

UMBC UGC Program Changes & Other Request: Biological Sciences, B.A. degree: Elective Changes

Date Submitted: 9/16/2019

Proposed Effective Date: Spring 2020

	Name	Email	Phone	Dept
Dept Chair	Philip Farabaugh	farabaug@umbc.edu	53018	BIOL
UPD	David Eisenmann	eisenman@umbc.edu	52256	BIOL
Other Contact	Nichole Zang Do	Zang.do@umbc.edu	58071	BIOL

Specifics (see instructions):

Current BIOL Core Courses

BIOL 141 (or BIOL 141H)	Foundations of Biology
BIOL 142	Foundations of Biology: Ecolog
BIOL 300L	Experimental Biology Lab
BIOL 302	Molecular & General Genetics
BIOL 303	Cell Biology

Proposed Core Courses

BIOL 141 (or BIOL 141H)	Foundations of Biology
BIOL 142	Foundations of Biology: Ecolog
BIOL 300L	Experimental Biology Lab
BIOL 302	Molecular & General Genetics
BIOL 303 or BTEC 303	Cell Biology or Applied Cell Biology

Current Elective 1 Options (Students choose one)

BIOL 275	Microbiology
BIOL 304	Plant Biology
BIOL 305	Comp. Animal Physiology
BIOL 306	Molecular Biology
BIOL 307	Human Physiology
BIOL 313	Bioinformatics Intro
BIOL 405	Adv Top Compar Physiolgy
BIOL 410	Modeling in the Life Sciences
BIOL 411	Bacterial Physiology
BIOL 412	Microbial Systems Biology
BIOL 414	Eukaryotic Molecular Genetics
BIOL 415	Systems Biology
BIOL 420	Adv Topics:Cell Biology
BIOL 421	Topics in Molecular Genetics
BIOL 425	Immunology
BIOL 426	Appr To Molecular Biol
BIOL 428	Computer Appl Molec Biol
BIOL 429	Topics in Molecular Biology
BIOL 430	Biological Chemistry
BIOL 434	Microbial Molec Genetics
BIOL 442	Developmental Biology

Proposed Elective 1 Options (Students choose one)

BIOL 275	Microbiology
BIOL 304	Plant Biology
BIOL 305	Comp. Animal Physiology
BIOL 306	Molecular Biology
BIOL 307	Human Physiology
BIOL 313	Bioinformatics Intro
BIOL 405	Adv Top Compar Physiolgy
BIOL 410	Modeling in the Life Sciences
BIOL 411	Bacterial Physiology
BIOL 412	Microbial Systems Biology
BIOL 414	Eukaryotic Molecular Genetics
BIOL 415	Systems Biology
BIOL 420	Adv Topics:Cell Biology
BIOL 421	Topics in Molecular Genetics
BIOL 425	Immunology
BIOL 426	Appr To Molecular Biol
BIOL 428	Computer Appl Molec Biol
BIOL 429	Topics in Molecular Biology
BIOL 430	Biological Chemistry
BIOL 434	Microbial Molec Genetics
BIOL 442	Developmental Biology

BIOL 444 Development And Cancer
 BIOL 445 Signal Transduction
 BIOL 451 Neurobiology
 BIOL 453 Physiol Bases Of Behavior
 BIOL 454 Vision Science
 BIOL 456 Plant Molecular Biology
 BIOL 457 Phys:Marine/Est Animals
 BIOL 463 Theor & Quant Biology
 BIOL 466 Population & Conservation Gen
 BIOL 468 Ecology of Rivers and Streams
 BIOL 470 General Virology
 BIOL 476 Antibiotics
 BIOL 477 Appl of Biodetection Approach
 BIOL 480 Animal Behavior
 BIOL 481 Advanced Topics in Evolution
 BIOL 483 Evol: From Genes To Genomes
 BIOL 486 Genome Science
 BIOL 487 Medical Case Studies
 BIOL 490 Chem.Comm. & Brain Disorders
 BIOL 612 Microbial Systems Biology
 BIOL 615 Systems Biology
 BIOL 681 Advanced Topics in Evolution
 GES 406 Aquatic Ecology
 GES 408 Quantitative Field Ecology
 GES 413 Seminar In Biogeography

BIOL 444 Development And Cancer
 BIOL 445 Signal Transduction
 BIOL 451 Neurobiology
 BIOL 453 Physiol Bases Of Behavior
 BIOL 454 Vision Science
 BIOL 456 Plant Molecular Biology
 BIOL 457 Phys:Marine/Est Animals
 BIOL 463 Theor & Quant Biology
 BIOL 466 Population & Conservation Gen
 BIOL 468 Ecology of Rivers and Streams
 BIOL 470 General Virology
 BIOL 476 Antibiotics
 BIOL 477 Appl of Biodetection Approach
 BIOL 480 Animal Behavior
 BIOL 481 Advanced Topics in Evolution
 BIOL 483 Evol: From Genes To Genomes
 BIOL 486 Genome Science
 BIOL 487 Medical Case Studies
 BIOL 490 Chem.Comm. & Brain Disorders
 BIOL 612 Microbial Systems Biology
 BIOL 615 Systems Biology
 BIOL 681 Advanced Topics in Evolution
 GES 406 Aquatic Ecology
 GES 408 Quantitative Field Ecology
 GES 413 Seminar In Biogeography
 BTEC 344 Epidemiology
 BTEC 395 Translational Bioinformatics
 BTEC 430¹ Translational Biochemistry &
 Molecular Biology
 BTEC 444² Translational Cancer Biotechnology
 BTEC 453 Biochemical Engineering

¹- Note 1: BIOL 430 and BTEC 430 are thematically similar, and therefore only one may be used as an elective for the major.

²- Note 2: BIOL 444 and BTEC 444 are thematically similar, and therefore only one may be used as an elective for the major.

Current Upper Level Lab Elective Options

(students choose one)

BIOL 302L	Mol & Gen Genetics Lab
BIOL 303L	Cell Biology Lab
BIOL 304L	Plant Biology Lab
BIOL 305L	Physiology Laboratory
BIOL 306L	Projects in Synthetic Biology

Proposed Upper Level Lab Elective Options

(students choose one)

BIOL 302L	Mol & Gen Genetics Lab
BIOL 303L	Cell Biology Lab
BIOL 304L	Plant Biology Lab
BIOL 305L	Physiology Laboratory
BIOL 306L	Projects in Synthetic Biology

BIOL 312L	Modeling in the Life Sciences	BIOL 312L	Modeling in the Life Sciences
BIOL 316L	Phage Genome Analysis	BIOL 316L	Phage Genome Analysis
BIOL 340L	Developmtl Biology Lab	BIOL 340L	Developmtl Biology Lab
BIOL 422L	Microscopy & Imaging Techniques	BIOL 422L	Microscopy & Imaging Techniques
		MBIO 361L	Sustainable Aquaculture Laboratory

Current Statistics Requirement (*students choose one*)

STAT 350	Stat W/App In Biol Sci
STAT 355	Prob & Stat for Sci and Eng

Proposed Statistics Requirement (*students choose one*)

STAT 350	Stat W/App In Biol Sci
STAT 355	Prob & Stat for Sci and Eng
BTEC 350	Statistics for Translational Life Sciences

Rationale (see instructions):

With the creation of the new TLST program, several of their new courses (BTEC acronym) align with the current Biological Sciences curriculum. In fact, many of these courses were modeled off the Biology Department's similarly numbered courses with the help of the Biology faculty who teach them in our department. Because of this, we would like to allow our students to utilize these new courses as they complete our major requirements. We are adding additional notes to the relevant sections to inform students that the related courses cannot be duplicated within the major, including BIOL 303 and BTEC 303, BIOL 430 and BTEC 430, BIOL 313 and BTEC 395, BIOL 444 and BTEC 444.

The Marine Biotechnology Department has only recently begun to offer courses. Their course work helps to fill a need for our students in the area interest of marine biology and ecology. This new MBIO course supplements nicely with our current lab offerings.

The Biology Department has received statements of support from both the Chair of the Marine Biotechnology Department, Dr. Yonathan Zohar, and the TLST Program Director, Dr. Annica Wayman. Please see additional documentation for their messages. Attached to this file is also a current checklist of our program's requirements.

Bachelor of Arts in Biological Sciences (BIOL BA) - Minimum Requirements

See Important Notes on the back of this form!

BIOL CORE COURSES	Pre-requisites	Cr.
BIOL 141 - Foundations of Biology: Cells, Energy & Organisms	MATH 150 or higher or placement in MATH151	4
BIOL 142 - Foundations of Biology: Ecology & Evolution	MATH 150 or higher or placement in MATH151, BIOL 141	4
BIOL 302 - Molecular & General Genetics (see note 3)	MATH 150 or higher or placement in MATH151, BIOL 141, BIOL 142, CHEM 101/123, CHEM 102/124 (co-requisite)	4
BIOL 303 - Cell Biology	MATH 150 or higher or placement in MATH151, BIOL 141, BIOL 142, BIOL 302, CHEM 102	4
BIOL 300L - Experimental Biology Laboratory	MATH 150 or higher or placement in MATH151, BIOL 141, BIOL 142, BIOL 302, CHEM 102, CHEM 102L	2
BIOL ELECTIVES		
<u>Elective 1 - Choose one</u> BIOL 275 - Microbiology BIOL 251+ BIOL252 - Human Anatomy & Phys. (see note 4) BIOL 304 - Plant Biology BIOL 305 - Animal Physiology BIOL 306 - Molecular Biology BIOL 307 - Human Physiology BIOL 313 - Introduction to Bioinformatics BIOL 430 - Biochemistry BIOL 442 - Developmental Biology BIOL 4XX - Any qualifying BIOL 4XX - (see note 5)	See catalog	3-4
<u>Elective 2</u> _____ - Any qualifying BIOL4XX lecture course (see note 5)	See catalog	4
<u>Laboratory Elective</u> _____ - Any BIOL 3XXL or BIOL 4XXL lab course (not BIOL 300L or BIOL 499L)	BIOL 300L; See catalog for other prerequisites	2
OTHER COURSES		
CHEM 101 - Principles of Chemistry I	MATH 106 or higher	4
CHEM 102 - Principles of Chemistry II	CHEM 101	4
CHEM 102L - Introductory Chemistry Laboratory I	CHEM 101, CHEM 102 (pre- or co-requisite)	2
CHEM 351 - Organic Chemistry I	CHEM 102	3
PHYS 111 - Basic Physics I (see note 6)	None	4
PHYS 112 - Basic Physics II (see note 6)	PHYS 111	4
MATH 155 - Elementary Calculus I or MATH 151 - Calculus & Analytical Geometry I	MATH 106 MATH 150	4
STAT 350 - Stats w/Applications in Bio Sci or STAT 355 - Intro Prob and Stats for Scientists/Engineers	MATH 150 or higher MATH 152	4

Important Notes:

- 1) Students must earn a “C” or better in all major courses AND course prerequisites.
- 2) At least half of the required BIOL courses and electives must be completed in residence: for the BIOL BA at least four of eight BIOL classes must be taken at UMBC.
- 3) BIOL 141, BIOL 142 and BIOL 302 are considered an academic sequence. Once you pass BIOL 302 you may not go back and repeat BIOL 141 or BIOL 142.
- 4) Students using BIOL251 and BIOL252 to fulfill Elective 1 must take BOTH classes.
- 5) BIOL 442, 495, 497, 499, and Lab classes may NOT be used to fulfill Elective 2. The BIOL 4XX elective class must be taken at UMBC.
- 6) Students may substitute PHYS121 for PHYS111, and PHYS122 for PHYS112, but should note that PHYS121/122 may not satisfy some professional school admission requirements.
- 7) BIOL BA majors receive 23 - 27 Upper Level Credits (3XX/4XX) from BIOL BA courses that may be applied to the University requirement of 45 Upper Level credits for graduation, and 55 - 57 credits toward the 120 total credits needed for graduation.
- 8) The Biological Sciences Department evaluates completion of major requirements based on COURSES completed, not CREDITS completed, because equivalent courses taken elsewhere may not be the same number of credits as the UMBC course they replace.
- 9) Students who are BIOC (Biochemistry and Molecular Biology) majors who wish to also pursue a BIOL BA degree may use Core BIOL, CHEM, MATH and PHYS courses from the BIOC major towards the BIOL BA degree, but MUST take separate electives for the two degrees (ie., no ‘double-dipping for the electives). Please note, the university requires students taking two different Bachelor’s degrees (like the BA and BS) to take a total of 150 credits.
- 10) Students may not pursue both a BIOE and BIOL degree since the BIOE degree contains the BIOL BA curriculum within it.
- 11) Under exceptional circumstances, the Department may waive or alter a BIOL major requirement. Students seeking to petition for a waiver must consult with their academic adviser, then may submit a ‘Petition for Waiver/Substitution of Program Requirements’ form, found here: <https://biology.umbc.edu/undergrad/forms-links/>.

BTEC courses for BIOL majors

1 message

Annica Wayman <awayman@umbc.edu>

Wed, Sep 18, 2019 at 9:33 PM

To: Philip Farabaugh <farabaug@umbc.edu>

Cc: Nichole Zang Do <zang.do@umbc.edu>, David Eisenmann <eisenman@umbc.edu>, Elizabeth Feeser <efeeser@umbc.edu>

Dear Phil,

On behalf of the Translational Life Science Technology program in the College of Natural and Mathematical Sciences, I would like to extend my support of the Department of Biological Sciences using the following BTEC courses for their BIOL BA and BIOL BS degree's lab requirement:

- For the BIOL BA:
 - BTEC 303 can be used in the place of BIOL 303
 - Elective 1 options: BTEC 344, 395, 430, 444, and 453.
 - Statistics option: BTEC 350

- For the BIOL BS:
 - BTEC 303 can be used in the place of BIOL 303
 - Column A Elective options: BTEC 344, 395, and 430
 - Column B Elective options: BTEC 444 and 453
 - Statistics option: BTEC 350.

I look forward to our continued collaboration.

Regards,
Annica

Annica Wayman, Ph.D.
Associate Dean for Shady Grove Affairs
Professor of the Practice
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Nichole Zang Do <nzang1@umbc.edu>

MBIO 361L - Message of support from your department

Yonathan Zohar <zohar@umbc.edu>

Thu, Sep 19, 2019 at 7:52 AM

Reply-To: Yonathan Zohar <zohar@umbc.edu>

To: Farabaugh Philip <farabaug@umbc.edu>

Cc: David Eisenmann <eisenman@umbc.edu>, Elizabeth Feeser <efeeser@umbc.edu>, Colleen Burge <colleenb@umbc.edu>, Keiko Saito <saito@umbc.edu>, Nichole Zang Do <zang.do@umbc.edu>

Dear Phil,

As you know, yesterday I heard from Nichole Zang Do that your faculty agreed that DMB's MBIO 361L is a suitable course for the BIOL BA and BS degrees' lab requirement. We really appreciate your action on that course and the faculty interest in it.

On behalf of the Department of Marine Biotechnology, I would like to extend my support of the Department of Biological Sciences using MBIO 361L for their BIOL BA and BIOL BS degree's lab requirement. I look forward to start teaching this course. Please let me know what we need to do next. As you know, there are a couple of logistic issues related to this course that we must discuss/resolve.

Thank you and best regards.

[Quoted text hidden]