



8 August 2019

RE: New Program Proposal: Combined Microbiology BS/MS degree

Dear Colleagues,

The Department of Microbiology currently offers a B.S., M.S., and Ph.D. in Microbiology. Here we share a proposal for a new academic program, a combined Microbiology BS/MS degree. Outstanding students who qualify for this program will complete the requirements for their undergraduate degree as well as coursework for a MS degree in microbiology in five years. We fully endorse this proposal, which has also been reviewed and approved by Michael Ibba (Chair, Department of Microbiology), The Department of Microbiology Curriculum Committee (which includes tenure track faculty, non-tenure track faculty, and an undergraduate Microbiology Major), and Matt DeBlieck (Undergraduate Advisor, Department of Microbiology). We thank you for your consideration.

Regards,

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Proposal for a BS/MS Combination Degree in Microbiology

Program Rationale

The following document presents the rationale and plan for creation of a combined BS/MS degree in Microbiology. Currently, the Microbiology Department offers a BS undergraduate degree and a graduate-level MS or PhD degree. After reviewing the curriculum and the advanced courses being taken by high-performing students in the Microbiology major, it is possible for accelerated students to complete the requirements for their undergraduate degree as well as coursework for a MS degree in microbiology in five years. The plan described below fits the Graduate School's description of the purpose of a combined program as "to give outstanding students an opportunity to pursue simultaneously two degrees in different colleges or schools by reducing the amount of time required to complete both sets of degree requirements."

Executive Summary

The central feature of the proposed combined BS/MS degree program is the ability to double-count advanced Microbiology courses normally taken by first-year graduate students as elective credits for the fourth year of the undergraduate major (Appendix A). By double-counting these electives for both the undergraduate and graduate degrees, a student in the combined degree program can fulfill the undergraduate degree requirements in their fourth year and be able to complete the remaining requirements for the Masters degree in an additional year. Thus, this combined degree plan allows students the ability to enhance their undergraduate training with graduate-level coursework and reduce the amount of time necessary for an advanced degree.

The undergraduate BS degree in Microbiology requires completion of 121 credit hours consisting of at least 45 general education credits, prerequisite coursework in Biology, Math, Chemistry, and Physics, and 30 credits specific to the Microbiology major (Appendix B). The Microbiology major requirements include 21 credits of required coursework in Biochemistry and Microbiology and 9 credits of elective courses. Many students come to Ohio State University with Advanced Placement or other college-level credits enabling them to accelerate their progress toward the Microbiology major and many take upper-division (5000-level) courses as early as their third year. The first year of graduate study (either the M.S. or Ph.D. program) in Microbiology includes 11 credit hours of 5000- and 6000-level Microbiology courses (Appendix B). The combined degree program would allow accelerated undergraduate students to take the first year of graduate coursework and apply these 11 credit hours towards the fulfillment of the 9 undergraduate major elective credits. The remaining requirements for the MS degree include 21 credits of additional coursework which can be completed in an additional (i.e., fifth) year. A sample plan for the combined BS/MS degree is presented in Appendix C1 and a complete listing of course options and mapping to learning goals is presented in Appendix D. Current BS sample curriculum is presented in Appendix C2. Current BS, current MS, and proposed BS/MS advising forms are presented in Appendix E.

Students will be made aware of the opportunity to participate in the combined degree program at the point of declaring their major in Microbiology and during appointments with advisors. It is anticipated that most candidates will apply during the Spring semester of the student's third year following consultation with the Microbiology majors advisor or honors advisor for admission to the program at the beginning of the student's fourth year. By the time of admission, applicants to the combined degree program must:

1. be in good academic standing (at least 3.5 GPA)
2. have completed the Microbiology major entry classes (MICRO4100 and BIOCHEM4511)
3. have completed at least one additional Microbiology major core class (MICRO4110, 4120, 4130, or 4140)

GRE scores, normally part of applications to the Department of Microbiology's graduate programs, will not be required for the combined BS/MS degree. Applications will be reviewed by the Microbiology Department Graduate Studies Committee to determine if the student is ready and capable of accelerated studies. Upon admission, the Chair of the Microbiology Department Graduate Studies Committee, or another Microbiology faculty member designated by the GSC Chair after consultation with the student will serve as the students BS/MS advisor. A committee consisting of two additional Microbiology faculty members will be formed during the student's fifth year and will serve as an advisory body for the selection of remaining coursework for the MS

degree (i.e., elective coursework typically in a particular focus area and/or individual study/research credits; Appendix C1) as well as the examination panel for the written and oral requirements for the Microbiology MS degree. Based on exit surveys from Spring 2019, roughly 25% of graduating Microbiology seniors are taking a “gap year” following graduation in preparation for professional schools (e.g., medical school, veterinary school, dental school, or PhD programs). Consequently, we anticipate 4-6 students will enroll in the combined degree program each year.

Students in the combined BS/MS degree program who are doing laboratory research as undergraduates (MICRBIOL 4998(H)/4999(H)) can receive research distinction (including honors) with the BS component. Students performing research as undergraduates may continue to do so after admission to the BS/MS degree program. Such students desiring a research focus may elect to complete a thesis MS as part of their combined BS/MS degree and will need to complete 44 credit hours of graduate training (which includes the core and elective course requirements for the non-thesis MS degree) and enrollment in MICRBIOL7999 (Research in Microbiology – MS Thesis). In this situation, the student’s research mentor will become the MS advisor. A student in the combined degree program can elect to leave the program without penalty. The completed graduate courses will continue to count as elective credits towards the student’s Microbiology BS degree.

Admission to the program results in enrollment of the student as graduate students and credit hours including those that will be double-counted for completion of the undergraduate degree will be charged according to the graduate degree rates of the University. As graduate students, students in the combined BS/MS program may receive financial support through appointment as graduate teaching assistants (GTAs) depending on the student’s interests and the availability of teaching positions and funding in the Department.

We believe the opportunity to obtain a BS and MS degree will be attractive to ambitious students at Ohio State University preparing for either professional school (e.g., medical school or PhD programs) or employment in Microbiology fields where a MS degree will position them ahead of or open up better career-related positions than those available to BS degree-holding graduates. In addition, the advanced knowledge and training of graduates with an MS degree will enhance the reputation of Ohio State University programs in scientific fields and industries.

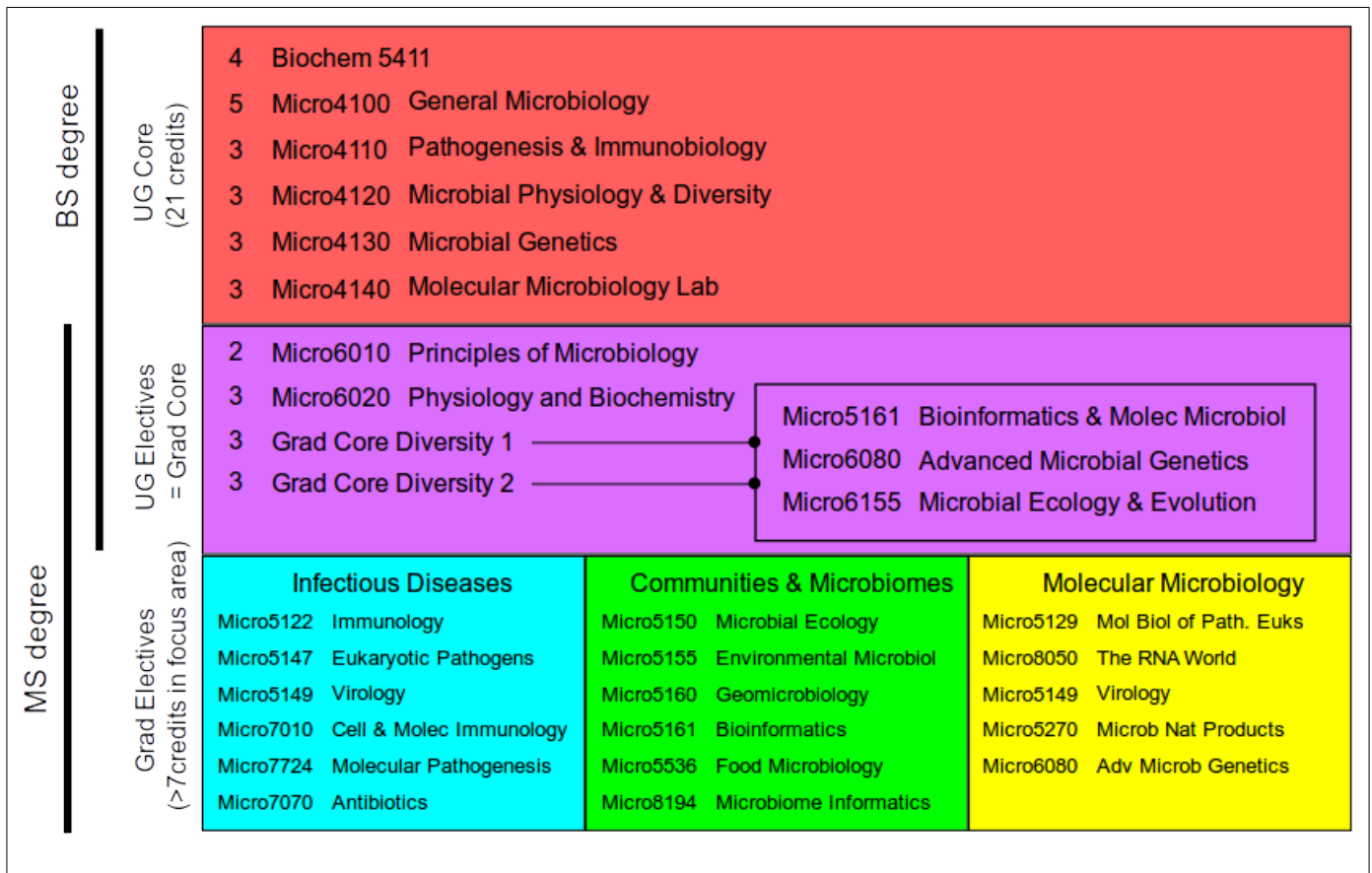
APPENDIX A: OVERVIEW OF THE COMBINED BS/MS DEGREE PROGRAM

BS degree

30 credits of Biochemistry and Microbiology coursework
 required courses: 21 credits
 elective courses: at least 9 credits

MS degree

30 credits (at least 18 graded) of Microbiology and related coursework
 required courses: 12 credits (11 graded)
 core courses: 6 credits (5 graded)
 diversity courses (pick two of three options): 6 credits (graded)
 elective courses (> 5000-level): at least 7 credits (graded) – courses determined by area of focus
 a third core-diversity course can be counted as one elective
 recurring courses: 2 credits (S/U) per semester (8 credits in 2 years)



APPENDIX B: INDIVIDUAL BACHELOR AND MASTER DEGREES IN MICROBIOLOGY

Microbiology Major (BS)

121 total credits that includes 30 credits of Microbiology coursework

- General education (not counting pre-requisite coursework): 24-45 credits
- Pre-requisite coursework: 46-48 credits
 - Math & Statistics (8-10 credits)
 - Physics (10 credits)
 - Chemistry & Organic Chem (20 credits)
 - Biology (8 credits) 48 credits
- Required Microbiology courses: 21 credits

Course	Title	Credits	Pre-requisites*
BIOCHEM4511	Biological Chemistry	4 cr (graded)	CHEM2310 (or 2510) one Biological Sciences
MICRBIO4100	General Microbiology & Lab	5 cr (graded)	BIOL1113 CHEM2510
MICRBIO4110	Pathogenesis & Immunobiology	3 cr (graded)	MICRBIO 4100
MICRBIO4120	Microbial Physiology & Diversity	3 cr (graded)	MICRBIO 4100 BIOCHEM4511
MICRBIO4130	Microbial Genetics	3 cr (graded)	MICRBIO 4100
MICRBIO4140	Molecular Microbiology Lab	3 cr (graded)	MICRBIO 4100 MICRBIO 4130

* or honors equivalent

- Microbiology elective courses: at least 9 credits

Microbiology MS degree (non-thesis)

30 credits (at least 18 graded) of Microbiology coursework

- required courses (double-counted as electives for the BS degree): 5 credits (graded) + 1 credit (S/U)

Course	Title	Credits
MICRBIO6010	Principles of Microbiology	2 cr (graded)
MICRBIO6020	Physiology and Biochemistry	3 cr (graded)
MICRBIO7600	First Year Orientation	1 cr (S/U)

- core diversity (two required, double-counted as electives for the BS degree): 6 credits (graded)

Course	Title	Credits
MICRBIO5161	Bioinformatics & Molecular Microbiology	3 cr (graded)
MICRBIO6080	Adv Microbial Genetics	3 cr (graded)
MICRBIO6155	Microbial Ecology & Evolution	3 cr (graded)

- electives (at least 7 hours, typically within an area of focus): > 7 credits (graded)
- recurring courses (2 credits per semester)

Course	Title	Credits
MICRBIO7899	Microbiology Colloquium	1 cr (S/U)
MICRBIO8899	Seminars in Microbiology	1 cr (S/U)

Microbiology MS degree (thesis)

44 credits (at least 18 graded) of Microbiology coursework

- required courses (double-counted as electives for the BS degree): 5 credits (graded) + 1 credit (S/U)

Course	Title	Credits
MICRBIO6010	Principles of Microbiology	2 cr (graded)
MICRBIO6020	Physiology and Biochemistry	3 cr (graded)
MICRBIO7600	First Year Orientation	1 cr (S/U)

- core diversity (two required, double-counted as electives for the BS degree): 6 credits (graded)

Course	Title	Credits
MICRBIO5161	Bioinformatics & Molecular Microbiology	3 cr (graded)
MICRBIO6080	Adv Microbial Genetics	3 cr (graded)
MICRBIO6155	Microbial Ecology & Evolution	3 cr (graded)

- electives (at least 7 hours, typically within an area of focus): > 7 credits (graded)
- recurring courses (2 credits per semester)

Course	Title	Credits
MICRBIO7899	Microbiology Colloquium	1 cr (S/U)
MICRBIO8899	Seminars in Microbiology	1 cr (S/U)

- research credits (variable)

Course	Title	Credits
MICRBIO7999	Research in Microbiology (MS)	variable (S/U)

APPENDIX C1: SAMPLE COMBINED BS/MS CURRICULUM

Previous coursework (years 1-2 of undergraduate): General education classes and pre-requisite work

Year	Semester	Credits	Course	Course Title	BS required credits	BS elective credits	MS required credits	MS elective credits	MS S/U credits	
3	Autumn	15	BIOCHEM4511	Biological Chemistry	4					
			MICRBIO4100	General Microbiol & Lab	5					
			(GE course)	Gen Ed course option (3 cr)						
			(GE course)	Gen Ed course option (3 cr)						
Spring	15		MICRBIO4110	Pathogenesis & Immunobiology	3					
			MICRBIO4120	Microbial Physiology & Diversity	3					
			(GE course)	Gen Ed course option (3 cr)						
			(GE course)	Gen Ed course option (3 cr)						
4	Autumn	14	MICRBIO4130	Microbial Genetics	3					
			MICRBIO4140	Molec Microbiology Lab	3					
			MICRBIO6010	Principles of Microbiology		2	2			
			MICRBIO6020	Microbial Physiology & Biochem		3	3			
			MICRBIO7600	First-year Orientation					1	
			MICRBIO7899	Microbiology Colloquium					1	
			MICRBIO8899	Seminars in Microbiology					1	
	Spring	14		MICRBIO5161	Bioinformatics & Molec Micro		3	3		
				MICRBIO6080	Adv Microbial Genetics		3	3		
				MICRBIO7899	Microbiology Colloquium					1
				MICRBIO8899	Seminars in Microbiology					1
5	Autumn	12	(MS elective)	MS elective course				3		
			(MS elective)	MS elective course				3		
			MICRBIO7899	Microbiology Colloquium					1	
			MICRBIO8899	Seminars in Microbiology					1	
			(optional) MICRBIO7193 or MICRBIO7999	Individual Studies/Research					4	
	Spring	12		(MS elective)	MS elective course				3	
				(MS elective)	MS elective course				3	
				MICRBIO7899	Microbiology Colloquium					1
				MICRBIO8899	Seminars in Microbiology					1
				(optional) MICRBIO7193 or MICRBIO7999	Individual Studies/Research					4
Total BS degree required credits					21					
Total BS degree elective credits						11				

Total BS degree credits (>30)	32
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Total MS degree required credits	11
Total MS degree elective credits	12
Total MS degree S/U credits	17
Total MS degree credits (>30)	40

APPENDIX C2: SAMPLE BS CURRICULUM

Year	Autumn	Credit Hrs	Comment*	Spring	Credit Hrs	Comment	Year Total
1	Gen Chem 1210	5	GE-Nat Sci/Micro-PreRec	Gen Chem 1220	5	GE-Nat Sci/Micro-PreRec	
	Math 1151 or 1156	5	GE-Math/Micro-PreRec	Bio 1113	4	GE-Nat Sci/Micro-PreRec	
	*GE: F.L. 1	4	GE	GE: F.L. 2	4	GE	
	Arts Sci 1100.07	1	GE	GE: Comp 1	3	GE	
	Semester Sum	15		Semester Sum	16		31
Year	Autumn	Credit Hrs	Comment*	Spring	Credit Hrs	Comment	Year Total
2	Org Chem 2510	4	Micro-PreRec	Org Chem 2520	4	Micro-PreRec	
	Bio 1114	4	GE-Open Opt/Micro-PreRec	Org Chem Lab 2540	2	Micro-PreRec	
	GE: F.L. 3	4	GE	Micro 4100	5	Micro-Core	
	Math 1152 (2) or Math 1157 (3) or Stats 1450(3) or Stats 2450 (3) or Stats 2480 (3)	3 - 5	Micro-PreRec	GE: Comp 2	3	GE	
	Semester Sum	15-17		Semester Sum	14		29 - 31
Year	Autumn	Credit Hrs	Comment*	Spring	Credit Hrs	Comment	Year Total
3	Physics 1200	5	GE-Open Opt/Micro-PreRec	Physics 1201	5	Micro-PreRec	
	BioChem 4511	4	Micro-Core	Micro 4110	3	Micro-Core	
	GE: Soc. Sci 1	3	GE	Micro 4130	3	Micro-Core	
	GE: Literature	3	GE	GE: Soc. Sci 2	3	GE	
	Semester Sum	15		Semester Sum	15		30
Year	Autumn	Credit Hrs	Comment*	Spring	Credit Hrs	Comment	Year Total
4	Micro 4120	3	Micro-Core	Micro 4140	3	Micro-Core	
	#Micro Elective 1	3	Micro-Required	Micro Elective 3	3	Micro-Required	
	Micro Elective 2	3	Micro-Required	GE: Cult & Ideas	3	GE	
	GE: Visual Art	3	GE	Electives	5 - 7	Free elective	
	GE: Historical Study	3	GE				
Semester Sum	15			Semester Sum	14-16		29 - 31
						Total Hrs.	121

* Placement of specific GE courses will vary depending on the student's individual requirements and preferences. Where available, honors courses can substitute

Micro electives include 3-9 hours from Group 1 and 00-6 hours from Group 2 courses. Up to 3 hrs of S/U graded courses, including independent research (Micro 4998), can be counted toward the elective requirement.

Electives: Total Required 9 hrs Group 1: 3-9 hrs				U/G Learning Goals					Grad Learning Goals			
Semester Course Number	Course Title	Semester hrs	1	2	3	4	5	1	2	3	4	
MICRBIOL 2000	Introduction to Microbiology Research	1.5				B	B					
MICRBIOL 3704	HIV: From Microbiology to Macrohistory	3			I	I	I					
MICRBIOL 4150	Immunobiology Laboratory	3	I	I	A	A	A					
MICRBIOL 4193	Individual Studies	1-3										
MICRBIOL 4194	Group Studies	1-3										
MICRBIOL 4591S	DNA Finger Printing Workshops in Columbus PS	1				A	A					
MICRBIOL 4797	Study at a Foreign Institution	1-19										
MICRBIOL 4798	Study Tour Domestic	1-19										
MICRBIOL 4998	Undergrad Research in Microbiology	1-5				A	A					
MICRBIOL 4998H	Honors Research	1-5				A	A					
MICRBIOL 4999	Undergrad Research in Microbiology- Thesis	1-5				A	A					
MICRBIOL 4999H	Honors Research- Thesis	1-5				A	A					
MICRBIOL 5122	Immunology	3			A			I				
MICRBIOL 5129	Cellular and Molecular Biology of Pathogenic Eukaryotes	3		A	A			I	I		B	
MICRBIOL 5147	Eukaryotic Pathogens	3		A	A	A		I	I		B	
MICRBIOL 5149	Introductory Virology	3		A	A			I	I		B	
MICRBIOL 5150	Microbial Ecology	3	A	A	A			I				
MICRBIOL 5155	Environmental Microbiology	3	A	A	A			I			B	
MICRBIOL 5161	Bioinformatics and Molecular Microbiology	3	A	A	A		A	I	I			
MICRBIOL 5170	Microbes and Evolution	3			A			I				
MICRBIOL 5270	Antibiotics and Microbial Natural Products	3		A	A	A	A	I				
MICRBIOL 5536	Food Microbiology Lecture	3		A	I		A	I				
MICRBIOL 5546	Food Microbiology Laboratory	3		A	I	A	A	I	I			
MICRBIOL 6020*	Microbial Physiology and Biochemistry	3	A	A	A	A		A			I	
MICRBIOL 6080*	Advanced Microbial Genetics	3		A		A		A	A			
MICRBIOL 6155*	Microbial Ecology & Evolution	3			A	A	A	A				
MICRBIOL 6790*	Scientific Writing	2									A	
MICRBIOL 7010*	Cellular and Molecular Immunology	3			A	A		A				
MICRBIOL 7020*	Physiology Meets Pathogenesis	2	A	A	A	A		A				
MICRBIOL 7023*	Molecular Immunology: Lecture	3			A	A		A				
MICRBIOL 7050*	Fermentation Biotechnology	3	A			A	A	A				
MICRBIOL 7060*	Advanced Topics in Molecular Microbiology	2		A		A		A	A		I	
MICRBIOL 7193*	Individual Studies	1-5							A	I		
MICRBIOL 7536*	Advanced Food Microbiology	3		A	I	A	A	A				
MICRBIOL 7724*	Molecular Pathogenesis	3		A	A	A		A				
MICRBIOL 7889*	Host-Pathogen Interactions: Research Seminar	1			A	A		A			A	

MICRBIOL 7899*	Microbiology Colloquium	1							A	A		
MICRBIOL 7999*	Research in Microbiology	1-8								A	A	
MICRBIOL 8149*	Microbiome Informatics	3	A*	A*	A*				A			
MICRBIOL 8899*	Seminars in Microbiology	1							A			A
Total Hrs.		3-9										
*Indicated graduate-level course. Undergraduates require special permission to enroll.												
Electives: Total Required 9 hrs Group 2: 0-6 hrs						U/G Learning Goals					Grad Learning Goals	
Semester Course Number	Course Title	Semester Hrs.	1	2	3	4	5	1	2	3	4	
MICRBIOL 3798.05	Impact of HIV: Tanzania (study abroad)	4			I	B	I					
BIOCHEM 5621	Intro Biological Chemistry Laboratory	4	I			I		I				
MOLGEN 4500	General Genetics	3		I								
MOLGEN 4606	Molecular Genetics I	4		I								
MVIMG 5000	Evolution of Emerging Viruses	2			A			I				
PLPATH 5010	Phylobacteriology	2		I	A			I				
PLPATH 5020	Introduction to Plant Virology	2		I	A			I				
PLPATH 5040	Science of Fungi: Mycology Lecture	3	I	I	A			I				
ANSCI 6090*	Anaerobic Microbiology	3		A				A				
ENR 5263	Biology of Soil Ecosystems	3	I	A				I				
ENR 5266	Field Soil Investigations	3	I			A		I				
Total Hrs.		0-6										
Total Hrs. for the U/G Major		30										
*Indicated graduate-level course. Requires special permission to enroll.												

Undergraduate Program Learning Goals : (B, beginning; I, Intermediate; A, Advanced)

1. Students acquire the ability to interrelate and apply the fundamental concepts of chemistry, physics and mathematics to the functions of living cells.
2. Students understand the chemical properties of biological molecules and how these molecules function in the molecular mechanisms underlying physiological processes in microbial cells.
3. Students understand evolutionary processes, the diversity of microorganisms, and how microorganisms impact their environment, including their roles in human health and disease.
4. Students acquire the ability to design experiments to test hypotheses, perform analyses, interpret and analyze data, and present scientific information in written and oral formats.
5. Students acquire the ability to appraise scientific data presented in the popular press for accuracy and scientific merit and understand issues and ethical conflicts associated with applications of biotechnology.

Graduate Program Learning Goals: (B, beginning; I, Intermediate; A, Advanced)

1. Demonstrate a broad base of knowledge in several areas, including microbial physiology, genetics, biochemistry, and pathogenesis.
2. Demonstrate in-depth knowledge in an area of interest.
3. Make an original and substantial contribution to the field, as indicated by at least one first-author publication.
4. Effectively communicate science through oral and written presentations to both scientific and general audiences

APPENDIX E1: CURRENT BS ADVISING SHEET

Microbiology BS

Student ID #: _____

Expected Graduation Term: _____ Student Name.#: _____

Second Major: _____ Minor: _____

Part A: General Education not fulfilled by Part B

GE Category	Course Number	Credit Hours	Grade	Term Taken
Writing		3		
		3		
Literature		3		
VPA		3		
Soc. Sci. 1:		3		
Soc. Sci. 2:		3		
Historical Study		3		
Cultures & Ideas		3		
Foreign Language		4		
		4		
		4		
Social Diversity*		3		
Global Studies*		3		
		3		

*Courses in these areas can overlap with another GE category when applicable

Part B: Major Prerequisites

Course	Credit Hours	Grade	Term Taken	Course	Credit Hours	Grade	Term Taken
Math 1151	5			Chem 1210	5		
OR Math 1156	5			Chem 1220	5		
Math 1152	5			Chem 2510	4		
OR Math 1157	5			Chem 2520	4		
OR Stat 1450	3			Chem 2540	2		
OR Stat 2450	3			Physics 1200	5		
OR Stat 2480	3			OR Physics 1201	5		
Bio 1113	4			Physics 1201	5		
Bio 1114	4			OR Physics 1251**	5		

Honors courses can substitute where available

Additional courses may be required or suggested for pre-professional students

**Math 1152 is a prerequisite/co-requisite for Physics 1251

Microbiology BS

Part C: Microbiology BS Core

Course	Title	Major Credit Hours	Grade	Term Taken
BIOCHEM 4511	Intro to Biological Chemistry	4		

MICRBIO 4100	General Microbiology & Lab	5		
MICRBIO 4110	Pathogenesis & Immunobiology	3		
MICRBIO 4120	Microbial Physiology & Diversity	3		
MICRBIO 4130	Microbial Genetics	3		
MICRBIO 4140	Molecular Microbiology Lab	3		

Part D: Microbiology BS Electives

Course	Title	Major Credit Hours	Grade	Term Taken	Group 1 or 2	Mark if S/U***

At least 3 credits must be from Group 1

***At most 3 credits graded S/U may be counted toward the major

BS Degree

Major Core Credits (21): _____

Major Elective Credits (≥ 9): _____

Major Credits not graded S/U (≥ 27): _____

Total BS Major Credits (≥ 30): _____

Upper Division Credits (≥ 39): _____

Total BS Credits (≥ 121): _____

APPENDIX E2: CURRENT MS (NON-THESIS) ADVISING SHEET

Microbiology MS (non-thesis)

Student ID #: _____

Expected Graduation Term: _____

Student Name.#: _____

Part A: Required Courses

Course	Title	Credit Hours	Grade	Term Taken	Mark if S/U
MICRBIO 6010	Principles of Microbiology	2			
MICRBIO 6020	Physiology and Biochemistry	3			
MICRBIO 7600	First-Year Orientation	1			X
SUB-TOTAL (6)					

Part B: Core Diversity [Select 2]

Course	Title	Credit Hours	Grade	Term Taken	Mark if S/U
MICRBIO 5161	Bioinformatics & Molecular Microbiology	3			
MICRBIO 6080	Adv. Microbial Genetics	3			
MICRBIO 6155	Microbial Ecology & Evolution	3			
SUB-TOTAL (6)					

Part C: Electives

Course	Title	Credit Hours	Grade	Term Taken	Mark if S/U
MICRBIO	Elective:				
MICRBIO	Elective:				
MICRBIO	Elective:				
MICRBIO	Elective:				
MICRBIO	Elective:				
SUB-TOTAL (≥ 7)					

Part D: Recurring Courses

Course	Title	Credit Hours	Grade	Term(s) Taken	Mark if S/U
MICRBIO 7899	Microbiology Colloquium	1 each semester			X
MICRBIO 8899	Seminars in Microbiology	1 each semester			X
SUB-TOTAL					

MS Degree

Required Credits (12): _____

Elective Credits (≥ 7): _____

Credits not graded S/U (≥ 18): _____

Total MS Degree Credits (≥ 30): _____

APPENDIX E3: CURRENT MS (THESIS) ADVISING SHEET

Microbiology MS (thesis)

Student ID #: _____

Expected Graduation Term: _____

Student Name.#: _____

Part A: Required Courses

Course	Title	Credit Hours	Grade	Term Taken	Mark if S/U
MICRBIO 6010	Principles of Microbiology	2			
MICRBIO 6020	Physiology and Biochemistry	3			
MICRBIO 7600	First-Year Orientation	1			X
SUB-TOTAL (6)					

Part B: Core Diversity [Select 2]

Course	Title	Credit Hours	Grade	Term Taken	Mark if S/U
MICRBIO 5161	Bioinformatics & Molecular Microbiology	3			
MICRBIO 6080	Adv. Microbial Genetics	3			
MICRBIO 6155	Microbial Ecology & Evolution	3			
SUB-TOTAL (6)					

Part C: Electives

Course	Title	Credit Hours	Grade	Term Taken	Mark if S/U
MICRBIO	Elective:				
MICRBIO	Elective:				
MICRBIO	Elective:				
SUB-TOTAL (≥ 7)					

Part D: Recurring Courses

Course	Title	Credit Hours	Grade	Term(s) Taken	Mark if S/U
MICRBIO 7899	Microbiology Colloquium	1 each semester			X
MICRBIO 7999	Research in Microbiology (MS)	Variable			X
MICRBIO 8899	Seminars in Microbiology	1 each semester			X
SUB-TOTAL					

MS Degree

Required Credits (12): _____

Elective Credits (≥ 7): _____

Credits not graded S/U (≥ 25): _____

Total MS Degree Credits (≥ 44): _____

APPENDIX E4: PROPOSED BS/MS ADVISING SHEET

Microbiology BS/MS

Student ID #: _____

Expected Graduation Term: _____

Student Name.#: _____

Second Major: _____

Minor: _____

Part A: General Education not fulfilled by Part B

Should complete majority prior to starting MS courses

GE Category	Course Number	Credit Hours	Grade	Term Taken
Writing		3		
		3		
Literature		3		
VPA		3		
Soc. Sci. 1:		3		
Soc. Sci. 2:		3		
Historical Study		3		
Cultures & Ideas		3		
Foreign Language		4		
		4		
		4		
Social Diversity*		3		
Global Studies*		3		
		3		

*Courses in these areas can overlap with another GE category when applicable

Part B: Major Prerequisites

Should be completed prior to starting MS courses

Course	Credit Hours	Grade	Term Taken	Course	Credit Hours	Grade	Term Taken
Math 1151	5			Chem 1210	5		
OR Math 1156	5			Chem 1220	5		
Math 1152	5			Chem 2510	4		
OR Math 1157	5			Chem 2520	4		
OR Stat 1450	3			Chem 2540	2		
OR Stat 2450	3			Physics 1200	5		
OR Stat 2480	3			OR Physics 1201	5		
Bio 1113	4			Physics 1201	5		
Bio 1114	4			OR Physics 1251**	5		

Honors courses can substitute where available

**Math 1152 is a prerequisite/co-requisite for Physics 1251

Microbiology BS/MS

Part C: Microbiology BS Core

Course	Title	BS Credit Hours	MS Credit Hours	Grade	Term Taken
BIOCHEM 4511	Intro to Biological Chemistry	4			
MICRBIO 4100	General Microbiology & Lab	5			

MICRBIO 4110	Pathogenesis & Immunobiology	3			
MICRBIO 4120	Microbial Physiology & Diversity	3			
MICRBIO 4130	Microbial Genetics	3			
MICRBIO 4140	Molecular Microbiology Lab	3			

Biochem 4511, Micro 4100, and at least 1 more course in Part C MUST be completed prior to starting MS courses
 OSU GPA must be ≥ 3.5 prior to starting MS courses

Part D: Microbiology BS Electives/MS Requirements

Course	Title	BS Credit Hours	MS Credit Hours	Grade	Term(s) Taken	Mark if S/U
MICRBIO 6010	Principles of Microbiology	2	2			
MICRBIO 6020	Microbial Physiology & Biochem	3	3			
MICRBIO	Core Diversity 1:	3	3			
MICRBIO	Core Diversity 2:	3	3			
MICRBIO	Elective:					
MICRBIO	Elective:					
MICRBIO	Elective:					
MICRBIO	Elective:					
MICRBIO 7600	First-Year Orientation		1			X
MICRBIO 7899	Microbiology Colloquium		4 (1 each semester)			X
MICRBIO 7999*	Research in Microbiology		Variable			X
MICRBIO 8899	Seminars in Microbiology		4 (1 each semester)			X
Space for Additional Microbiology Coursework						

* MICRBIO7999 enrollment for students in the thesis-MS program only

BS Degree

Major Core Credits (21): _____
 Major Elective Credits (≥ 9): _____
 Major Credits not graded S/U (≥ 27): _____
 Total BS Major Credits (≥ 30): _____
 Upper Division Credits (≥ 39): _____
 Total BS Degree Credits (≥ 121): _____

MS Degree

Required Credits (12): _____
 Elective Credits (≥ 7): _____
 Credits not graded S/U (≥ 18): _____

Total MS Degree Credits* (≥ 30): _____

* thesis-MS requires > 44 credits



THE OHIO STATE UNIVERSITY

College of Arts and Sciences

Offices of the Associate
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Dear Vice Provost Smith and members of the Council on Academic Affairs,

I have reviewed and strongly endorse the proposal from the Department of Microbiology to create a combined BS/MS degree program. I believe their rationale is sound and thorough, with clear and explicit admissions criteria and curriculum designs. Moreover, this combined degree program should serve to attract some of our strongest undergraduate students in the field to choose Ohio State for continued graduate-level work. The College of Arts and Sciences therefore urges you to approve this combined degree proposal.

Sincerely,

Steve Fink
Associate Executive Dean
College of Arts and Sciences