MEMORANDUM OF UNDERSTANDING
HARFORD COMMUNITY COLLEGE & TOWSON UNIVERSITY
November 29, 2018

CHEMISTRY – PROFESSIONAL TRACK 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 Chemistry - Professional Track (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 Chemistry (with Calculus-based physics) program at Harford Community College may transfer into Towson University's Chemistry - Professional Track 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 ***fall 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 12.17.18

Dr. David Vanko
Interim Provost and Executive Vice-President
of **Academic Affairs**

Date 11 Jan 19

Effective Fall 2018

Attachment A

11/29/2018

HARFORD COMMUNITY COLLEGE – CHEMISTRY (WITH CALCULUS BASED PHYSICS), ARTS & SCIENCES A.S. DEGREE
TOWSON UNIVERSITY/ CHEMISTRY – PROFESSIONAL TRACK B.S. DEGREE

HARFORD COMMUNITY COLLEGE			TOWSON UNIVERSITY		
COURSE #	**COURSE TITLE**	**CR**	**TU EQUIVALENCY**	**COMMENTS**	**COURSE ID#**
	General Education Applied to CORE		*TSEM 102 (waived)*	***Towson Seminar Waived***	***13192***
ENG 101	English Composition (GE)	3	ENGL 102		**2348**
MATH 203*	Calculus I (GM)	4	MATH 273	Satisfies TU major requirement	**4407**
GH Elective	Arts & Humanities Elective (GH)**	3	Depends on choice.		
GH Elective	Arts & Humanities Elective (GH)**	3	Depends on choice.		
GB Elective	Behavioral/Social Science Elective (GB)**	3	Depends on choice.		
GB Elective	Behavioral/Social Science Elective (GB)**	3	Depends on choice		
CHEM 111*	General Chemistry I (GL)	4	CHEM 131 & CHEM 131L	Satisfies TU major requirement	**13097** **13098**
CHEM 112*	General Chemistry II (GL)	4	CHEM 132 & CHEM 132L	Satisfies TU major requirement	**13099** **13100**
MATH 204*	Calculus II (GM)	4	MATH 274	Satisfies TU major requirement.	**4408**
PHYS 203* **&** PHYS 200*	General Physics: Mechanics & Particle Dynamics (GS) ***and*** General Physics I Lab (GL) [Program Elective]	3 1	PHYS 241	Satisfies TU major requirement. Lab is required for equivalency (see page 2).	**6805**
PHYS 204*	General Physics: Vibrations, Waves, Heat, Electricity (GL)	4	PHYS 242	Satisfies TU major requirement.	**6806**
	Units Applied to TU Core	39			
	Program Requirements/Electives				
CHEM 207*	Organic Chemistry I	4	CHEM T31	Lower-level equivalent of CHEM 331. Satisfies TU major requirement.	**10134**
CHEM 208*	Organic Chemistry II	4	CHEM T32	Lower-level equivalent of CHEM 332. Satisfies TU major requirement.	**10135**
CHEM 204*	Analytical Chemistry [Program Elective – *general elective*]	4	CHEM 210	Satisfies TU major requirement.	
Program Electives	Program Electives (Choose from list of approved program electives at HCC)	8	Depends on choice.		
PE	Physical Education Elective	1	Depends on choice.		
	Program Requirements at Harford CC	21			
	Total Degree Requirements at Harford CC	**60**		**Core Transfer Package 4 : AACR 400**	
	Maximum Units in Transfer	**64**			

***Course satisfies program requirement for both Associate's degree and Bachelor's degree. Refer to next page for details on course selection and degree requirement satisfaction.**

****One Arts/Humanities (GH) or Social/Behavioral Science (GB) must be a Diversity course (D).**

A grade of "C" or higher is required for all program requirements at HCC.

Note: Students may choose to take additional electives within the 64 allowable transfer credits to satisfy prerequisites for major electives at TU. This is not required; see next page for details.

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Harford CC Course Selection:

GENERAL EDUCATION:

1. Students should use one of their **Arts/Humanities (GH) or Social/Behavioral Science (GB) general education electives** to satisfy the 3-credit **diversity course (D)** requirement for Harford CC's graduation requirements.
2. Students who do not complete general education courses as outlined here may be required to complete additional CORE courses at TU.
3. An ethics course is recommended.

PROGRAM ELECTIVES (13 CREDITS):

1. Students should complete **PHYS 200 General Physics I Lab (GL) as a program elective;** it is recommended to complete this at the same time as PHYS 203 General Physics: Mechanics & Particle Dynamics (GS). Both lecture and lab must be completed in order to receive the PHYS 241 equivalency at TU. Students who do not complete the lab will be required to complete PHYS 241 at TU and will receive only a PHYS TLL (elective) credit for PHYS 203.
2. The A.S. degree in Chemistry allows for 1-4 credits of *general electives* to satisfy one of the **program electives**. Students should complete CHEM 204 Analytical Chemistry as this *general elective* (**program elective**). A course substitution appeal may be required at HCC to take this course. Students should consult with their academic advisors before registering for this course. Students who do not complete CHEM 204 at HCC will be required to complete CHEM 210 at TU. **NOTE:** If CHEM 204 is not offered at HCC during a student's attendance, refer to the note below for alternative course recommendations.
3. The following courses are recommended to satisfy the remaining 8 credits of program electives or for students who wish to complete additional credits within the allowable 64 transfer credits*:

    a. **BIO 120 General Biology I (GL)** to satisfy prerequisites for Biology electives available in the major at TU.
    b. **ES 105 Earth Science (GS) and ES 106 Earth Science Laboratory (GL)** to satisfy prerequisites for Geology electives available in the major at TU. A course substitution appeal may be required at HCC to take this course. Students should consult with their academic advisors before registering for this course.
    c. **MATH 208 Elementary Differential Equations** to satisfy a major elective (MATH 374) at TU. Students who do not complete MATH 208 will be required to complete additional electives in the major at TU, but may choose courses other than MATH 374. **NOTE:** MATH 208 will transfer as a lower-level equivalent to MATH 374 and does not count toward the overall upper-level credit requirement.

*These are only suggestions for students looking to complete additional program requirements while at HCC. HCC and TU do not require students to complete more than the required 60 credits for the AS degree. However, completion of an additional major or prerequisite course at HCC may reduce the total number of units to be completed at TU.

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DEGREE REQUIREMENTS TO BE COMPLETED AT TU:

CORE CURRICULUM TO BE COMPLETED AT TU		**3 UNITS**
Core 9	Advanced Writing Seminar	3 units

Additional Core courses may be required if courses were not completed at HCC as indicated on page 1 of this agreement

REQUIRED CHEMISTRY COURSES			**21-26 UNITS**
CHEM 210	Analytical Chemistry	***(If CHEM 204 is not taken at HCC)***	(5 units)
CHEM 310	Instrumental Analysis		4 units
CHEM 323	Inorganic Chemistry		4 units
CHEM 345	Principles Physical Chemistry		3 units
CHEM 346	Theoretical Foundations of Physical Chemistry		3 units
CHEM 351	Biochemistry I		3 units
CHEM 372	Physical Chemistry Laboratory		2 units
CHEM 401	Communication Skills in Chemistry		1 unit
CHEM 491	Research in Chemistry		2 unit

ADDITIONAL REQUIRED COURSES			**0-4 UNITS**
PHYS 241	General Physics I Calculus-Based	***(If PHYS 200 is not taken at HCC)***	(4 units)

MAJOR ELECTIVES – PROFESSIONAL TRACK **3-6 UNITS**

In addition to the required courses listed above, students selecting this track must take a minimum of two additional courses (6 additional units), which must include at least one CHEM or FRSC course. Students should refer to the TU catalog for a list of approved elective courses. Elective courses may require additional prerequisites that are not listed in the degree requirements.

Students who completed MATH 208 Elementary Differential Equations as a program elective at HCC will require only 3 units of electives at TU. (Do not take MATH 374.)

NOTE: The Professional track is designed to meet the requirements for American Chemical Society (ACS) certification. Additional information regarding ACS certification is available in the TU catalog. Students selecting this track should plan their college careers carefully because not all the advanced chemistry courses are offered every term. A long-term schedule for these courses may be obtained from the Department of Chemistry. Advanced chemistry electives are offered periodically, subject to adequate enrollment.

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GENERAL ELECTIVES **21-33 UNITS**

Students may consider filling general elective units through a number of different options, including completing additional electives in the major, adding a minor, or completing electives to explore personal and professional interests.

CHEMISTRY MAJOR REPEAT POLICY: A student may repeat no more than three courses, including multiple attempts at the same course, required for the Chemistry major or minor. This includes all foundation courses, as well as required courses and electives for the major and minor. Students exceeding this limit may not be permitted to register for additional Chemistry courses.

NOTE: This policy applies to TU coursework only. Students will not be penalized for repeating major courses prior to attending TU; they should refer to the Harford CC catalog for its repeat policy.

TOTAL UNITS TO B.S. DEGREE 120 UNITS

Harford CC Chemistry (w/ Calculus Based Physics) A.S. Degree	**60**
Completion of Core Curriculum at TU	**3**
Chemistry Major – Professional Track Requirements at TU	**24-36**
Electives	**21-33**

ADDITIONAL BACHELOR'S 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).***