses. Up to 6 units of upper division 100 level MCBL courses may be taken during the MS portion of the program. No more than 12 units earned prior to matriculation to graduate status (including MCBL 197) can be applied toward the MS degree requirements.

During the MS portion of this program, students must maintain a grade-point average (both overall and in the major) of at least 3.0 for all course work, both cumulatively and for each quarter of enrollment. If the student's GPA falls below 3.0 (for either the overall or major), he/she may be dropped from the program.

Additional requirements include the completion of a thesis, with an oral presentation to, and approval of, a 3-member MS Thesis Committee. Students must meet with their committee prior to and throughout the master's year to discuss the project and its progress. The written thesis must be submitted to the MS Thesis Committee by Week 7 of the student's sixth quarter in the joint BS+MS program. Any deviation from this plan, such as a disruption in enrollment for 1 or more quarters, may cause the student to be dropped from the program.

COMPREHENSIVE EXAM OPTION

The joint BS+MS program requires a total of 36 units of 200-level courses. Students are required to take the Graduate Core Series of Courses. A maximum of 12 research units (a combination of MCBL 197 and MCBL 297/299) can be applied toward the BS+MS program. As is the case for all Microbiology graduate programs, the program's seminar, MCBL 250, is required during all quarters of the MS portion of the program, however it does not count toward the 36-unit requirement.

During the MS portion of this program, students must maintain a grade-point average (both overall and in the major) of at least 3.0 for all course work, both cumulatively and for each quarter of enrollment. If the student's GPA falls below 3.0 (for either the overall or major), he/she may be dropped from the program.

Students taking the Comprehensive Exam Option must take the exam upon completing the Graduate Core Series of Courses. The exam will consist of material from these courses. Unless excused by either the graduate advisor or department chair, failure to take the first examination available will be regarded as a failed exam. Students must take every sequential offering of the exam and no student will be given more than two attempts within one year following completion of the core coursework to achieve a satisfactory grade on the comprehensive written exam.

SAMPLE PROGRAM FOR THE PROPOSED BS+MS – THESIS OPTION. This table outlines a sample program for a student in the proposed BS+MS program in Microbiology – **Thesis Option**.

Freshman	Courses	Fall	Winter	Spring
	BIOL 005A, BIOL 05LA or BIOL 020; BIOL 005B		5	4
	CHEM 001A, CHEM 001B, CHEM 001C	4	4	4
	CHEM 01LA, CHEM 01LB, CHEM 01LC	1	1	1
	ENGL 001A, ENGL 001B	4		4
	Humanities/Social Sciences			4
	MATH 007A, MATH 007B	4	4	
	NASC 093	2		
	Freshman Total Units	15	14	17
Sophomore	Courses	Fall	Winter	Spring
	STAT 010			5
	BIOL 005C	4		
	CHEM 008A and 008LA, CHEM 008B and 008LB, CHEM 008C and 008LC	4	4	4
	Elective (e.g. World History)		4	
	Humanities/Social Sciences		4	
	PHYS 02A, PHYS 02B, PHYS 02C	4	4	4
	PHYS 02LA, PHYS 02LB, PHYS 02LC	1	1	1
	Sophomore Total Units	13	17	14
Junior	Courses	Fall	Winter	Spring
	BCH 100	4		
	Humanities/Social Sciences	4	4	4
	BIOL 102		4	
	BIOL 107A		4	
	MCBL 121	4		
	MCBL 121L		3	
	MCBL 125			4
	PHIL 009 ¹	4		
	Major Electives ² & Other Requirements			7
	Junior Total Units	16	15	15
Senior	Courses	Fall	Winter	Spring
	Major Electives ² & Other Requirements	8	8	11
	Elective	4		
	MCBL 197 ³	3	3	3
	ENGL 001C		4	
	Senior Total Units	15	15	14
5th Yr/MS	Courses	Fall	Winter	Spring
	MCBL 29X ³	5	7	7
	Microbiology Electives (200 level) ³		4	4
	Microbiology Electives (100 or 200 level) ³	6		
	MCBL 250	1	1	1
	5th Yr Total Units	12	12	12

¹Students are encouraged to take a course in ethics

²Up to 12-units of 100 level MCBL electives will double count towards the BS and the MS degree requirements. This 12-unit limit is similar to BCOE BS/MS program

³A minimum of 24 research units (a combination of MCBL 197 and MCBL 297/299) over 6 consecutive quarters is required – using a maximum of 3 quarters of MCBL 197 and a minimum of 3 quarters of MCBL 297/299. Students receive units towards this requirement by completing MCBL 197 as an undergraduate senior and MCBL 297/299 as a graduate student. ⁴Up to 6 units of upper division 100 level MCBL courses may be taken during the MS portion of the program

SAMPLE PROGRAM FOR THE PROPOSED BS+MS – COMPREHENSIVE EXAM OPTION. This table outlines a sample program for a student in the proposed BS+MS program in Microbiology – Thesis Option.

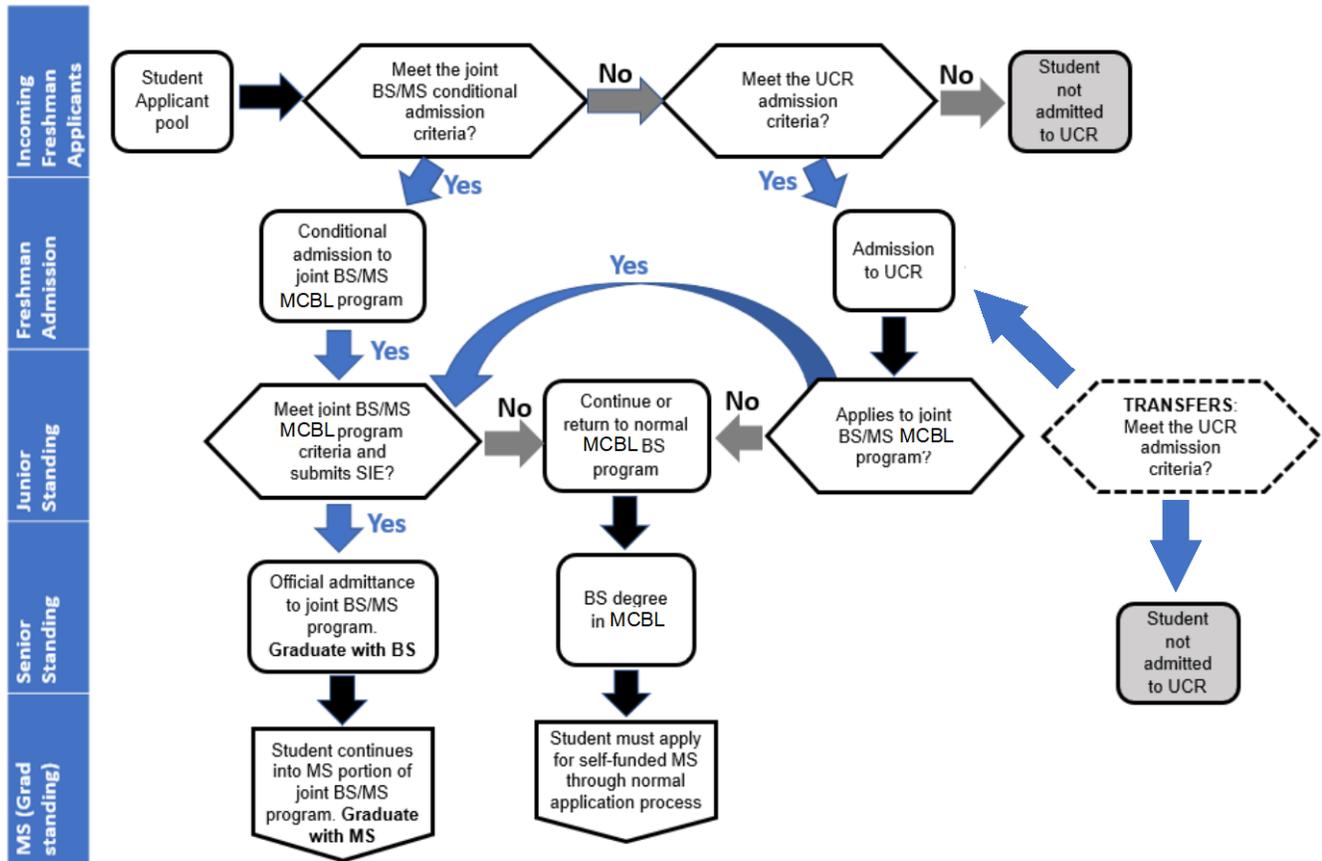
Freshman	Courses	Fall	Winter	Spring
	BIOL 005A, BIOL 05LA or BIOL 020; BIOL 005B		5	4
	CHEM 001A, CHEM 001B, CHEM 001C	4	4	4
	CHEM 01LA, CHEM 01LB, CHEM 01LC	1	1	1
	ENGL 001A, ENGL 001B	4		4
	Humanities/Social Sciences			4
	MATH 007A, MATH 007B	4	4	
	NASC 093	2		
	Freshman Total Units	15	14	17
Sophomore	Courses	Fall	Winter	Spring
	STAT 010			5
	BIOL 005C	4		
	CHEM 008A and 008LA, CHEM 008B and 008LB, CHEM 008C and 008LC	4	4	4
	Elective (e.g. World History)		4	
	Humanities/Social Sciences		4	
	PHYS 02A, PHYS 02B, PHYS 02C	4	4	4
	PHYS 02LA, PHYS 02LB, PHYS 02LC	1	1	1
	Sophomore Total Units	13	17	14
Junior	Courses	Fall	Winter	Spring
	BCH 100	4		
	Humanities/Social Sciences	4	4	4
	BIOL 102		4	
	BIOL 107A		4	
	MCBL 121	4		
	MCBL 121L		3	
	MCBL 125			4
	PHIL 009 ¹	4		
	Major Electives & Other Requirements			7
	Junior Total Units	16	15	15
Senior	Courses	Fall	Winter	Spring
	Elective	4		
	Major Electives & Other Requirements	8	8	11
	MCBL 197 ²	3	3	3
	ENGL 001C		4	
	Senior Total Units	15	15	14
5th Yr/MS	Courses	Fall	Winter	Spring
	MCBL 29X ²	3		
	Microbiology Electives (200 level) ²	3	12	12
	Microbiology Electives (200 level) ²	6		
	MCBL 250	1	1	1
	5th Yr Total Units	13	13	13

¹Students are encouraged to take a course in ethics

²A maximum of 12 research units (a combination of MCBL 197 and MCBL 297/299) can be applied toward the BS+MS program

Application Details. Interested students must submit a Statement of Interest and Eligibility (SIE) before the start of their final undergraduate year but are encouraged to apply as early as possible. This SIE would provide documentation of meeting the eligibility criteria, include a very brief description of the proposed research topic, and be signed by the identified thesis advisor.

Projected Flowchart of Student Applicants. The following flowchart illustrates how MCBL students may move into and out of the joint BS+MS program in MCBL. Students must maintain academic standards (i.e. GPA > 3.3 in major and 3.0 overall) or they will not be permitted to remain in the program. Students would graduate with a BS in Microbiology after their senior year and would graduate with MS in Microbiology after their year at MS standing.



CATALOG ENTRY

Joint Microbiology BS + Microbiology MS Program. The College of Natural and Agricultural Science offers a combined five-year BS / MS program in Microbiology, designed to allow successful UCR Microbiology BS graduates to complete the Master of Science degree in Microbiology in one additional year. Applicants to the Microbiology Joint BS+MS program should apply by the end of their junior year, provided that the student was a UCR Microbiology BS student with cumulative GPA at least 3.0 overall and 3.3 in the Microbiology major. This must include a minimum of 11 units of upper division Microbiology courses to be completed by the end of spring term of junior year (or the student's year of application). Similarly, transfer students must complete 11 units of upper division Microbiology courses, however their combined GPA (minimum 3.0) will be calculated from their UCR and prior institution transcripts. The application to the Joint BS+MS program must include at least two

recommendation letters from UCR Academic Senate faculty members, one of which will include the prospective thesis advisor. Matriculation into the graduate portion of the joint degree program occurs in the Fall term following senior year, provided: (a) the MS application is accepted, (b) throughout senior year, the student is a Microbiology BS major with cumulative GPA 3.0 or higher, (c) by the end of senior year, the student completes the Microbiology BS degree requirements and receives their BS in Microbiology.

Incoming freshman students who are applying to the Microbiology BS program may simultaneously apply for preliminary admission into the joint degree program provided their high-school GPA is at least 3.6, they satisfy the Entry-Level Writing requirement prior to matriculation, they have sufficient math preparation to enroll in MATH 7A (Calculus for the Life Sciences) upon arrival. In addition, because UCR will stop using SAT and ACT for undergraduate admission, replacements will be things like high school A-G course scores and AP course scores. We obtained this information from UCR's Committee on Undergraduate Admissions. We will stay in contact with them to have our admission criteria similar to the campus criteria. Preliminary conditional admission status is maintained as long as the student is a Microbiology BS student in good standing with a cumulative GPA of at least 3.0. Preliminarily admitted students would still need to apply for full admission by the end of their junior year as described above.

Thesis Option Only. The Joint BS+MS programs will allow up to 12 units of upper division Microbiology electives, which were used for the undergraduate degree, to be double-counted and therefore used for the MS degree as well.

3. PROJECTED NEED, RESOURCE REQUIREMENTS, STUDENT SUPPORT

As noted in the introduction, in keeping with the framework established by CEP and Graduate Council, this combined program is primarily a recruitment tool, intended to leverage the increasing interest in graduate education to attract top freshmen into the BS program, and to attract top UC Riverside BS students into the MS program.

In the BS program, the prospect of entering the program at year three and completing both the BS and MS in a total of five years should attract students that are highly motivated and more likely than average to make it through the program. While we do have a number of students who choose to study Microbiology as entering freshmen, a larger proportion of our undergraduates discover the field after their first year at UC Riverside. The combined BS+MS program will increase the visibility of the undergraduate major to entering students. It will also raise the visibility of the major to life science students who are already enrolled but might have been unaware of the prospects offered by the discipline. We expect that the opportunity of earning a joint 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.

Based on the levels of participation in the Microbiology BS program over the 2012-2020 period, we expect approximately 3-12 students to participate in the joint BS+MS program per year. However, a similar program in life sciences at UC San Diego has more than 100 students enrolled annually. Rapid growth in the proposed program would be welcome and would significantly increase overall enrollment in the Microbiology MS program. Although we consistently receive a small number of applicants for our Plan 1 MS program, potential major professors accept a very small number of

students because of the lack of support available to them. There would be no expectation of support for the participants in the combined BS+MS program. Major professors could provide support funding in the fifth year if they chose to do so. In addition, if at some point in the future, funding opportunities emerge from campus, college, or Graduate Division sources for MS students, then fifth-year BS+MS students would be eligible. Therefore, the proposed combined BS+MS program would complement the existing Plan 1 MS program.

If a student decided to continue on for a Ph.D., then full support packages would be provided. Students could enter the department's Ph.D. program through the fall application process after receiving their MS in Microbiology. Petitions to transfer from the MS to the Ph.D. program will be handled according to established departmental procedures. Each student accepted into the combined program is likely to be near the top of the applicant pool and would be welcomed into the laboratories, particularly if there was a likely prospect of timely completion of the degree and continuation through the Ph.D. at UCR or another research institution.

In short, the main effect of the program should be to increase the quality of students in the BS and 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 Microbiology 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. Thus, 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 the CNAS Undergraduate Academic Advising Center as normal for pursuance of a BS in Microbiology. 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 Microbiology Graduate program are already performed by the Admissions/Recruitment Committee; this committee will also be responsible for administering the BS+MS program with continued support from the CNAS Graduate Student Affairs Center, which will have to track which MS students are in the combined program and account for the double-counting allowance.

4. CHANGES IN SENATE REGULATIONS

No changes in Senate regulations are required.

Coversheet for Request for Approval To Modify Graduate Program Degree Requirements

Program	Microbiology
Is this an interdepartmental program?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If an interdepartmental program, list other involved programs	
Department/Academic Unit/School	Microbiology and Plant Pathology
Date	November 12, 2020
Proposed Effective Date	Fall 2021

Faculty Contact:	James Borneman	Email:	James.borneman@ucr.edu	Phone:	827-3584
Prepared by:	Laura McGeehan	Email:	laura.mcgeehan@ucr.edu	Phone:	827-5688

Proposed Modification(s) (please check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Admission requirements
<input type="checkbox"/> Unit requirements
<input type="checkbox"/> Professional Development Plan
<input type="checkbox"/> Examination requirements
<input type="checkbox"/> Time-to-degree
<input type="checkbox"/> Designated Emphasis | <input type="checkbox"/> Course requirements – course changes/new courses MUST be submitted in CRAMS simultaneously with program change/new program submission.
<input type="checkbox"/> Specializations
<input checked="" type="checkbox"/> Other (please describe): Addition of a MS BS/MS program |
|---|--|

Does this program change affect any other programs? If yes, check the box.

1. If the program change involves changes to any existing courses (deleting courses, changing existing courses, or adding new courses), the course changes MUST be submitted in CRAMS simultaneously with the program change submission so that Graduate Council can review all affected courses with the proposed program change.

2. Proposal must include a cover letter from the Dean, Associate Dean, Chair, Director or Program Advisor as appropriate, taking care to briefly describe the proposed modifications and justification for the request.

3. Attached proposal must include the proposed modifications as formatted in the example below. The existing requirements must be on the left column, and the proposed revisions on the right. Proposed additions must be underlined and deletions must be ~~stricken~~. Be sure the revised catalog copy adheres to the attached Graduate Council Policy on Graduate Program Catalog Entry. If any portion of the catalog entry does not include all items listed in the Policy, including sections the program is not making changes to; please revise the catalog entry so that it is in line with the policy.

Existing	Proposed
Insert existing program requirements on this side of the table and strike the deletions .	Insert proposed requirements on this side of the table. <u>Underline the additions</u>
Justification: The Justification should include examples such as impact on time to degree, expected impact on employment prospects, expected impact on recruitment. Please address whether current students will be permitted to switch to take advantage of the revisions. If so what will the approval process be?	
Faculty Approval Date: Indicate the date of the faculty vote	
Department Chair / Program Director:	Please type name(s) as appropriate
Signature:	Please include signature(s) as appropriate
Date:	Date signed

Checklist of Required Attachments/Appendices (please check to verify inclusion):

Dean/Associate Dean/Chair or Program Advisor Cover Letter.

- Completed Coversheet for Request for Approval To Modify Graduate Program Degree Requirements.
- Revised Catalogue/Website Copy in proper table format including Justification as indicated above. Must be signed and dated.

Graduate Council Policy on Graduate Program Catalog Entry

Revised April 21, 2016

Graduate Council requires graduate programs state and detail the following in the General Catalog:

- Admission Requirements
- Unit and Course Requirements – specify course numbers and the number of courses/units required
- Language, Teaching, and Examination Requirements
- Specializations, concentrations, fields of study
- Designated Emphases, if applicable
- Professional Development Requirement
- Normative Time-to-Degree

Please note that web links are not permitted in place of traditional catalog copy. However, web links may be included as an additional source of information provided the site contains details duplicative of the information displayed in the catalog.

Existing	Proposed
	<p data-bbox="824 268 1344 296"><u>Joint Microbiology BS + Microbiology MS Program.</u></p> <p data-bbox="824 317 1414 464"><u>The College of Natural and Agricultural Science offers a Joint five-year BS+MS program in Microbiology, designed to allow successful UCR Microbiology BS graduates to complete the Master of Science degree in Microbiology in one additional year with either Plan 1-Thesis or Plan 2-Comprehensive Exam option.</u></p> <p data-bbox="824 489 1419 974"><u>Applicants to the Microbiology Joint BS+MS program (including transfer students) must be Microbiology BS students and apply by the end of their junior year. Students who entered UCR as freshmen are required to have a cumulative GPA at least 3.0 overall and 3.3 in the Microbiology major. Prior course work for all students must include a minimum of 11 units of upper division Microbiology courses to be completed by the end of spring term of junior year. The combined GPA is calculated from their UCR and prior institution transcripts, if applicable. The application to the Joint BS+MS program must include a Statement of Interest and Eligibility and at least two recommendation letters from UCR Academic Senate faculty members, including the prospective thesis advisor. Matriculation into the graduate portion of the joint degree program occurs in the Fall term following senior year, provided: (a) the MS application is accepted, (b) throughout senior year, the student is a Microbiology BS major with cumulative GPA 3.0 or higher, (c) the student completes the Microbiology BS degree requirements and earns the BS in Microbiology by the end of senior year.</u></p> <p data-bbox="824 999 1419 1268"><u>Incoming freshman students applying to the Microbiology BS program may simultaneously apply for preliminary admission into the joint degree program provided their high school GPA is at least 3.6, they satisfy the Entry-Level Writing requirement prior to matriculation, and they have sufficient math preparation to enroll in MATH 7A-Calculus for the Life Sciences upon arrival. Preliminary conditional admission status is maintained as long as the student is a Microbiology BS student in good standing with a cumulative GPA of at least 3.0. Conditionally admitted students still must apply for full admission by the end of their junior year as described above.</u></p> <p data-bbox="824 1293 1276 1320"><u>Joint BS+MS Degree Program Requirements</u></p> <p data-bbox="824 1346 1393 1440"><u>The BS program course requirements remain as currently outlined in the general catalog. Requirements for the Thesis Option–MS Plan I and the Comprehensive Exam Option–MS Plan II are outlined below.</u></p> <p data-bbox="824 1465 1414 1612"><u>During the MS portion of this program, students must maintain a grade-point average (both in the major and overall) of at least 3.0 for all course work, both cumulatively and for each quarter of enrollment. If the student's GPA falls below 3.0 (for either the major or overall), he/she may be dropped from the program.</u></p> <p data-bbox="824 1659 1122 1686"><u>THESIS OPTION – MS PLAN I</u></p> <p data-bbox="824 1711 1045 1738"><u>Overall Requirements</u></p> <p data-bbox="824 1738 1386 1808"><u>A total of 36 units are required for the MS degree. 24 units must be 200-level courses, with no more than 12 units from MCBL 297/299 research.</u></p> <p data-bbox="824 1833 1419 1902"><u>Up to 12 units of MCBL courses (100 or 200 level) earned prior to matriculation to graduate status can be applied toward the MS degree requirements.</u></p>

Course Requirements

1. A minimum of 24 research units (a combination of MCBL 197 and MCBL 297/299) over 6 consecutive quarters. Students receive credit towards this requirement by completing up to 12 units of MCBL 197 as an undergraduate senior and a minimum of 12 units of MCBL 297/299 as a graduate student. No more than 12 units of MCBL 297/299 count toward the 36-unit MS requirement.
2. MCBL 250 Seminar is required every quarter it is offered during MS study. MCBL 250 does not count toward the 36-unit MS requirement.
3. Remaining course requirements can be fulfilled by taking a minimum of 8 units of graduate courses. Up to 6 units of upper division 100 level MCBL courses may be taken during the MS portion of the program. No more than 12 units earned prior to matriculation to graduate status (excluding MCBL 197) can be applied toward the MS degree requirements.

Thesis and Final Oral Examination Following completion of research, students submit a written thesis and conclude their studies with an oral public thesis defense. Students must meet with their committee prior to and throughout the MS year to discuss project progress. The written thesis must be submitted to the MS Thesis Committee by Week 7 of the student's sixth quarter in the joint BS+MS program. Any deviation from this plan, such as a disruption in enrollment for one or more quarters, may cause the student to be dismissed from the program.

COMPREHENSIVE EXAM OPTION – MS PLAN II

Overall Requirements

A total of 36 units are required for the MS degree. 24 units must be 200-level courses.

Up to 12 units of MCBL courses (100 or 200 level) earned prior to matriculation to graduate status can be applied toward the MS degree requirements (excluding MCBL 197).

Course Requirements

1. MCBL graduate core courses: MCBL 221, MCBL 202, and MCBL 211.
2. A maximum of 12 units of research units (a combination of MCBL 197 and MCBL 297/299).
3. MCBL 250 Seminar is required every quarter it is offered during MS study. MCBL 250 does not count toward the 36-unit MS requirement.
4. Additional MCBL courses as needed to fulfill the 36 unit MS requirement.

Written Comprehensive Exam

Students take the exam upon completion of the MCBL graduate core courses: MCBL 221, MCBL 202, and MCBL 211, and the exam consists of material from these courses. Failure to take the first examination offered is considered a failed exam, unless excused in advance in writing by either the graduate advisor or the department chair. Students must take each sequential offering of the exam, and no student will be given more than two attempts within one year following completion of the core coursework to achieve a satisfactory grade on the written comprehensive examination.

Professional Development

	<p>All BS+MS students participate in the departmental seminar (MCBL 250) every quarter of the master's year when offered.</p> <p>Normative Time to Degree 15 quarters (BS+MS)</p>										
<p>Justification: Quoting from the document "Establishment of Combined Programs at UCR"¹ "Combined programs can better attract top high school graduates, transfer students, and returning students, especially those interested in advanced degrees. Thus, UCR departments can expect a higher proportion of the best undergraduates. Combined program students will be more inclined to stay at UCR for their MS 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.</p>											
<table border="1"> <tr> <td>Faculty Approval Date:</td> <td></td> </tr> <tr> <td>Department Chair/Program Advisor:</td> <td></td> </tr> <tr> <td>Signature</td> <td>Digitally signed by</td> </tr> <tr> <td>Date</td> <td>James Borneman</td> </tr> <tr> <td></td> <td>Date: 2020.11.12 15:48:13 -08'00'</td> </tr> </table>	Faculty Approval Date:		Department Chair/Program Advisor:		Signature	Digitally signed by	Date	James Borneman		Date: 2020.11.12 15:48:13 -08'00'	<p>October 29, 2019</p>
Faculty Approval Date:											
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Date	James Borneman										
	Date: 2020.11.12 15:48:13 -08'00'										
<p>James Borneman</p>											
<p>November 12, 2020</p>											



TO: Committee on Education Policy (CEP)
UCR Academic Senate

FROM: Kathryn Uhrich 
Dean, CNAS

DATE: December 1, 2020

RE: Establishment of a 4+1 BS/MS Program in Microbiology

I am pleased to support the 4+1 BS/MS Program in Microbiology within the Department of Microbiology and Plant Pathology. The program leverages existing courses as well as the academic and administrative infrastructure already in place in the Microbiology Undergraduate Major, the Microbiology Graduate Program and CNAS.

The goals of the 4+1 BS/MS program as outlined in the proposal are two-fold. *One*, it will provide participating students the training and experience that will position them well for admission to professional schools and/or secure more highly technical jobs in industry and other sectors including agriculture, environmental regulation and health care. *Two*, it will serve as a recruitment tool to attract the highest quality students on multiple levels: incoming freshmen to the Microbiology major, transfer students from Community Colleges, and students considering a PhD graduate program in Microbiology at UCR.

I respectfully request that the the Committee on Education Policy and the Academic Senate approve this 4+1 BS/MS program in Microbiology.



23 November 2020

To: Jason Stajich, Chair
Riverside Division

From: Theodore Garland, Jr., Chair, Executive Committee
College of Natural and Agricultural Science

Re: Microbiology BS MS Joint Program (BS+MS) Proposal

The CNAS Executive Committee endorses this proposal.

We note that proposers will soon be including language on freshman admission criteria that excludes mention of SAT/ACT.

Transfers are noted as freshmen on the flow chart -- can this be more clearly delineated?

Cheers,

A handwritten signature in black ink that reads "Ted Garland".