LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

Name of program and degree award: Biology, B.S.
Hegis number: 0401.00
Program code: 34022
Effective term: Spring 2023

1. **TYPE OF CHANGE:** Degree Requirements

2. **FROM:**
Biology, B.S. (39-78 credit major)

The required courses and credits are distributed as follows:

Prerequisites * (~~34-38~~ credits):

		credits
BIO 166	Principles Of Biology: Cells And Genes	4
BIO 167	Principles Of Biology: Organisms	4
CHE 166	General Chemistry I	4
CHE 167	General Chemistry Laboratory I	1.5
CHE 168	General Chemistry II	4
CHE 169	General Chemistry Laboratory II	1.5
PHY 166	General Physics I	5
PHY 167	General Physics II	5
MAT 175	Calculus I	4
~~MAT 155~~	~~Calculus I Laboratory~~	~~1~~

**Bio 166 And Bio 167 Can Be Used To Fulfill General Education Requirements. Both Are Prerequisites To All Other Biology Courses.*
Mat 175: Depending On Mathematics Placement, ~~Students~~ May Need To Complete The Pre-Requisite Mat 172, 4 Credits.
Students Who Complete Any Or All Of The Pre-Requisite Courses Before Declaring The Major May Complete The Major In Less Than 77 Credits.

Foundation (Required) Courses (19 Credits):
Biology (7 Credits):

		Credits
BIO 238	Genetics	4
BIO 240	Biostatistics	3

Organic Chemistry (12 Credits):

		Credits
CHE 232	Organic Chemistry Lecture I	4
CHE 233	Organic Chemistry Laboratory I	2
CHE 234	Organic Chemistry Lecture Ii	4
CHE 235	Organic Chemistry Laboratory Ii	2

At Least 20-~~24~~ Credits In One Of The Following Tracks:

Biomedical Sciences At Least 21 Credits

Select Courses From Lists: A, B, And C
At Least 12 Credits From List A:

		Credits
BIO 228	Mammalian Physiology	4
BIO 267	Comparative Anatomy Of Vertebrates	4
BIO 331	Experimental Microbiology	4
BIO 333	Endocrine Physiology	4

BIO 350	Introduction To Immunology	4
BIO 400	Biological Chemistry	4
BIO 410	Cell Physiology And Biochemistry	4
BIO 411	Principles Of Virology	2
BIO 415	Medical Microbiology	4
BIO 420	Molecular Biology	4

At Least 8 Credits From List B:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 268	Vertebrate Embryology	4
BIO 311	Parasitology	3
BIO 312	Parasitology Laboratory	2
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 321	Neural Development Laboratory	2
BIO 330	Plant Physiology	4
BIO 336	Marine Biology Lectures	3
BIO 338	Genetics Of Man	4
BIO 339	Ecology	4
BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
~~BIO 431~~	~~Comparative Animal Physiology~~	4

BIO 435	Neurophysiology	3
BIO 438	Genomics And Human Health	4
BIO 465	Microbial Physiology And Genetics	4

At Least 1 Credit From List C:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

Organismic Sciences At Least 21 Credits

Select Courses From Lists A, B, And C
At Least 12 Credits From List A:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 268	Vertebrate Embryology	4
BIO 311	Parasitology	3
BIO 312	Parasitology Laboratory	2
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 321	Neural Development Laboratory	2
BIO 330	Plant Physiology	4

BIO 336	Marine Biology Lectures	3
BIO 338	Genetics Of Man	4
BIO 339	Ecology	4
BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
~~BIO 431~~	~~Comparative Animal Physiology~~	4
BIO 435	Neurophysiology	3
BIO 438	Genomics And Human Health	4
BIO 465	Microbial Physiology And Genetics	4

At Least 8 Credits From List B:

		Credits
BIO 228	Mammalian Physiology	4
BIO 267	Comparative Anatomy Of Vertebrates	4
BIO 331	Experimental Microbiology	4
BIO 333	Endocrine Physiology	4
BIO 350	Introduction To Immunology	4
BIO 400	Biological Chemistry	4
BIO 410	Cell Physiology And Biochemistry	4
BIO 411	Principles Of Virology	2
BIO 415	Medical Microbiology	4

BIO 420	Molecular Biology	4

At Least 1 Credit From List C:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

Brain Sciences At Least 20 Credits

Select Courses From Lists: A, B, And C
At Least 13 Credits From List A:

		Credits
BIO 228	Mammalian Physiology	4
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 321	Neural Development Laboratory	2
BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
BIO 435	Neurophysiology	3

At Least 1 Credit From List B:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1

BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

6-9 Credits From List C:

		Credits
PSY 166	General Psychology	3
PSY 308	Motivation And Emotion	3
PSY 310	Psychology Of Learning	3
PSY 312	Psychology Of Memory	3
PSY 314	Cognitive Psychology	3
PSY 317	Psychology Of Sensation And Perception	3
PSY 366	Clinical Neuropsychology	3

Psy 166 Can Be Used To Fulfill General Education Requirements And Is A Prerequisite To All Other Psy Courses. Students Who Complete Psy 166 Before Declaring The Major Only Need To Complete 6 Credits In This Area.

Bioenvironmental Sciences At Least 24 Credits

Select Courses From Lists: A, B, And C Or D
At Least 14 Credits From List A:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
~~BIO 246~~	~~Growth And Development Of Higher Plants~~	~~4~~
BIO 270	Invertebrate Zoology	3

BIO 271	Invertebrate Zoology Laboratory	2
BIO 330	Plant Physiology	4
BIO 331	Experimental Microbiology	4
BIO 336	Marine Biology Lectures	3
BIO 339	Ecology	4
BIO 400	Biological Chemistry	4
BIO 420	Molecular Biology	4

At Least 1 Credit~~s~~ From List B:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

~~Either At Least 6 Credits In Geospatial Sciences From List C:~~

		~~Credits~~
~~GEP 204~~	~~Basic Mapping: Applications And Analysis~~	~~3~~
	~~Or~~	
~~GEO 101~~	~~Dynamic Earth~~	~~3~~
	~~Or~~	
~~GEH 101~~	~~An Introduction To Geography~~	~~3~~

	~~And~~	
~~GEP 205~~	~~Principles Of Geographic Information Science~~	~~3~~
	~~And~~	
~~GEP 321~~	~~Introduction To Remote Sensing~~	~~4~~
	~~Or~~	
~~GEP 3750~~	~~Data Acquisition And Integration Methods For Gis Analysis~~	~~3~~

~~Or 6 Credits From List D:~~

		~~Credits~~
~~POL 3600~~	~~Political Demography~~	~~3~~
~~POL 366~~	~~Global Political Economy~~	~~3~~
~~POL 368~~	~~Global Environmental Politics~~	~~3~~
~~POL 343~~	~~International And Regional Organizations~~	~~3~~

3. **TO:**
Biology, B.S. (39-80 Credit Major)

The Required Courses And Credits Are Distributed As Follows:
Prerequisites * (33-37 Credits):

		Credits
BIO 166	Principles Of Biology: Cells And Genes	4
BIO 167	Principles Of Biology: Organisms	4
CHE 166	General Chemistry I	4
CHE 167	General Chemistry Laboratory I	1.5
CHE 168	General Chemistry II	4

CHE 169	General Chemistry Laboratory Ii	1.5
PHY 166	General Physics I	5
PHY 167	General Physics Ii	5
MAT 175	Calculus	4

**Bio 166 And Bio 167 Can Be Used To Fulfill General Education Requirements. Both Are Prerequisites To All Other Biology Courses.*
Mat 175: Students Must Take Mat 155 As A Co-Requisite, And Depending On Mathematics Placement, May Need To Complete The Pre-Requisite Mat 172, 4 Credits Or The Combined Substitute (Mat 171 And Mat 108)
Students Who Complete Any Or All Of The Pre-Requisite Courses Before Declaring The Major May Complete The Major In Less Than 77 Credits.

Foundation (Required) Courses (19 Credits):
Biology (7 Credits):

		Credits
BIO 238	Genetics	4
BIO 240	Biostatistics	3

Organic Chemistry (12 Credits):

		Credits
CHE 232	Organic Chemistry Lecture I	4
CHE 233	Organic Chemistry Laboratory I	2
CHE 234	Organic Chemistry Lecture Ii	4
CHE 235	Organic Chemistry Laboratory Ii	2

At Least 20-24 Credits In One Of The Following Tracks:

Biomedical Sciences At Least 21 Credits

Select Courses From Lists: A, B, And C

At Least 12 Credits From List A:

		Credits
BIO 228	Mammalian Physiology	4
BIO 267	Comparative Anatomy Of Vertebrates	4
BIO 331	Experimental Microbiology	4
BIO 333	Endocrine Physiology	4
BIO 350	Introduction To Immunology	4
BIO 400	Biological Chemistry	4
BIO 410	Cell Physiology And Biochemistry	4
BIO 411	Principles Of Virology	2
BIO 415	Medical Microbiology	4
BIO 420	Molecular Biology	4
BIO 431	Comparative Animal Physiology	4

At Least 8 Credits From List B:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 251	Introduction To Environmentalism	2
BIO 268	Vertebrate Embryology	4
BIO 311	Parasitology	3
BIO 312	Parasitology Laboratory	2
BIO 320	Neural Development: From Genes And Cells To Brains	3

BIO 321	Neural Development Laboratory	2
BIO 330	Plant Physiology	4
BIO 336	Marine Biology Lectures	3
BIO 338	Genetics Of Man	4
BIO 339	Ecology	4
BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
BIO 425	Ichthyology	3
BIO 426	Ichthyology Laboratory	2
BIO 435	Neurophysiology	3
BIO 438	Genomics And Human Health	4
BIO 465	Microbial Physiology And Genetics	4

At Least 1 Credit From List C:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

Organismic Sciences At Least 21 Credits

Select Courses From Lists A, B, And C
At Least 12 Credits From List A:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 251	Introduction To Environmentalism	2
BIO 268	Vertebrate Embryology	4
BIO 311	Parasitology	3
BIO 312	Parasitology Laboratory	2
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 321	Neural Development Laboratory	2
BIO 330	Plant Physiology	4
BIO 336	Marine Biology Lectures	3
BIO 338	Genetics Of Man	4
BIO 339	Ecology	4
BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
BIO 425	Ichthyology	3
BIO 426	Ichthyology Laboratory	2
BIO 435	Neurophysiology	3
BIO 438	Genomics And Human Health	4

BIO 465	Microbial Physiology And Genetics	4

At Least 8 Credits From List B:

		Credits
BIO 228	Mammalian Physiology	4
BIO 267	Comparative Anatomy Of Vertebrates	4
BIO 331	Experimental Microbiology	4
BIO 333	Endocrine Physiology	4
BIO 350	Introduction To Immunology	4
BIO 400	Biological Chemistry	4
BIO 410	Cell Physiology And Biochemistry	4
BIO 411	Principles Of Virology	2
BIO 415	Medical Microbiology	4
BIO 420	Molecular Biology	4
BIO 431	Comparative Animal Physiology	4

At Least 1 Credit From List C:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).

BIO 490	Honors In Biological Sciences	3

Brain Sciences At Least 20 Credits

Select Courses From Lists: A, B, And C
At Least 13 Credits From List A:

		Credits
BIO 228	Mammalian Physiology	4
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 321	Neural Development Laboratory	2
BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
BIO 400	Biological Chemistry	4
BIO 420	Molecular Biology	4
BIO 435	Neurophysiology	3

At Least 1 Credit From List B:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

6-9 Credits From List C:

		Credits
PSY 166	General Psychology	3
PSY 308	Motivation And Emotion	3
PSY 310	Psychology Of Learning	3
PSY 312	Psychology Of Memory	3
PSY 314	Cognitive Psychology	3
PSY 317	Psychology Of Sensation And Perception	3
PSY 366	Clinical Neuropsychology	3

Psy 166 Can Be Used To Fulfill General Education Requirements And Is A Prerequisite To All Other Psy Courses. Students Who Complete Psy 166 Before Declaring The Major Only Need To Complete 6 Credits In This Area.

Bioenvironmental Sciences At Least 24 Credits

Select Courses From Lists: A, B, And C
At Least 12 Credits From List A:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 242	Flowering Plants	4
BIO 251	Introduction To Environmentalism	2
BIO 270	Invertebrate Zoology	3
BIO 271	Invertebrate Zoology Laboratory	2
BIO 330	Plant Physiology	4
BIO 331	Experimental Microbiology	4
BIO 336	Marine Biology Lectures	3
BIO 339	Ecology	4
BIO 400	Biological Chemistry	4

BIO 420	Molecular Biology	4
BIO 425	Ichthyology	3
BIO 426	Ichthyology Laboratory	2
BIO 503	Topics In Urban Ecology	4

At Least 1 Credit From List B:

		Credits
BIO 440	Biology Journal Review	2
BIO 450	Biology Seminar	1
BIO 489	Introduction To Experimental Biology	1 (May Be Repeated For A Maximum 3 Credits).
BIO 490	Honors In Biological Sciences	3

BS To M.S. Dual Credit Opportunity
Undergraduate Students Majoring In Biology With 90 Or More Credits And A Minimum (3.0) Cumulative Index And (3.5) Index In The Major May Be Permitted To Enroll In Up To 8 Credits Of Graduate Coursework In Preparation For The M.S. Degree In Biology. The Student Must Receive Permission From The Department To Take Graduate Courses Prior To Registration. Should move this to here after the table

At Least 11 Credits In Geospatial And Environmental Sciences

		Credits
ENV 251	Introduction To Digital Data	2
	3 credits from	
GEP 205	Principles Of Geographic Inform Sci	3
	Or	
GEP 3060 /306	Raster Applications	3
	Or	
GEP 375	Data Acq And Integr For Gis Analysis	3
	Or	
ENV 235	Conservation Of The Environment	3
	Or	

GEP 340	Natural Hazards And Disasters With Gis	3
	3 credits from	
ENV 236	Environmental Policy	3
	Or	
POL 368	Global Environmental Politics	3
	And 3 credits from	
HEA 301	Environmental Health	3
	Or	
ENV 270	Environmental Pollution	3

4. **Rationale (Explain How This Change Will Impact Learning Outcomes of the Department and Major/Program):**
1) Removed Mat 155 From The Required Courses Because Mat 175 Has Mat 155 As A Co-Requisite, But The Math Department Does Not Offer Mat 155 Every Semester And Allows Students In Those Semesters To Ignore Mat 155. Students Who Take Mat 175 Without Mat 155 Or Who Transfer The Course To Lehman Must Ask For A Waiver From The Department Which Is Causing A Problem For Students And For The Advisors. **2)** The Proposed Policy Permitting Those With A 3.5 Major Gpa To Take Graduate-Level Courses Will Allow Eligible Students To Show Their Competency For Entering The M.S. Program In Biological Sciences Or Other Professional Training Schools. 3) The Proposed Changes In The Course Offerings And Choices For The Bioenvironmental Sciences Track Will Prepare Students For A Wider Variety Of Careers. The Track Is Redesigned To Better Prepare Students For Graduate Programs To Become Plant Scientists, Wildlife Conservationists, Environmental Biologists Or Any Other Professions In Government And Industry That Requires Knowledge Of Plant And Environmental Sciences. With The Addition Of The New Course Offerings, We Will Help Students Better Identify The Training Path That Is Suited For Their Career Goals.

5. **Date of Departmental Approval:** 03/02/2022

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

Name Of Program and Degree Award: Biology-BA Teacher, Grades 7-12, B.A.
Hegis Number: 0401.00
Program Code: 39823
Effective Term: Spring 2023

1. **Type Of Change:** Degree Requirements

2. **From:**
Biology Teacher, Grades 7-12, B.A. (55 Credit Major)

This major sequence in Biology is appropriate only for students planning to teach in middle and high school. The required education sequence in middle and high school education must be completed for all students selecting this major in Biology. As part of their overall training students in science, students will be required to take ESC 419.

The required credits are distributed as follows:

~~8~~ Credits In:

		Credits
BIO 166	Principles Of Biology: Cells And Genes	4
BIO 167	Principles Of Biology: Organisms	4

Bio 166 And Bio 167: Both Courses Count Towards Pathways General Education Requirements. Both Are Prerequisites To All Other Biology Courses At The 200-Level Or Higher.

5 Credits In Physics:

		Credits
PHY 166	General Physics I	5

17 Credits In Chemistry:

		Credits
CHE 166	General Chemistry I	4
CHE 167	General Chemistry Laboratory I	1.5

CHE 168	General Chemistry Ii	4
CHE 169	General Chemistry Laboratory Ii	1.5
CHE 232	Organic Chemistry Lecture I	4
CHE 233	Organic Chemistry Laboratory I	2

3 Credits In Mathematics:

		Credits
MAT 128	Foundations Of Data Science	3

At Least ~~22~~ Credits In Advanced Biology Courses From 3 Areas:
At Least ~~Two~~ Courses From Cellular Biology:

		Credits
~~BIO 238~~	~~Genetics~~	~~4~~
BIO 268	Vertebrate Embryology	4
BIO 311	Parasitology	3
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 331	Experimental Microbiology	4
BIO 338	Genetics Of Man	4
BIO 350	Introduction To Immunology	4
BIO 400	Biological Chemistry	4
BIO 406	Biochemistry Of Differentiation	3
BIO 415	Medical Microbiology	4
BIO 420	Molecular Biology	4
BIO 465	Microbial Physiology And Genetics	4

At Least One Course From Organismic Biology:

		Credits
BIO 228	Mammalian Physiology	4
BIO 267	Comparative Anatomy Of Vertebrates	4
BIO 270	Invertebrate Zoology	3
BIO 330	Plant Physiology	4
BIO 333	Endocrine Physiology	4
BIO 340	Human Body And Brain	3
BIO 431	Comparative Animal Physiology	4
BIO 435	Neurophysiology	3

At Least One Course From Population Biology:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 336	Marine Biology Lectures	3
BIO 339	Ecology	4
~~BIO 401~~	~~Biological Systematics~~	~~4~~

3. To:

Biology Teacher, Grades 7-12, B.A. (55 Credit Major)

This major sequence in Biology is appropriate only for students planning to teach in middle and high school. The required education sequence in middle and high school education must be completed for all students selecting this major in Biology. As part of their overall training students in science, students will be required to take ESC 419.

The required credits are distributed as follows:

12 Credits In:

		Credits
BIO 166	Principles Of Biology: Cells And Genes	4
BIO 167	Principles Of Biology: Organisms	4
BIO 238	Genetics	4

Bio 166 And Bio 167: Both Courses Count Towards Pathways General Education Requirements. Both Are Prerequisites To All Other Biology Courses At The 200-Level Or Higher.

5 Credits In Physics:

		Credits
PHY 166	General Physics I	5

17 Credits In Chemistry:

		Credits
CHE 166	General Chemistry I	4
CHE 167	General Chemistry Laboratory I	1.5
CHE 168	General Chemistry Ii	4
CHE 169	General Chemistry Laboratory Ii	1.5
CHE 232	Organic Chemistry Lecture I	4
CHE 233	Organic Chemistry Laboratory I	2

3 Credits In Mathematics:

		Credits
MAT 128	Foundations Of Data Science	3

At Least 18 Credits In Advanced Biology Courses From 3 Areas:
At Least One Course From Cellular Biology:

		Credits

BIO 268	Vertebrate Embryology	4
BIO 311	Parasitology	3
BIO 312	Parasitology Lab	2
BIO 320	Neural Development: From Genes And Cells To Brains	3
BIO 321	Neural Development Laboratory	2
BIO 331	Experimental Microbiology	4
BIO 338	Genetics Of Man	4
BIO 350	Introduction To Immunology	4
BIO 400	Biological Chemistry	4
BIO 406	Biochemistry Of Differentiation	3
BIO 415	Medical Microbiology	4
BIO 420	Molecular Biology	4
BIO 465	Microbial Physiology And Genetics	4

At Least One Course From Organismic Biology:

		Credits
BIO 228	Mammalian Physiology	4
BIO 267	Comparative Anatomy Of Vertebrates	4
BIO 270	Invertebrate Zoology	3
BIO 330	Plant Physiology	4
BIO 333	Endocrine Physiology	4

BIO 340	Human Body And Brain	3
BIO 341	Human Body And Brain Laboratory	2
BIO 431	Comparative Animal Physiology	4
BIO 435	Neurophysiology	3

At Least One Course From Population Biology:

		Credits
BIO 241	Evolution, Species, And Biogeography	3
BIO 251	Introduction To Environmentalism	2
BIO 336	Marine Biology Lectures	3
BIO 339	Ecology	4
BIO 425	Ichthyology	3
BIO 426	Ichthyology Laboratory	2

4. **Rationale (Explain How This Change Will Impact Learning Outcomes Of The. Department And Major/Program):**
Genetics is a field of study with which all biologists must be familiar. We added genetics as a requirement for the BA degree because we think that the knowledge and skills obtained in the course are important for students that we are training to become Middle and High school Biology teachers. Also, we added the lab courses: BIO 312, BIO 321, and BIO 341 to the electives because we think it is important for the Biology teachers to have additional laboratory skills to teach Middle and High school students.

5. **Date of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** *New Course*

2. **From**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 251
Course Title	Introduction To Environmentalism
Description	The Course Introduces Students To The History And Science Of Environmental Ecology And Its Applications In Urban Eco Systems.
Pre/ Co Requisites	BIO166 and BIO 167
Credits	2
Hours	2
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

3. **Rationale:**
The Course Aims To Provide Students With Knowledge Of The Background And Development Of Ecological Environmental Science To Understand Current Issues At Local Scales And To Help Hone Critical Skills For Addressing Environmental Problems

To Ameliorate Their Impact. Bio 251 Was Approved As An Experimental Course, But We Are Asking To Make The Course Permanent So That It Can Be Added To The Bio-Bs Bioenvironmental Track And The Bio-Ba As An Offering That Counts Towards Their Degree.

4. **Learning Outcomes (By The End Of The Course Students Will Be Able To):**
   - Develop natural history skills for interpreting local environments and ecosystems
   - Become familiar with environmentalism and its impact on urbanized ecosystems
   - Be able to present and critically discuss current journal articles on ecological topics
   - Be able to collect and analyze basic ecological data
   - Be able to apply information gained locally to issues that are global in nature

5. **Date Of Departmental Approval:** 10/06/2021

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** *Cross Listing*

2. **From:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 330 (BIO 340)
Course Title	Plant Physiology
Description	Consideration Of The Major Physiological Processes Of Plants, With Special Emphasis On Water Relations, Inorganic Nutrition, Photosynthesis, Metabolism, And Hormonal Relationships. Laboratory Studies Consist Of Physiological Experiments With Living Plants.
Pre/ Co Requisites	BIO 166 And BIO 167 And One BIO Course At 200 Level Or Above (Not BIO 230) And CHE 234 And CHE 235. ~~Cross Listed Courses~~ ~~Leh Bio 340/Bio 330~~
Credits	4
Hours	6 (2, Lecture; 4, Lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science

	____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

3. **To:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 330
Course Title	Plant Physiology
Description	Consideration Of The Major Physiological Processes Of Plants, With Special Emphasis On Water Relations, Inorganic Nutrition, Photosynthesis, Metabolism, And Hormonal Relationships. Laboratory Studies Consist Of Physiological Experiments With Living Plants.
Pre/ Co Requisites	Bio 166 And Bio 167 And One Bio Course At 200 Level Or Above (Not Bio 230) And Che 234 And Che 235.
Credits	4
Hours	6 (2, Lecture; 4, Lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

4. **Rationale (Explain How This Change Will Impact The Learning Outcomes Of The Department And Major/Program):**
We Are Correcting An Error In The Cross Listed Courses.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** Cross Listing, credits, hours

2. **From:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 340 (BIO 330)
Course Title	Human Body And Brain
Description	Human Anatomy And Physiology With Emphasis On The Brain's Role In Regulating Body Functions.
Pre/ Co Requisites	BIO 166 And BIO 167 And One BIO Course At 200 Level Or Above (Not BIO 230). ~~Cross Listed Courses~~ ~~Leh Bio 340/Bio 330~~
Credits	~~3~~
Hours	~~3 (lecture)~~
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression

	____ Individual And Society ____ Scientific World

3. **To:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 340
Course Title	Human Body And Brain
Description	Human Anatomy And Physiology With Emphasis On The Brain's Role In Regulating Body Functions.
Pre/ Co Requisites	Bio 166 And Bio 167 And One Bio Course At 200 Level Or Above (Not Bio 230).
Credits	3
Hours	3
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

4. **Rationale (Explain How This Change Will Impact The Learning Outcomes Of The Department And Major/Program):**
1) We Are Correcting An Error In The Cross Listing Of The Course.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
OF THE
CITY OF NEW YORK

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** Hours, Credits, Description

2. **From:**

Department(S)	Biology
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 350
Course Title	Introduction To Immunology
Description	~~This Course Will Focus On The~~ ~~C~~omprehension, Application, And Synthesis Of ~~Important~~ Immunology Concepts. ~~This Course Is An Introductory Course That Which Will Examine~~ Both Normal And Disease States Of The Immune System. ~~The Course Will Use Current And Traditional Research Techniques In The Lab To Emphasize What Is Learned In The Lecture.~~
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238
Credits	~~4~~
Hours	~~6 (2, Lecture; 4, Lab)~~
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

3. **To:**

Department(S)	Biology
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 350
Course Title	Introduction To Immunology
Description	Comprehension, Application, And Synthesis Of Current Immunology Concepts. Examination Of Both Normal And Disease States Of The Immune System.
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238
Credits	2
Hours	2
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

4. **Rationale (Explain How This Change Will Impact The Learning Outcomes Of The Department And Major/Program):**
We Are Removing The Lab Component So That The Lecture-Only Course Could Be Taught More Readily And Thus Increase The Variety Of Courses That Are Offered At The Department.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** New Course

2.

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 351
Course Title	Immunology Laboratory
Description	Current And Traditional Research Techniques In Immunology
Pre/ Co Requisites	BIO 166 and, BIO 167 and, BIO 238 PRE OR COREQ: BIO 350.
Credits	2
Hours	4 (Lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

3. **Rationale:**
To Improve Students' Problem-Solving Ability, It Is Critical That They Learn Technical And Thinking Skills By Conducing Hands-On Experiments In Immunology.

4. **Learning Outcomes (By The End Of The Course Students Will Be Expected To):**
   - Demonstrate The Ability To Solve Problems By Collecting And Analyzing Data Using Laboratory Techniques In Immunology.
   - Demonstrate The Ability To Interpret And Communicate Laboratory And Research Findings In Immunology.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** Prerequisite, Hours

2. **From:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 400
Course Title	Biological Chemistry
Description	Stress On The Central Role Of Nucleic Acids And Proteins In Living Cells: Biological Oxidation And Intermediary Metabolism Of Carbohydrates, Lipids, And Proteins, And The General Properties Of Enzymes And Enzyme Catalyzed Reactions In The Intact Cell And Cell-Free Systems. Laboratory Work Stresses Use Of Modern Techniques Used In Biochemical Analysis And In Enzyme Assays. Selected Experiments To Demonstrate The Dynamic Aspects Of Biochemistry In Living Cells And In Cell-Free Systems.
Pre/ Co Requisites	BIO 166 And BIO 167 And ~~Two~~ BIO Course At 200 Level Or Above (Not BIO 230) And CHE 234 And CHE 235
Credits	4
Hours	6 (2, Lecture; ~~2,~~ Lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression

	____ Individual And Society ____ Scientific World

3. **To:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 400
Course Title	Biological Chemistry
Description	Stress On The Central Role Of Nucleic Acids And Proteins In Living Cells: Biological Oxidation And Intermediary Metabolism Of Carbohydrates, Lipids, And Proteins, And The General Properties Of Enzymes And Enzyme Catalyzed Reactions In The Intact Cell And Cell-Free Systems. Laboratory Work Stresses Use Of Modern Techniques Used In Biochemical Analysis And In Enzyme Assays. Selected Experiments To Demonstrate The Dynamic Aspects Of Biochemistry In Living Cells And In Cell-Free Systems.
Pre/ Co Requisites	BIO 166 And BIO 167 And BIO 238 And One BIO Course At 200 Level Or Above (Not BIO 230) And CHE 234 And CHE 235
Credits	4
Hours	6 (2, Lecture; 4, Lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

4. **Rationale (Explain How This Change Will Impact The Learning Outcomes Of The Department And Major/Program):**
1) We Are Correcting An Error In The Lab Hours For Bio 400.

2) Genetics Is A Field Of Study With Which All Biologists Must Be Familiar. As Bio 238 Genetics Is Listed As A Foundation Course For The Biology Bs Degree, We Are Adding It As A Prerequisite To Bio 400 To Ensure That Students Who Take The Course Have Sufficient Background In Genetics.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** Course Description, Hours, Credits, Prerequisite,

2. **From:**

Department(S)	Biological Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 415
Course Title	Medical Microbiology
Description	~~The Course Will Focus On~~ ~~D~~isease Mechanism, Antibiotic And Antiviral Susceptibility And Resistance, And Epidemiology Of Primarily Human Diseases Caused By Bacteria, Viruses, And Fungi As Well As By Those Caused By Emerging Diseases.
Pre/ Co Requisites	BIO 166, And BIO167, And BIO 238, And BIO 331, And ~~CHE 166 And CHE 167 And CHE 168 And CHE 169 And~~ CHE 232 And CHE 233
Credits	~~4~~
Hours	~~6 (2, Lecture; 4, Lab)~~
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

3. **To:** Underline The Changes

Department(S)	Biological Sciences
Career	[X] Undergraduate [X] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 415
Course Title	Medical Microbiology
Description	Disease Mechanisms, Antibiotic And Antiviral Susceptibility And Resistance, And Epidemiology Of Primarily Human Diseases Caused By Bacteria, Viruses, And Fungi As Well As By Those Caused By Emerging Diseases.
Pre/ Co Requisites	BIO 166, And BIO 167, And BIO 238, And BIO 331, And CHE 232 And CHE 233
Credits	2
Hours	2
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

4. **Rationale (Explain How This Change Will Impact The Learning Outcomes Of The Department And Major/Program):**
We Are Removing The Lab Component So That The Lecture-Only Course Could Be Taught More Readily And Thus Increase The Variety Of Courses That Are Offered At The Department. Changes Were Made To Cross List The Course With Bio 615 So That The Course Could Be Offered To Both Undergraduate And Graduate Students.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type Of Change:** New Course

2.

Department(S)	Biological Sciences
Career	[X] Undergraduate [X] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 416
Course Title	Medical Microbiology Laboratory
Description	Laboratory And Research Techniques In Medical Microbiology.
Pre/ Co Requisites	Prerequisite: BIO 166, And BIO 167, And BIO 238, And BIO331, And CHE 232 And CHE 233 PRE or COREQ: BIO 415
Credits	2
Hours	4 (Lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (E.G. Writing Intensive, Wac, Etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ___ Flexible ____ World Cultures ____ Us Experience In Its Diversity ____ Creative Expression ____ Individual And Society ____ Scientific World

3. **Rationale:**
To Improve Students' Problem-Solving Ability, It Is Critical That They Learn Technical And Thinking Skills By Conducing Hands-On Experiments Relevant To Medical Microbiology.

4. **Learning Outcomes (By The End Of The Course Students Will Be Expected To):**
- Demonstrate The Ability To Use The Laboratory To Diagnose Infections, Including Appropriate Specimen Collection
- Demonstrate The Ability To Interpret Laboratory Findings In The Context Of The Patient's Presentation And Findings.
- Demonstrate Problem Solving Ability And Diagnostic Reasoning With Infectious Diseases.

5. **Date Of Departmental Approval:** 10/06/21

LEHMAN COLLEGE
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DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of change:** Experimental Course
2.

Department(s)	Biology
Career	[x] Undergraduate [ ] Graduate
Academic Level	[x] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 180
Course Title	Anatomy and Physiology Workshop
Description	Application of knowledge in anatomy and physiology for problem solving with the use of case studies and student's active participation in class discussions
Pre/ Co Requisites	Co-Requisite: BIO 181
Credits	0
Hours	0
Liberal Arts	[x] Yes [ ] No
Course Attribute (e.g. Writing Intensive, WAC, etc)	

General Education Component	__x_ Not Applicable _____ Required _____ English Composition _____ Mathematics _____ Science _____ Flexible _____ World Cultures _____ US Experience in its Diversity _____ Creative Expression _____ Individual and Society _____ Scientific World

3. **Rationale:**
Limited time in the BIO 181 and 182 labs do not allow opportunities for sufficient review of course material. This experimental workshop is designed to increase student engagement and retention by providing additional instruction in the form of weekly active learning sessions where students will be guided to solve a problem using their knowledge of anatomy and physiology. The workshop will be scheduled immediately following the laboratory in an adjacent classroom for ease in scheduling. Students will have opportunities for group learning and discussion, which we expect to improve engagement in the course. Scheduled sessions will ensure students have fewer barriers to attendance. Mandatory attendance ensures that all students benefit from the additional instruction. Students, especially freshmen, non-traditional students and other students requiring more support will have a dedicated, scheduled workshop with guided discussion and review. This experimental course will test the efficacy of adding such a workshop to all the Bio 181 and Bio 182 courses in the future.

4. **Learning Outcomes (By the end of the course students will be expected to):**
The workshop will improve student engagement and retention by allowing more opportunities to practice and engage with course material. Students will:

- Define physiological/pathophysiology concepts
- Analyze and explain physiological processes (e.g. Homeostasis)
- Interpret physiological data (e.g. case studies)
- Demonstrate understanding of the structures and functions of the human body
- Improve critical thinking skills by solving problems relevant to human physiology

5. **Date of Departmental Approval:** 03/16/2022