

**CECIL COLLEGE
AND
UNIVERSITY OF DELAWARE**

PROGRAM ARTICULATION AGREEMENT

**Bioproduction
Associate of Applied Science Degree
A.A.S.**

**Applied Molecular Biology & Biotechnology (AMBB)
Bachelor of Science Degree
B.S.**

2024 through 2028

Associate-Bachelor Program Articulation Agreement

between

**Cecil College
and
University of Delaware
for
Bioproduction A.A.S./**

Applied Molecular Biology & Biotechnology B.S.

AGREEMENT

WHEREAS Cecil College (CC) and University of Delaware (UD) are committed to expanding educational opportunities for the citizens of the States of Maryland and Delaware, and

WHEREAS the two institutions are committed to providing a smooth transition for students wishing to earn an associate degree and a baccalaureate degree, and

WHEREAS the intent of the two institutions is to avoid duplication of curricula where appropriate within articulated programs of studies, and

WHEREAS the two institutions better serve the educational growth of students and the economic development of the community through cooperative educational planning and optimal utilization of community resources,

BE IT HEREWITH RESOLVED that this agreement commits the partners to full support of an articulation process between similar academic programs offered by the two institutions.

PROVISIONS OF THE AGREEMENT

1. The institutions agree to follow the connected degree curriculums delineated in this document for the transfer of CC's Associate of Applied Science Degree Program in Bioproduction and UD's Bachelor of Science Degree Program in Applied Molecular Biology and Biotechnology (AMBB).
2. Both institutions will cooperate toward developing, disseminating, and presenting the articulated program information to students.
3. Graduates of the CC Bioproduction program who have completed the associate degree with a cumulative grade point average of 2.50 or higher will automatically be accepted into the baccalaureate program at UD. Students will be considered for admission based on the completed work at the time of the review. CC will provide confirmation of degree completion upon students' final semester of coursework. Students who do not complete the degree program as outlined in the agreement may have admission based on the articulation agreement criteria rescinded, however still may be considered for regular transfer admission based on the totality of their academic record. UD reserves the right to recalculate the CC cumulative grade point average to account for CC's Waiver of Prior Failing Grades policy when making admission decisions.
4. Students must complete the courses in the specified associate degree program herein with a grade of C or better to receive the credits for transfer. Students are expected to complete all courses outlined in the CC portion of the agreement at CC. Students who have attended a college or university other than CC and transferred credits to CC in pursuit of the associate degree program may not be admissible via the provisions of this articulation agreement. In such cases, students will be considered based on their entire academic history and not guaranteed admission to the bachelor's degree program or the course equivalencies detailed within the provisions of this agreement. Coursework taken at an institution other than CC may not transfer to UD as noted in the agreement. It is expected that students will complete all coursework in the UD portion of the agreement at UD. Students who previously attended UD are not eligible for admission via an articulation agreement and instead should apply for readmission consideration if wishing to re-enroll at UD.
5. Students intending to transfer should complete the UD admissions application following the third semester of their associate degree program. Students should note on their application that they are applying as part of an articulation agreement/connected degree.
6. Students are subject to all the policies and procedures of both institutions.

7. Students are subject to all specific policies pertaining to students admitted to the AMBB Bachelor's Degree Program.
8. This articulation agreement is based on the present curricula contained in this document and it is effective for a period of five years from the date of signing by both parties.
1. Both institutions at any time may initiate changes to this articulation agreement. Both institutions reserve the right to modify the programs as deemed necessary and agree to inform the appropriate individuals of said changes. Departments will review agreements and notify the appropriate individuals at each institution of any changes by July 1 of each year the agreement is in effect. The University of Delaware will make a good faith effort to honor this articulation agreement for any Cecil College student who enrolls in the Bioproduction Associate of Applied Science Degree program during the five-year period specified for this agreement, and graduates with the required associate degree within eight (8) years of the signing of this agreement by both parties. A student who meets these conditions must apply to the University of Delaware and be accepted in order to receive the benefits of this agreement.

CONNECTED DEGREE ANALYSIS

Matching Worksheet/Suggested Course Sequence/Bachelor's Completion

ASSOCIATE OF APPLIED SCIENCE DEGREE PROGRAM BIOPRODUCTION A.A.S. CECIL COLLEGE		BACHELOR'S DEGREE COURSE MATCH OR POTENTIAL COURSE MATCH		BACHELOR'S DEGREE COMPLETION APPLIED MOLECULAR BIO. & BIOTECHNOLOGY B.S. UNIVERSITY OF DELAWARE	
Course No./Name First Semester (fall)	CR	Course No./Name	CR	Course No./Name Fifth Semester (fall)	CR
CIS101 Introduction to Computer Concepts	3	CISC101 Principles of Computing	3	CHEM213 Elementary Organic Chemistry CHEM215 Elementary Organic Chemistry lab	3 1
BIO130 Principles of Biology I BIO131 Principles of Biology I lab	3 1	BISC207 Intro Biology I	4	MMSC408 Molecular Preparatory Techniques	2
BIO200 Microbiology BIO210 Microbiology lab	3 1	BISC300 Introduction to Microbiology	4	MMSC415 Clinical Immunology & Medical Virology	3
BIP101 Introduction to Biotechnology	4	MMSC301 Introduction to Biotechnology MMSC366DE Departmental Elective	3 1	MMSC425 Basic Recombinant DNA Techniques	4
Semester Credit Total	15	Semester Credit Total	15	MMSC490 Clinical & Molecular Cell Biology	3
				Semester Credit Total	16
Second Semester (spring)				Sixth Semester (winter)	
BIO132 Principles of Biology II BIO133 Principles of Biology II lab	3 1	BISC208 Introductory Biology II	4	MATH114 College Math & Statistics	3
BIP102 Biotechnology Laboratory Techniques	4	MMSC166DE Department Elective	4	Semester Credit Total	3
MATH127 Introduction to Statistics	4	STAT200 Basic Statistical Practice + 1 cr STAT266DE (will substitute for MMSC375 Biostatistics for the Biological & Health Sciences in the AMBB curriculum)	4	Seventh Semester (spring)	
HUM101 Introduction to Critical Inquiry	3	UNIV166DE Department Elective	3	MMSC100 Intro to Medical & Molecular Sciences	1
Semester Credit Total	15	Semester Credit Total	15	MMSC426 Protein Purification & Characterization	3
				MMSC450 Medical Biochemistry	4
				MMSC451 Cell & Tissue Culture Techniques	4

ASSOCIATE OF APPLIED SCIENCE DEGREE PROGRAM BIOPRODUCTION A.A.S. CECIL COLLEGE		BACHELOR'S DEGREE COURSE MATCH OR POTENTIAL COURSE MATCH		BACHELOR'S DEGREE COMPLETION APPLIED MOLECULAR BIO. & BIOTECHNOLOGY B.S. UNIVERSITY OF DELAWARE	
Course No./Name Third Semester (fall)	CR	Course No./Name	CR	MMSC491 Human Molecular Genetics	3
BIP201 Introduction to Bioprocessing	4	MMSC266DE Departmental Elective	4	MMSC492 Application of Molec Diagnostic Tech	3
CHM103 General Chemistry I	3	CHEM103 General Chemistry	3	Semester Credit Total	18
CHM113 General Chemistry I lab	1	CHEM133 General Chemistry lab	1		
EGL101 College Composition	3	ENGL166DE: Department Elective* (see note below regarding ENGL110 First Year Writing exemption)	3		
SPH121 Interpersonal Communications	3	COMM166DE Department Elective	3		
Semester Credit Total	14	Semester Credit Total	14		
Fourth Semester (spring)				Eighth Semester (summer)	
BIP202 College Based Work Experience	3	MMSC266DE Departmental Elective	4	CHEM214 Elementary Biochemistry	3
CHM104 General Chemistry II	3	CHEM104 General Chemistry	3	CHEM216 Elementary Biochemistry lab	1
CHM114 General Chemistry II lab	1	CHEM134 General Chemistry lab	1	Semester Credit Total	4
EGL102 Composition and Literature	3	ENGL101 Tools of Textual Analysis	3	Ninth Semester (fall)	
Social Science Elective – strongly suggest: ANT101 Cultural Anthropology or SOC105 Perspective in Human Diversity (other CC Social Science elective options available but do not satisfy two UD curriculum requirements simultaneously)	3	ANTH101 Introduction to Cultural Anthropology (satisfies History & Cultural Change breadth and multicultural requirement) or HDFS202 Diversity & Families (satisfies Social & Behavioral Science breadth and multicultural requirement)	3	MMSC200 Language of Medicine	3
Math, Science or Engineering Elective ** (see note page 8) – strongly suggest: Option #1: BIO208 Human Anatomy & Physiology I & BIO218 Human Anatomy & Physiology I lab or Option #2: PHY217 General Calculus Physics w lab (other CC program elective options available but do not satisfy UD curriculum requirements)	3 1 4	Option #1: KAAP309 Human Anatomy & Physiology I ** or Option #2: PHYS207 Fund of Physics I & PHYS227 Fundamentals of Physics I lab	4 3 1	MMSC435 Practical Genomics, Proteomics & Bioinformatics	3
Semester Credit Total	17	Semester Credit Total	17	MMSC441 Biotechnology Practicum I	3
TOTAL	61	TOTAL	61	MMSC442 Biotechnology Practicum II	3

			MMSC461 Lab Practice & Leadership I	1
			History & Cultural Change or Social & Behavioral Science breadth (whichever was not completed at Cecil)	3
			Semester Credit Total	16
			Tenth Semester (winter)	
			Option #1 KAAP310 Human Anatomy & Physiology II or Option #2 PHYS202/222L Intro Physics II **	4
			Semester Credit Total	4
			Eleventh Semester (spring)	
			ANFS449 Food Biotechnology	4
			MMSC427 Flow Cytometry	2
			MMSC443 Biotechnology Practicum III	3
			MMSC444 Biotechnology Practicum IV	3
			MMSC471 Lab Practice & Leadership II	1
			HLTH241 Ethical Aspects of Healthcare	3
			Semester Credit Total	16
			TOTAL	73

* Note: Students who successfully complete and transfer credit for EGL101 and earn an associate degree from Cecil College will be granted an exemption for ENGL110 First Year Writing. This exemption will be posted to the student record upon receipt of a final, official transcript. Note: grades of C- or better are required to transfer credit to UD

**** ANATOMY & PHYSIOLOGY OR PHYSICS COURSE SEQUENCE WITH MATH IMPLICATIONS**

The AMBB curriculum at UD requires one of the following sequences and it is strongly suggested that students complete the first course of either sequence in Term 4 at Cecil which will satisfy the Bioproduction Math/Science/Engineering Elective requirement. See below for suggested options to complete the required coursework at both Cecil and UD:

OPTION 1: KAAP309 Human Anatomy & Physiology I and KAAP310 Human Anatomy & Physiology II (details below)

or

OPTION 2: PHYS201/221L Introductory Physics I w/lab and PHYS202/222L Introductory Physics II w/lab (details below - may substitute PHYS207/227 Fundamentals of Physics I w/lab and PHYS208/228L Fundamentals of Physics II w/lab)

OPTION 1 course plan for students choosing the Anatomy & Physiology track: Cecil College BIO208/218 Anatomy & Physiology 1 w/lab in term 4 and UD's KAAP310 Anatomy & Physiology II in term 10 (or at a preferred term, likely winter or summer due to curriculum requirements in fall/spring). Students following this track either must complete or test out of Cecil's MAT097 Introductory & Intermediate Math as a prerequisite for Cecil's BIO208/218 Anatomy & Physiology I.

1. A&P Track

Test out of or complete MAT097 Introductory & Intermediate Math prior to term 4 at CC

Complete A&P1 in semester 4 at CC for Math/Science/Engineering elective

Complete A&P 2 at UD suggest term 10

Complete MATH114 at UD suggested term 6

OPTION 2 course plan for students choosing the Physics track: Cecil College PHY217 General Physics I w/lab in term 4 (requires MAT191 Precalculus as a prereq) and UD's PHYS208/228L Fundamentals of Physics II w/lab in term 6 or 10 (or at a preferred term, likely winter or summer due to curriculum requirement in fall/spring). Since students following this plan must complete Cecil's MAT191 Precalculus at CC (transfers to UD as MATH117 Precalculus for Scientists & Engineers) as a prereq for physics, this satisfies the UD mathematics requirement and therefore eliminates the need for MATH114 College Math & Statistics at UD in term six.

2. Physics Track

Complete MAT191 prior to term 4 at CC

Complete PHYS 1 semester 4 at CC for Math/Science/Engineering elective

Complete PHYS2 at UD suggest term 6 (replacing MATH114) or term 10

MATH114 at UD not required.

OPTION 2A variation course plan for students choosing the Physics track: Cecil College MAT191 Precalculus in term 4 and then completion of both Physics 1 and Physics 2 at UD (either PHYS201/221L and 202/222L or PHYS207/227L and PHYS208/228L), likely in winter/summer terms. Suggest terms six and ten (both winters). This plan also eliminates the need for MATH114 College Math & Statistics at UD.

2a. Physics Track Variation

Complete MAT191 in semester 4 at CC as math/science elective

Complete PHYS 1 at UD suggest term 6 (replacing MATH114)

Complete PHYS 2 at UD suggest term 10

MATH114 at UD not required.



CONNECTED DEGREE CURRICULUM

Suggested Course Sequence

ASSOCIATE OF APPLIED SCIENCE DEGREE BIOPRODUCTION A.A.S. CECIL COLLEGE				BACHELOR'S DEGREE APPLIED MOLECULAR BIOLOGY & BIOTECHNOLOGY B.S. UNIVERSITY OF DELAWARE			
Semester 1 (Fall)			CR 15	Semester 5 (Fall)			CR 16
CIS	101	Introduction to Computer Concepts	3	CHEM	213/215	Elementary Organic Chemistry w/lab	3/1
BIO	130/131	Principles of Biology I w/lab	3/1	MMSC	408	Molecular Preparatory Techniques	2
BIO	200/210	Microbiology/lab	3/1	MMSC	415	Clinical Immunology & Medical Virology	3
BIP	101	Introduction to Biotechnology	4	MMSC	425	Basic Recombinant DNA Techniques	4
				MMSC	490	Clinical & Molecular Cell Biology	3
				Semester 6 (winter)			3
				MATH	114	College Math & Stats (only if no MAT191 at CC) **	3
Semester 2 (Spring)			15	Semester 7 (Spring)			18
BIO	132/133	Principles of Biology II w/lab	3/1	MMSC	100	Introduction to Medical & Molecular Sciences	1
BIP	102	Biotechnology Laboratory Techniques	4	MMSC	426	Protein Purification & Characterization	3
MATH	127	Introduction to Statistics	4	MMSC	450	Medical Biochemistry	4
HUM	101	Introduction to Critical Inquiry	3	MMSC	451	Cell & Tissue Culture Techniques	4
				MMSC	491	Human Molecular Genetics	3
				MMSC	492	Applications of Molec Diagnostic Techniques	3
Semester 3 (Fall)			15	Semester 8 (Summer)			4
BIP	201	Introduction to Bioprocessing	4	CHEM	214/216	Elementary Biochemistry w/lab	3/1
CHEM	103/113	General Chemistry I w/lab	3/1	Semester 9 (fall)			16
ENG	101	College Composition	3	MMSC	200	Language of Medicine **	3
SPH	121	Interpersonal Communications	3	MMSC	435	Pract Genomics, Proteomics & Bioinformatics	3
				MMSC	441	Biotechnology Practicum I	3
				MMSC	442	Biotechnology Practicum II	3
				MMSC	461	Laboratory Practice & Leadership I	1
				XXXX	###	Breadth - History & Cultural Change or Social & Behav Sci (whichever was not completed at Cecil)	3
Semester 4 (Spring)			17	Semester 10 (winter)			4
BIP	202	College Based Work Experience	3	KAAP or PHYS	310 202/222	Human Anatomy & Physiology II ** or PHYS202/222 Intro Physics II ** (to complete sequence begun in Semester 4 at CC)	4 or 3/1
CHM	104/114	General Chemistry II w/lab	3/1	Semester 11 (spring)			16
EGL	102	Composition and Literature	3	ANFS	449	Food Biotechnology	4
XXX	###	Social Science Elective:* strongly suggest ANT101 Cultural Anthropology or SOC105 Perspective in Human Diversity for maximum efficiency in fulfillment of UD requirements*	3	HLTH	241	Ethical Aspects of Healthcare	3
XXXX	###	Math/Sci/Engineering Elective **: strongly suggest BIO208 Human Anat & Phys I w/lab or PHY217 Gen Physics I w/lab (see note p8)	4	MMSC	427	Flow Cytometry	2
				MMSC	443	Biotechnology Practicum III	3
				MMSC	444	Biotechnology Practicum IV	3
				MMSC	471	Laboratory Practice and Leadership II	1
Total Credits			62				73

The AMBB Bachelor of Science program in 2023-24 requires a minimum of 122 credits. Course sequencing may vary by semester. See your advisor.

* Link to Social Science Elective options: <https://catalog.cecil.edu/content.php?catoid=5&navoid=703#approved-general-education-courses-by-category>

** See note on Anatomy & Physiology or Physics course sequence options with math implications on page 8

Cecil College Contact name/information Benjamin Rohe, Ed D Bioproduction Program Coordinator brohe@cecil.edu	University of Delaware Contact name/information Esther Biswas-Fiss, PhD Department Chair, Medical & Molecular Sciences ebiswas@udel.edu
---	--

The articulation agreement is subject to change based on Cecil College and UD curriculum changes 05/2024

APPROVAL

This program articulation agreement is between CC's Associate of Applied Science Degree in Bioproduction and UD's Bachelor of Science Degree in Applied Molecular Biology & Biotechnology.

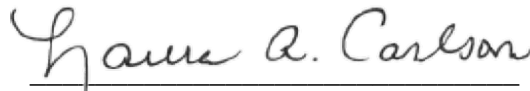
Approval is granted for a period of five years effective on the date both parties have signed this agreement.

CECIL COLLEGE

UNIVERSITY OF DELAWARE

 8/15/2024

Mary Way Bolt, EdD
President
Cecil College

 10/24/2024

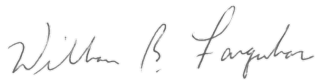
Laura Carlson, PhD
Provost
University of Delaware

Date



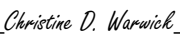
Christy Dryer, DNP
Vice President of Academic Programs

8/15/2024
Date

 8/23/24


William Farquhar, PhD
Dean
College of Health Sciences

Date

 8/13/24

Christine Warwick, MS
Chair
Science & Technology Department

Date

 18 August 2024

Esther Biswas-Fiss PhD
Chair
Medical and Molecular Sciences

Date

