

MEMORANDUM OF UNDERSTANDING
HARFORD COMMUNITY COLLEGE & TOWSON UNIVERSITY
March 26, 2018

**Molecular Biology, Biochemistry, and Bioinformatics (MB3) – Bioinformatics
Concentration B.S. Degree**

Harford Community College, Bel Air, Maryland, and Towson University, agree to follow the articulation of courses outlined in the articulation (course equivalency) document, for completion of requirements for the Bachelor of Science degree in Molecular Biology, Biochemistry, and Bioinformatics (Attachment A), which is attached to, and incorporated by reference into, this Memorandum of Understanding (MOU). The following principles guide the operation of this MOU, with the requirements for transfer in specific curricula set forth in Attachment A.

1. Towson University will accept a maximum number of 64 credits from Harford Community College as outlined in the Attachment A. The number of transferable credits specific to this program is reflected in Attachment A.
2. Students who have completed the Associate of Science Degree in the Computer Science program at Harford Community College may transfer into Towson University's Molecular Biology, Biochemistry, and Bioinformatics: Bioinformatics concentration program with junior standing provided that the student has completed all courses identified on Attachment A (which is attached to, and incorporated by reference into, this MOU) with a cumulative GPA of 2.00 or higher. Courses completed at Harford Community College with 300 or 400 level Towson University course equivalencies will transfer as lower-level credit but will satisfy course content as indicated.
3. Only courses in which a grade of C (2.00) or better is earned will apply toward the major at Towson University.
4. In accordance with the MHEC transfer policy pertaining to general education requirements, Towson University will accept the completion of Harford Community College's general education requirements (GenEds) and students will be required to complete courses at Towson University to satisfy the remaining *University Core* requirements as shown in Attachment A.
5. Towson University recognizes college-level experiential learning gained through previous work, military and/or volunteer service or life experience. Credit for prior learning may also be established through course challenge or standardized credit by examination.
6. Harford Community College students transferring to Towson University will be given every consideration for financial aid and will be eligible to compete for academic scholarships upon entrance to Towson University subject to stated scholarship deadlines.
7. Both Harford Community College and Towson University agree to work together to facilitate the transfer of students from Harford Community College to Towson University

to work cooperatively to insure the high quality of the programs at the respective institutions. Transfer of students will be in accordance with policies and procedures of both institutions, as they may be amended from time to time.

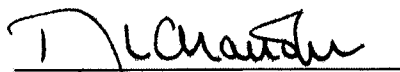
8. This MOU will be in effect initially for ten years, beginning *spring 2018*, with a review every two years by both parties. Any revisions the parties deem necessary must be evidenced in writing and signed by the authorized officials of each institution. The MOU may be terminated by either party for due cause and after adequate notice of not less than six months is given to the other party.
9. Towson University will establish procedures to provide information on the academic progress of Harford Community College students enrolled as part of this MOU.
10. This MOU, when signed, constitutes the entire agreement between the parties and supersedes all prior agreements and understandings between the parties respecting the matter hereof.

HARFORD COMMUNITY COLLEGE AND TOWSON UNIVERSITY



Dr. Steven Thomas
Vice President for
Academic Affairs

Date 6.5.2018



Dr. Timothy Chandler
Provost and Vice-President for
Academic Affairs

Date 6/26/18

HARFORD COMMUNITY COLLEGE – COMPUTER SCIENCE A.S. DEGREE
HARFORD COMMUNITY COLLEGE – MOLECULAR BIOLOGY, BIOCHEMISTRY AND BIOINFORMATICS (MB3) – BIOINFORMATICS CONCENTRATION B.S. DEGREE

HARFORD COMMUNITY COLLEGE			TOWSON UNIVERSITY			
COURSE #	COURSE TITLE	CRS.	TU EQUIVALENCY	CORE	COMMENTS	COURSE ID#
ENG 101	English Composition (GE) (Grade of C or better)	3	TSEM 102 Waived ENGL 102	1.	Towson Seminar English Composition	2348
MATH 203	Calculus I (GM)	4	MATH 273	2.	Mathematics	4407
GH	Arts & Humanities (GH)	3	Depends on choice.	4.	Creativity & Creative Development	
GB	Behavioral/Social Science (GB)	3	Depends on choice.	5.	Social & Behavioral Sciences	
CHEM 111*	General Chemistry I (GI)	4	CHEM 131/131L	6.	Biological & Physical Science w/Lab	13097/13098
CHEM 112*	General Chemistry II A (GI)	4	CHEM 132/132L	7.	Biological & Physical Science	13099/13100
				8.	Advanced Writing Seminar	
GB**	Behavioral & Social Science (GB)	3	Depends on choice.	9.	Metropolitan Perspectives	
GH**	Arts & Humanities (GH)	3	Depends on choice.	10.	The United States as a Nation	
				11.	Global Perspectives	
				12.	Diversity & Difference	
				13.	Ethical Issues & Perspectives	
				14.		
Total CORE in Transfer		27				
MATH 204	Calculus II (GM)	4	MATH 274			4408
MATH 210	Discrete Structures	3	MATH 263			4401
BIO 120*	General Biology I (GI)	4	BIO1 200/200L			13759/13760
CIS 115	Fundamentals of Programming	3	COSC 175			1335
CSI 131****	Computer Science I	4	COSC 236			1344
CSI 132****	Computer Science II	4	COSC 237			1345
CIS 201	Assembly Programming Language	4	COSC T1L			10186
CIS 221	C++ Programming Language	4	COSC T1L			10186
CIS 214	Programming II: Java	4	COSC T1L			10186
PHYS ED ELECT	Physical Education Elective	1	PHEA T1L			10564
Program Requirements at Harford		35				
Total Harford Program Requirements		62				
Maximum Credits in Transfer		64				

64 Credit Maximum. 15 Core Curriculum units must be completed at Towson University: 4. Creativity; 9. Advanced Writing Seminar; 10. Metropolitan Perspectives; 12. Global Perspectives; 14. Ethical Issues

*Students should choose CHEM 111; CHEM 112 AND BIO120 for their Biological/Physical Science general education requirements (GI) and General elective to satisfy MB3 major requirements at TU. Students who do not complete all three of these courses at HCC should complete the remainder of these courses in the first year of transfer to TU. **Please note that the program cannot be completed in 120 credits if at least two of these courses are not taken prior to transfer to TU.**

**One GB or GH course must also satisfy Diversity requirement at HCC.

***Must complete both CSI 131 and CSI 132 to receive credit for COSC 236 & COSC 237 at TU. Students who do not complete both courses will receive elective credit and will be required to take both COSC 236 & COSC 237 in their first year of transfer to TU.

HARFORD COMMUNITY COLLEGE - COMPUTER SCIENCE A.S. DEGREE
TOWSON UNIVERSITY/ Molecular Biology, Biochemistry and Bioinformatics (MB3) - BIOINFORMATICS CONCENTRATION B.S. DEGREE

CORE REQUIREMENTS TO BE COMPLETED AT TOWSON 15 UNITS

CORE 4: Creativity and Creative Development	(3 UNITS)
CORE 9: Advanced Writing Seminar	(3 UNITS)
CORE 10: Metropolitan Studies	(3 UNITS)
CORE 12: Global Perspectives	(3 UNITS)
CORE 14: Ethical Issues and Perspectives	(3 UNITS)

PROGRAM REQUIREMENTS TO BE COMPLETED AT TOWSON 38-55 UNITS

REQUIRED COURSES: 23-35 UNITS

BIOL 309 GENETICS	(4 UNITS)
BIOL 409 MOLECULAR BIOLOGY	(4 UNITS)
CHEM 351 BIOCHEMISTRY I	(3 UNITS)
MATH 237 ELEMENTARY BIOSTATISTICS	(4 UNITS)
MBBB 301 INTRO TO BIOINFORMATICS	(4 UNITS)
MBBB 493 SEMINAR IN BIOETHICS	(1 UNIT)
BIOL 200 & INTRODUCTION TO CELL BIOLOGY AND GENETICS	(3 UNITS)
BIOL 200L INTRODUCTION TO CELL BIOLOGY AND GENETICS LAB	(1 UNIT)
<i>(If BIOL 120 was not taken at HCC)</i>	
CHEM 131& GENERAL CHEMISTRY I LECTURE	(3 UNITS)
CHEM 131L GENERAL CHEMISTRY I LABORATORY	(1 UNIT)
<i>(If CHEM 111 was not taken at HCC)</i>	
CHEM 132& GENERAL CHEMISTRY II LECTURE	(3 UNITS)
CHEM 132L GENERAL CHEMISTRY II LABORATORY	(1 UNIT)
<i>(If CHEM 112 was not taken at HCC)</i>	

SELECT ONE OF THE FOLLOWING: (3 UNITS)

MBBB 495 CAPSTONE PROJECT*	
BIOL 491 ELECTIVE IN INDEPENDENT RESEARCH*	
CHEM 491 INTRODUCTION TO RESEARCH IN CHEMISTRY I*	
COSC 495 INDEPENDENT STUDY*	

***COURSES MAY BE REPEATED FOR A TOTAL OF 6 UNITS TOWARD THE MAJOR**

**HARFORD COMMUNITY COLLEGE – COMPUTER SCIENCE A.S. DEGREE
TOWSON UNIVERSITY / Molecular Biology, Biochemistry and Bioinformatics (MB3) – BIOINFORMATICS CONCENTRATION B.S. DEGREE**

COURSES FOR BIOINFORMATICS CONCENTRATION: 15-20 UNITS

CHEM 330	ESSENTIALS OF ORGANIC CHEMISTRY	(5-10 UNITS)
OR		
CHEM 331 &	ORGANIC CHEMISTRY I AND	
CHEM 332	ORGANIC CHEMISTRY II	
COSC 336	DATA STRUCTURES AND ALGORITHM ANALYSIS	(4 UNITS)
COSC 457	DATABASE MANAGEMENT SYSTEMS	(3 UNITS)
OR		
CIS 458	ORGANIZATIONAL DATABASE MANAGEMENT	
MBBB 401	ADVANCED BIOINFORMATICS	(3 UNITS)

Additional Bachelor Degree Requirements

- A C (2.0) or higher is required in all major and minor courses
- A cumulative grade point average (GPA) of 2.0 is required
- 32 units of the bachelor's degree must be completed at the upper level (courses numbered 300 or above)

Total Credits to B.S. Degree	(120-132)
Harford Biology A.S. Degree	62
Completion of Core at TU	15
Completion of Major Requirements at TU	38-55
Elective Credits at TU	0-5

