



MEMORANDUM

To: Julio Frenk
University President

From: Linda L. Neider
Chair, Faculty Senate

A handwritten signature in blue ink, appearing to read 'L. Neider'.

Date: April 27, 2020

Subject: Faculty Senate Legislation #2019-77(B) – Curriculum Change to the Bachelor of Science (B.S.) in Microbiology and Immunology – College of Arts and Sciences

The Faculty Senate, at its April 22, 2020 meeting, had no objections to the approval of the College of Arts and Sciences proposed changes to the B.S. in Microbiology and Immunology curriculum. This change includes updating the total credits to earn major from 24 to 27, updating elective courses of the major from 13 to 16.

The proposal is enclosed for your reference.

This legislation is now forwarded to you for your action.

LLN/ss/rh

cc: Jeffrey Duerk, Executive Vice President and Provost
Leonidas Bachas, Dean, College of Arts and Sciences
Roger Williams, Director, Student Activities, Undergraduate Microbiology and Immunology,
Miller School of Medicine

CAPSULE: Faculty Senate Legislation #2019-77(B) – Curriculum Change to the Bachelor of Science (B.S.) in Microbiology and Immunology – College of Arts and Sciences

PRESIDENT’S RESPONSE

APPROVED:  DATE: 5/20/20
(President’s Signature)

OFFICE OR INDIVIDUAL TO IMPLEMENT: Dean Leonidas Bachas, College of Arts & Sciences

EFFECTIVE DATE OF LEGISLATION: IMMEDIATELY
(Pending any further Board of Trustees approval.)

NOT APPROVED AND REFERRED TO: _____

REMARKS (IF NOT APPROVED): _____

Program Change Request

Date Submitted: 02/26/20 9:35 am

Viewing: **MICR_BS,MICR_AS_A : B.S. in
Microbiology and Immunology**

Last edit: 03/30/20 8:45 pm

Changes proposed by: Roger Williams (rwilliams)

Catalog Pages Using
this Program
[B.S. in Microbiology and Immunology](#)

In Workflow

1. **PG Assessment and Accreditation**
2. **PG AS Dean**
3. **PG FS Office for UCC**
4. **PG University Curriculum Committee**
5. **PG FS Office for GWC**
6. PG FS GWC
7. PG Faculty Senate
8. PG FS Office for President
9. PG Registrar

Proposer(s) Name

Change Type All Other Changes

Provide a brief summary of the change

Career Undergraduate

Academic Structure

Plan Type **Major and/or** ~~Dual/Joint~~ Degree

Who can take this program? **Any Student at University of Miami**

Degree Type Bachelor's

Degree Name **Bachelor of Science**

Proposed Plan Code

Plan Name
B.S. in Microbiology and Immunology

Approval Path

1. 03/18/20 5:04 pm
Patty Murphy (pxm491): Approved for PG Assessment and Accreditation
2. 03/20/20 1:18 pm
Leonidas Bachas (l.bachas): Approved for PG AS Dean
3. 03/20/20 3:08 pm
Patty Murphy (pxm491): Approved for PG FS Office for UCC
4. 03/27/20 9:18 am
David Chin (dchin1):

Will there be any subcomponents within the program such as concentrations, specializations, thesis/non-thesis options, or tracks?

Approved for PG University Curriculum Committee
 5. 03/27/20 9:36 am
 Patty Murphy (pxm491): Rollback to PG University Curriculum Committee for PG FS Office for GWC
 6. 03/27/20 11:54 am
 David Chin (dchin1): Approved for PG University Curriculum Committee

Please list the authors of this proposal including name, rank/title, program/department, and school.

Roger Williams, Director Student Activities, Undergraduate Microbiology and Immunology, Miller School of Medicine

Updating total credits to earn major from 24 to 27, updating elective courses of major from 13 to 16. Updating STATS requirement courses to include BPH courses. Adding BPH courses to count toward outside electives toward MIC major. Various minor changes to wording and footnotes.

School/ College	Department
College of Arts and Sciences	Microbiology/Immunology

No

Effective Term Fall 2020

First Term Valid Fall 2020

Program Instruction Mode In Person

Where is the program offered?	Location	Please provide the % of instruction at each location.
	Coral Gables Campus	100

Program Length (Years) 4

Total Credits **120** ~~127~~

Areas of Knowledge

STEM

To Be Published in the Academic Bulletin

Program Overview

Overview

The University of Miami is one of four institutions in the United States that offers an undergraduate program in Microbiology and Immunology. What does this mean? It means that you are being trained in an undergraduate major that focuses on two aspects of healthcare, various diseases and our bodies' defenses against them. Throughout your four years with us, you will learn about bacteria that cause the plague or that naturally inhabit our bodies, viruses such as Influenza, HIV, Zika or even Ebola and parasites such as Malaria. You will also learn how each of these can be controlled by our immune systems and how vaccinations can prevent some of these infections. Finally, you will understand how sometimes the immune system itself can inflict undesired damage and how it can be exploited to achieve cancer remissions. Students that have finished our program have gone on to careers in research, medicine, dentistry, pharmacy, optometry, physician assistant, law and many more.

Program Mission Statement

Mission

Our primary goal is to **emphasize basic as well as medical-focused science** ~~educate students in their chosen field~~ and instill **in our students the** ~~into them a~~ desire for lifelong learning. **We are unique program** ~~Research opportunities and laboratory engagement help create knowledge~~ in **that we have a dual presence at the Miller School** ~~our students while preparing them to become active members~~ of **Medicine as well as the Coral Gables Campuses.** ~~Research opportunities and laboratory engagement help create knowledge in our students while preparing them to become active members of the~~ **the** scientific and public communities.

Program Goals

Goals

Major program objectives are:

To expose students to the various disciplines within the field of Microbiology and Immunology, including virology, parasitology, microbial genetics, immunology and medical bacteriology.

To introduce students to special projects and/or research opportunities in laboratories at the School of Medicine.

To provide laboratory experience for the development of skills required for the conduct of research.

To make students aware of current cutting edge research in the field of Microbiology and Immunology by attending seminars of speakers from within and outside the University.

Student Learning Outcomes

Student Learning Outcomes

Students will learn to write scientifically using the appropriate style, terminology and methodology pertaining to their major area of study.

Students will demonstrate practical knowledge in microbiology and immunology.

Students will be able to apply their knowledge in scientific manner to deduce outcomes.

Curriculum Requirements

Curriculum Requirements

Course List

Code	Title	Credit Hours
Required MIC Courses		11
Take the following: 1		
<u>MIC 301</u>	Introduction to Microbes and the Immune System - COURSE PROPOSAL IN PROGRESS 4	
<u>MIC 304</u>	Introduction to Microbes and the Immune System (Lab) 4,7	
Select one of the following: 1		
<u>MIC 319</u>	Innate Immunity 2	
<u>MIC 321</u>	Immunobiology 3	
Select one of the following: 1		
<u>MIC 201</u>	Modern Plagues and Society 2	

Code	Title	Credit Hours
<u>MIC 322</u>	Medical Parasitology 3	
<u>MIC 323</u>	Microbial Pathogenesis and Physiology 2	
<u>MIC 436</u>	Fundamental and Medical Virology 3	
Elective MIC Courses		16
<u>MIC 201</u>	Modern Plagues and Society 2	
<u>MIC 319</u>	Innate Immunity 2	
<u>MIC 321</u>	Immunobiology 3	
<u>MIC 322</u>	Medical Parasitology 3	
<u>MIC 323</u>	Microbial Pathogenesis and Physiology 2	
<u>MIC 436</u>	Fundamental and Medical Virology 3	
<u>MIC 441</u>	Microbiology and Immunology Colloquium 4,7	
<u>MIC 460</u>	Advanced Topics in Microbiology and Immunology 3	
Research in MIC for Credit		
(only 6 credit hours may be applied to count toward the 16 MIC Elective hours, any credits over 6 count as elective credits toward the 120 credits required for graduation or 150 credits for dual degree seeking students)		
<u>MIC 451</u>	Special Projects in Immunobiology 4,5	
<u>MIC 452</u>	Special Projects in Parasitology 4,5	
<u>MIC 453</u>	Special Projects in Pathogenic Bacteriology 4,5	
<u>MIC 454</u>	Special Projects in Microbial Genetics 4,5	
<u>MIC 455</u>	Special Projects in Immunogenetics 4,5	
<u>MIC 456</u>	Special Projects in Virology 4,5	
Outside Electives that can be taken to count toward the 16 credit hours above (2 courses maximum)		
<u>BPH 206</u>	Introduction to Public Health (Required for Dual Degree and Double Major in Public Health) 4	
<u>BPH 208</u>	Introductory Epidemiology (Required for Dual Degree and Double Major in Public Health) 4	
<u>BIL 255</u>	Cellular and Molecular Biology	
or <u>BIL 250</u>	Genetics	
<u>GSC 309</u>	Microbes and the Environment	
or <u>MSC 465</u>	Marine Comparative Immunology	
Total MIC Credits for Major = 11 cr. Required MIC courses + 16 cr. Elective MIC courses = 27		
Required Natural Science Courses		
Chemistry Courses:		16
<u>CHM 121</u>	Principles of Chemistry	
& <u>CHM 113</u>	and Chemistry Laboratory I	
<u>CHM 221</u>	Organic Chemistry I	
& <u>CHM 205</u>	and Organic Chemistry Laboratory I	

Code	Title	Credit Hours
<u>CHM 222</u> & <u>CHM 206</u>	Organic Chemistry II and Organic Chemistry Laboratory II	
Other Required Natural Science Courses:		
<u>BIL 150</u> & <u>BIL 151</u>	General Biology and General Biology Laboratory	
<u>BIL 160</u> & <u>BIL 161</u>	Evolution and Biodiversity and Evolution and Biodiversity Laboratory	
<u>BMB 401</u>	Biochemistry for the Biomedical Sciences	
Select one of the following Physics Options:		10
Option 1:		
<u>PHY 101</u> & <u>PHY 106</u>	College Physics I and College Physics Laboratory I	
<u>PHY 102</u> & <u>PHY 108</u>	College Physics II and College Physics Laboratory II	
Option 2:		
<u>PHY 201</u> & <u>PHY 106</u>	University Physics I for the Sciences and College Physics Laboratory I	
<u>PHY 202</u> & <u>PHY 108</u>	University Physics II for the Sciences and College Physics Laboratory II	
Select one of the following Calculus Options:		6
Option 1:		
<u>MTH 140</u> & <u>MTH 141</u> & <u>MTH 162</u>	Calculus Concepts with Foundations A and Calculus Concepts with Foundations B and Calculus II	
Option 2:		
<u>MTH 161</u> & <u>MTH 162</u>	Calculus I and Calculus II	
Option 3:		
<u>MTH 171</u> & <u>MTH 172</u>	Calculus I and Calculus II	
Select one of the following Computer Science or Statistics courses:		3
<u>BPH 202</u> or <u>BPH 465</u>	Introductory Statistics in Health Care Public Health Statistics and Data Management	
<u>CSC 120</u>	Computer Programming I	
<u>CSC 210</u>	Computing for Scientists	
<u>MTH 224</u>	Introduction to Probability and Statistics	
<u>PSY 292</u>	Introduction to Biobehavioral Statistics for Non-Majors	
<u>SOC 211</u>	Quantitative Methods for Sociologists	

Code	Title	Credit Hours
Additional Required Courses		
ENG 105	English Composition I	3
ENG 106	English Composition II	3
or ENG 107	English Composition II: Science and Technology	
SOC 101 and PSY 110 are required for students that are Premed and/or are using to satisfy a cognate		
SOC 101	Introduction to Sociology	3
PSY 110	Introduction to Psychology	3
Language Courses		9
Arts and Humanities Cognate		9
People and Society Cognate (BPH fulfills if Dual Degree or Dual Major)		9
Electives		17
Total Credit Hours		120

1 Required of all Microbiology and Immunology majors.

2 [MIC 201](#), [MIC 319](#), [MIC 323](#), [GSC 309](#) Fall Semester only or by announcement

3 [MIC 321](#), [MIC 322](#), [MIC 436](#), [MIC 460](#) Spring Semester only or by announcement

4 [MIC 301](#), [MIC 304](#), [MIC 441](#) Fall and Spring Semesters

5 [MIC 451](#), [MIC 452](#), [MIC 453](#), [MIC 454](#), [MIC 455](#), [MIC 456](#) all require that you have already completed MIC 304 and earned at least a B and have a 3.0 cumm GPA with permission of Program Director or Roger, Fall and Spring Semesters

6 Depends on Math placement from SAT/ACT or ALEKS score.

7 University writing credit course

8 CHM 121 requires as a prerequisite or co-requisite MTH 140

* All MIC majors are required to have a minor (science or non-science). Students will receive a CHM minor provided that they earn a C- or better in every course of the minor while in residence at UM. All students should declare their CHM minor when they begin our program in ASHE 200 by filling out a change of major form. On this form, you can declare also additional majors/minors as well as cognates.

**Transfer students seeking a Microbiology and Immunology major must earn at least 12 credit hours taken in residence in the UM Department of Microbiology and Immunology beyond [MIC 301](#) in the courses listed above for majors.

Plan of Study

Sample Plan of Study

This is a 4 year sample plan of study that assumes courses are taken during the fall and spring.

This is a guide and is not meant to take the place of the advice of your major advisor, you should consult with them before making any changes.

Plan of Study Grid

Freshman Year

Fall		Credit Hours
<u>MIC 304, 201, 301, or 319</u>	Introduction to Microbes and the Immune System (Lab) or Modern Plagues and Society or Introduction to Microbes and the Immune System or Innate Immunity	2-3
<u>BIL 150</u>	General Biology	4
<u>BIL 151</u>	General Biology Laboratory	1
<u>CHM 121</u>	Principles of Chemistry	4
<u>CHM 113</u>	Chemistry Laboratory I	1
<u>ENG 105</u>	English Composition I	3
<u>PSY 110</u>	Introduction to Psychology (People & Society Cognate)	3
	Credit Hours	18-19

Spring

<u>MIC 301</u>	Introduction to Microbes and the Immune System	3
<u>MIC 304</u>	Introduction to Microbes and the Immune System (Lab)	2
<u>BIL 160</u>	Evolution and Biodiversity	4
<u>BIL 161</u>	Evolution and Biodiversity Laboratory	1
<u>CHM 221</u>	Organic Chemistry I	4
<u>CHM 205</u>	Organic Chemistry Laboratory I	1
<u>ENG 106 or 107</u>	English Composition II or English Composition II: Science and Technology	3
	Credit Hours	18

Sophomore Year

Fall		
<u>MIC 319 or 201</u>	Innate Immunity (and <u>MIC 304</u> if MIC 303 taken prior) or Modern Plagues and Society	3
<u>CHM 222</u>	Organic Chemistry II	4
<u>CHM 206</u>	Organic Chemistry Laboratory II	2
<u>MTH 161</u>	Calculus I	4
	Arts and Humanities Cognate Course	3
	Foreign Language	3
	Credit Hours	19

Spring

<u>MIC 321</u>	Immunobiology (or <u>MIC 322</u> or <u>MIC 436</u> or <u>MIC 460</u>)	3
<u>BMB 401</u>	Biochemistry for the Biomedical Sciences	4
<u>MTH 162</u>	Calculus II	4
<u>BIL 255 or 250</u>	Cellular and Molecular Biology (Optional elective in MIC) or Genetics	3

<u>SOC 101</u>	Introduction to Sociology (or Foreign Language)	3
	Recommended MCAT, GRE, DAT or OAT...	
	Credit Hours	17
Junior Year		
Fall		
<u>MIC 323</u>	Microbial Pathogenesis and Physiology	3
<u>GSC 309</u> or <u>MSC 465</u>	Microbes and the Environment (Optional elective credit in MIC)3 or Marine Comparative Immunology	
<u>PHY 101</u>	College Physics I	4
<u>PHY 106</u>	College Physics Laboratory I	1
Foreign Language		3
	Credit Hours	14
Spring		
<u>MIC 436</u>	Fundamental and Medical Virology	3
People and Society Cognate		3
<u>PHY 102</u>	College Physics II	4
<u>PHY 108</u>	College Physics Laboratory II	1
Statistics or Computer Science Course		3-4
<u>CSC 120</u>	Computer Programming I	
<u>CSC 210</u>	Computing for Scientists	
<u>MTH 224</u>	Introduction to Probability and Statistics	
<u>PSY 292</u>	Introduction to Biobehavioral Statistics for Non-Majors	
<u>SOC 211</u>	Quantitative Methods for Sociologists	
Arts and Humanities Cognate Course		3
	Possible MCAT, GRE, DAT or OAT...	
	Credit Hours	17-18
Senior Year		
Fall		
<u>MIC 441</u>	Microbiology and Immunology Colloquium	1
Choose one of the following:		2-6
<u>MIC 451</u>	Special Projects in Immunobiology	
<u>MIC 452</u>	Special Projects in Parasitology	
<u>MIC 453</u>	Special Projects in Pathogenic Bacteriology	
<u>MIC 454</u>	Special Projects in Microbial Genetics	
<u>MIC 455</u>	Special Projects in Immunogenetics	
<u>MIC 456</u>	Special Projects in Virology	
Applications to Medical or Graduate School		
Elective		3
Elective		3
People and Society Cognate Course		3

	Credit Hours	12-16
Spring		
<u>MIC 322</u>	Medical Parasitology	3
	Choose one of the following:	2-6
<u>MIC 451</u>	Special Projects in Immunobiology	
<u>MIC 452</u>	Special Projects in Parasitology	
<u>MIC 453</u>	Special Projects in Pathogenic Bacteriology	
<u>MIC 454</u>	Special Projects in Microbial Genetics	
<u>MIC 455</u>	Special Projects in Immunogenetics	
<u>MIC 456</u>	Special Projects in Virology	
Elective		3
Arts and Humanities Cognate Course		3
	Credit Hours	11-15
	Total Credit Hours	126-136

Rationale

Rationale

The modifications to our existing program are as follows:

1. Added three credits to the MIC major requirements which increases it from 24 to 27 in order to receive a MIC major. This was done since our course offerings have increased in recent years.
2. The statistics requirement was updated to include BPH courses as these are often taken by our students that are double majoring or pursuing the dual degree in Public Health.

Market Demand

N/A

Relationship to Other Programs

N/A

Library Resources Available and Needed to Support the Program

N/A

Laboratory Facilities, Equipment, and Space Available and Needed to Support the Program

N/A

Other Resources Available or Needed to Support the Program

N/A

Curriculum

Program Curriculum

N/A

Upload Syllabi for Any New Courses

Proposed Schedule of Course Offerings for the First Three Years

N/A

CIP Code

Proposed CIP Code

Faculty

Program Directors

Upload CV(s)

Program Faculty

Students

Applicant Pool

Enrollment Projections

Administration

Program Administration

Comparison

Peer Comparisons

Documents

Attach Supporting Documentation

[Dean Memo to Senate re Proposal for changes to BS in Microbiology and Immunology.pdf](#)

Reviewer

Comments

Patty Murphy (pxm491) (03/18/20 5:04 pm): The proposed changes do not require notification to or approval from SACSCOC because they involve a repackaging of existing courses.


Leonidas Bachas (l.bachas) (03/20/20 1:18 pm): Following existing College Policy the Microbiology proposal was approved on January 31, 2020 by the College Curriculum Committee. As Dean of A&S I approve this program change

Patty Murphy (pxm491) (03/27/20 9:36 am): Rollback: Please add comment

David Chin (dchin1) (03/27/20 11:54 am): On 3/25/20 the University Curriculum Committee voted to support this proposal as submitted.

Robyn Hardeman (rhardeman) (03/30/20 8:45 pm): Memo added from Dean Bachas, 3/30/2020, rh.

To: Linda Neider
Chair, Faculty Senate

From: Leonidas Bachas 
Dean, College of Arts and Sciences

Subject: Proposal for Changes to BS in Microbiology and Immunology

Date: March 27, 2020

I am writing to express my support of the proposal for changes to the BS degree in Microbiology and Immunology. It is the practice in the College not to require the College Council or the College Faculty to approve curricular changes. It has been the practice of the College that the College Curriculum Committee, which is appointed by the College Council, makes final decisions regarding curricular changes. Therefore, the proposal, which was approved by the College Curriculum Committee on January 31, 2020, is being forwarding to the Faculty Senate for action. If you have any questions, please feel free to contact me.

Thank you.

LGB/rkg