

**LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK**

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of Change:** *title and description*

2. **From:** ~~Strike through the changes~~

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 229
Course Title	Astrobiology
Description	Introduction to the emerging field of Astrobiology which is concerned with the origin, evolution, and distribution of life in the Universe. Topics include the molecular and cellular structures of life, the co-evolution of life and a planet, the habitability of planetary bodies, and the search for extraterrestrial life. The course also examines the impact of spaceflight on human health and physiology, as well as the role of space exploration research and technologies in advancing our understanding of plant science and agriculture, the environment, and climate change. Laboratory exercises complement lecture topics and teach basic laboratory skills and techniques.
Pre/ Co Requisites	BIO 166 and BIO 167
Credits	4
Hours	6 (2, lecture; 4, lab)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures

	<input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World
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3. **To:** Underline the changes

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate [] Graduate
Academic Level	<input checked="" type="checkbox"/> Regular [] Compensatory [] Developmental [] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 229
Course Title	Astrobiology: <u>Life and Health Beyond Earth</u>
Description	Introduction to the emerging field of Astrobiology which is concerned with the origin, evolution, and distribution of life in the Universe. Topics include the molecular and cellular structures of life, the co-evolution of life and a planet, the habitability of planetary bodies, and the search for extraterrestrial life. The course also examines the impact of spaceflight on human health and physiology, as well as the role of space exploration research and technologies in advancing <u>medicine, plant science, and environmental studies</u> . Laboratory exercises complement lecture topics and teach basic laboratory skills and techniques.
Pre/ Co Requisites	BIO 166 and BIO 167
Credits	4
Hours	6 (2, lecture; 4, lab)
Liberal Arts	<input checked="" type="checkbox"/> Yes [] No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society

	_____ Scientific World
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4. **Rationale (Explain how this change will impact the learning outcomes of the department and Major/Program):**

1) The title is unclear to some students. With a more descriptive title we hope to increase enrollment in the course. 2) The course description was also revised to provide students with a better understanding of the focus of the course.

5. **Date of departmental approval:** October 9, 2024

**LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK**

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of Change:** *title, description, and note*

2. **From:** ~~Strike through the changes~~

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 338
Course Title	Genetics of Man
Description	Principles of human genetics and their significance in the health sciences. The relationship between genetics and human diseases. Lecture topics include: chromosomal and genetic abnormalities in humans, metabolic variation and disease, patterns of human heredity, immunogenetics, population genetics, genetic counseling. Laboratory work includes karyotype analysis, study of biochemical and morphologic variation, probability and statistical testing, immunogenetics. Open to biology majors only.
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238
Credits	4
Hours	6 (2, lecture; 4, lab)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity

	<input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World
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3. **To:** Underline the changes

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate [] Graduate
Academic Level	<input checked="" type="checkbox"/> Regular [] Compensatory [] Developmental [] Remedial
Subject Area	Biology
Course Prefix & Number	BIO 338
Course Title	<u>Human Genetics</u>
Description	<p>Principles of human genetics and their significance in the health sciences. Lecture topics include <u>genome annotation</u>, chromosomal abnormalities and <u>sequence variations</u>, <u>animal models</u>, <u>genetic approaches</u>, <u>genetic/genomic testing</u>, and <u>gene therapy</u>. Laboratory work includes <u>heritability estimation</u>, <u>karyotyping</u>, <u>structural and functional annotations of genome</u>, <u>genome-wide association studies</u>, and <u>genome editing</u>.</p> <p><u>Note: Closed to students who have completed BIO 438.</u></p>
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238
Credits	4
Hours	6 (2, lecture; 4, lab)
Liberal Arts	<input checked="" type="checkbox"/> Yes [] No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World

4. Rationale (Explain how this change will impact the learning outcomes of the department and Major/Program):

1) The title is outdated as the topics apply to both sexes. 2) The course description is revised to reflect advances in genetic and genomic studies and correct grammatical errors. 3) The Note is added because students will not benefit from taking BIO 338 and BIO 438. BIO 438 covers some concepts that overlap with those in BIO 338 but is designed as a lecture-only course to be taught at the same time as a graduate level course.

5. Date of departmental approval: October 9, 2024

**LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK**

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of Change:** *description and note*

2. **From:** ~~Strike through the changes~~

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 438
Course Title	Genomics and Human Health
Description	In-depth analysis of genomes in humans, rodents, and primates and covers the current understanding of genetic and genomic mechanisms in relation to human health. Topics include gene identification and functional genomic studies in cancer, ageing, infertility, and behavior; development and evaluation of genetic testing and biopharming; and social/ethical/legal issues related to genetic and genomic advances.
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238
Credits	4
Hours	4 (lecture)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression

	<input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World
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3. **To:** Underline the changes

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 438
Course Title	Genomics and Human Health
Description	<p>In-depth analysis of genomes in humans, rodents, and primates, and covers the current understanding of genetic and genomic mechanisms in relation to human health. Topics include gene identification and functional genomic studies in cancer, ageing, infertility, and <u>behavior; development</u> and evaluation of genetic testing and <u>biopharming</u>; and <u>social/ethical/legal</u> issues related to genetic and genomic advances.</p> <p><u>Note: Closed to students who have completed BIO 338.</u></p>
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238
Credits	4
Hours	4 (lecture)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World

4. **Rationale (Explain how this change will impact the learning outcomes of the department and Major/Program):**

1) Changes were made in the course description to correct grammatical errors. 2) A note was added because students will not benefit from taking BIO 338 and BIO 438. BIO 438 covers some concepts that overlap with those in BIO 338 but is designed as a lecture-only course to be taught at the same time as a graduate-level course.

5. **Date of departmental approval:** October 9, 2024

**LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK**

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of Change:** *title*

2. **From:** ~~Strike through the changes~~

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 406
Course Title	Biochemistry of Differentiation
Description	The regulatory mechanisms controlling the changing of cells from a pre-existing condition to one of increased complexity and specialization will be considered. Evidence for biochemical interaction between the nucleus and cytoplasm in normal, hybrid, and cancer cells will be presented, and hypotheses suggested by specific experiments discussed.
Pre/ Co Requisites	BIO 166 and BIO 167 and one BIO course at 200 level or above (NOT BIO 230) and BIO 238 and CHE 234 and CHE 235
Credits	3
Hours	3 (lecture)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World

3. **To:** Underline the changes

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 406
Course Title	<u>Cancer and Cellular Differentiation</u>
Description	The regulatory mechanisms controlling the changing of cells from a pre-existing condition to one of increased complexity and specialization will be considered. Evidence for biochemical interaction between the nucleus and cytoplasm in normal, hybrid, and cancer cells will be presented, and hypotheses suggested by specific experiments discussed.
Pre/ Co Requisites	BIO 166 and BIO 167 and one BIO course at 200 level or above (NOT BIO 230) and BIO 238 and CHE 234 and CHE 235
Credits	3
Hours	3 (lecture)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World

4. **Rationale (Explain how this change will impact the learning outcomes of the department and Major/Program):**

1) The title is unclear to some students. Changing the name provides clarity and would help increase enrollment.

5. **Date of departmental approval:** October 9, 2024

**LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK**

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of change:** *New Course*

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 403
Course Title	Medicinal Plants
Description	Review of plant biology with a focus on natural products and their impact on human health. Students will explore plant structure, function, and the natural compounds that contribute to both plant and human well-being. Discussions will also cover the cultural and historical significance of medicinal plants.
Pre/ Co Requisites	BIO 166 and BIO 167 and BIO 238 and CHE 166 and 168
Credits	4
Hours	4 (lecture)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input type="checkbox"/> Science <input type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input type="checkbox"/> Scientific World

3. **Rationale:**

We are creating a new course at the undergraduate level to provide knowledge of plants and their uses in medicine.

4. **Learning Outcomes (By the end of the course students will be expected to):**

- Distinguish the major structures and functions of plants for diagnosing plant health and identifying species
- Evaluate bioactive compounds in plants and their roles in both plant and human health.
- Analyze the use of plants in traditional and modern medicine.
- Review evidence and impact of cultural and historical contexts on medicinal plant use.

5. **Date of Departmental Approval:** October 9, 2024

**LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK**

DEPARTMENT OF BIOLOGICAL SCIENCES

CURRICULUM CHANGE

1. **Type of Change:** *description, note, pre/corequisite*

2. **From:**

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 167
Course Title	Principles of Biology: Organisms
Description	<p>Introduction to the principles of biology governing the unity and diversity of living organisms, with special emphasis on biological diversity, physiological mechanisms involved in the coordination of activity in plants and animals, and ecology. Laboratory exercises consist of experimental procedures illustrating basic concepts of biology.</p> <p>Note: This course satisfies either Life & Physical Science or Scientific-e-World requirement in the CUNY 2013 Gen Ed requirements at Lehman.</p>
Pre/ Co Requisites	
Credits	4
Hours	6 (3 lecture, 3 lab)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<p><input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input checked="" type="checkbox"/> Science</p> <p><input checked="" type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity</p>

	<input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input checked="" type="checkbox"/> Scientific World
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3. **To:** Underline the changes

Department(s)	Biological Sciences
Career	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Academic Level	<input checked="" type="checkbox"/> Regular <input type="checkbox"/> Compensatory <input type="checkbox"/> Developmental <input type="checkbox"/> Remedial
Subject Area	Biology
Course Prefix & Number	BIO 167
Course Title	Principles of Biology: Organisms
Description	<p>Introduction to the principles of biology governing the unity and diversity of living organisms, with special emphasis on biological diversity, physiological mechanisms involved in the coordination of activity in plants and animals, and ecology. Laboratory exercises consist of experimental procedures illustrating basic concepts of biology.</p> <p>Note: This course satisfies either Life & Physical Science or Scientific World requirement in the CUNY 2013 Gen Ed requirements at Lehman.</p>
Pre/ Co Requisites	<u>BIO 166</u>
Credits	4
Hours	6 (3 lecture, 3 lab)
Liberal Arts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Course Attribute (e.g. Writing Intensive, WAC, etc)	
General Education Component	<input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Required <input type="checkbox"/> English Composition <input type="checkbox"/> Mathematics <input checked="" type="checkbox"/> Science <input checked="" type="checkbox"/> Flexible <input type="checkbox"/> World Cultures <input type="checkbox"/> US Experience in its Diversity <input type="checkbox"/> Creative Expression <input type="checkbox"/> Individual and Society <input checked="" type="checkbox"/> Scientific World

4. **Rationale (Explain how this change will impact the learning outcomes of the department and Major/Program):**

1) Corrected a typo in the notes within the course description. 2) Changed the prerequisite. Currently BIO 167 has no prerequisites, and many students enroll in BIO 167 first. However, many concepts introduced in BIO 166 are required for proper discussion and understanding of topics introduced in BIO 167. Data collected by course coordinator shows that students having successfully completed BIO 166 before taking BIO 167 tend to do better in the class.

5. **Date of departmental approval:** September 4, 2024