

MEMORANDUM OF UNDERSTANDING
HARFORD COMMUNITY COLLEGE & TOWSON UNIVERSITY
September 17, 2018

COMPUTER SCIENCE 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 Computer Science (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 Computer Science 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 9.27.2018



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

Date 9 Oct 18

Harford Community College Course Selections:

General education:

1. **Two LAB** science courses in the Biology, Chemistry or Physics disciplines are required for the computer science major at TU. Students should choose from the following General Education courses at HCC in order to satisfy the General Education requirements at HCC and the Core and Major requirements at TU: **BIO 120 and 121; CHEM 222 and 112; PHYS 203 and 204.** If both lab courses are taken in the same discipline, courses must be sequential as listed above. Students who do not take these courses as specified at HCC *may need to complete additional lab courses in the Biology, Chemistry, Physics disciplines at TU to satisfy COSC major requirement.*

Program requirements/ electives:

1. Students should choose **CMST 101 Speech Fundamentals** as their “General Elective” at HCC to satisfy a Core and a major requirement at TU. Students who do not take **CMST 101** at HCC *will need to take COMM 131 at TU* to satisfy the COSC program requirement and may require additional courses to satisfy Core.

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CORE Curriculum requirements to be completed at TU:

	6-9 Units
CORE 9 ENGL 317 Writing for Business and Industry	3
CORE 14 COSC 418 Ethical & Societal Concerns of Computer Scientists	3
CORE 5 COMM 131 Fundamentals of Speech Communication*	(3)

*Required if student did not take CMST 101 at HCC.

Required Computer Science Courses

	23 Units
COSC 290 Principles of Computer Organization	4
COSC 336 Data Structures and Algorithm Analysis	4
COSC 350 Data Communications and Networking	3
COSC 412 Software Engineering	3
COSC 439 Operating Systems	3
COSC 455 Programming Languages: Design/Implementation	3
COSC 457 Database Management Systems	3

Required Math Courses

	4-8 Units
MATH 314 Introduction to Cryptography	4
**required for Computer Security track ONLY	
MATH 330 Introduction to Statistical Methods	4

Elective Math/Science Courses

	7-9 Units
Select either two Math courses from the following, or one Math course and one Science course:	
MATH 265 Elementary Linear Algebra	BIOL 205 General Botany
MATH 275 Calculus III	BIOL 207 General Zoology
MATH 314 Introduction to Cryptography	BIOL 309 Genetics
MATH 315 Applied Combinatorics	CHEM 210 Analytical Chemistry
MATH 369 Introduction to Abstract Algebra	CHEM 323 Inorganic Chemistry I
MATH 374 Differential Equations	CHEM 331 Organic Chemistry I
MATH 377 Mathematical Models	PHYS 243 General Physics III
MATH 378 Scientific Modelling and Simulation	PHYS335 Basic Electronics
MATH 435 Numerical Analysis I	
MATH 437 Operations Research	
MATH 451 Graph Theory	

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Elective Computer Science Courses

Select at least two of the following:

COSC 417 Introduction to the Theory of Computation
 COSC 432 Requirements Analysis & Modeling
 COSC 436 Object-Oriented Design and Programming
 COSC 459 Computer Simulation & Modeling
 COSC 461 Artificial Intelligence
 COSC 471 Computer Graphics
 COSC 483 Design & Analysis Algorithms

12 Units

Select at least two of the following (only one of COSC 397, COSC 490 and COSC 495 may be used in this category):

COSC 397 Internship/COSC
 COSC 431 Selected Topics in Computer Science
 COSC 440 Operating Systems Security
 COSC 442 Software Quality Assurance And Testing
 COST 450 Network Security
 COSC 458 Application Software Security
 COSC 465 Robotics
 COSC 484 Web-Based Program
 COSC 490 Software Project Practicum
 COSC 495 Independent Study

Science Requirement

Two lab science courses taken from physics, biology or chemistry, which must be accepted in that major. A list of approved courses can be found on the department's website.

0-8 Units

****Students may need to complete this area at TU if course selections at HCC were not made as indicated on page 2 of this agreement.**

Other Requirements

COMM 131 Fundamentals Of Speech Communication (counted above)
 COSC 418 Ethical and Societal Concerns of Computer Scientists (counted above)
 ENGL 317 Writing for Business and Industry (counted above)

0 Units

(3)
 (3)
 (3)

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Optional Tracks within the Computer Science Major:

** A student choosing one of these tracks would replace the "Elective Computer Sciences" section with the appropriate courses below.

1. Computer Security Track Courses: 18 Units

COSC 310	Special Topics: Advanced Programming	3
COSC 440	Operating Systems Security	3
COSC 450	Network Security	3
COSC 458	Application Software Security	3
COSC 481	Case Studies in Computer Security	3
COSC 485	Reverse Engineering and Malware Analysis	3

2. Software Engineering Track Required Courses: 12 Units

COSC 432	Requirements Analysis & Modeling	3
COSC 436	Object Oriented Design & Programming	3
COSC 442	Software Quality Assurance and Testing	3
COSC 490	Software Project Practicum	3

Elective Software Engineering Courses: 6 Units

Select two of the following:

COSC 310	Special Topics: Advanced Programming	3
COSC 458	Application Software Security	3
COSC 484	Web-Based Programming	3

Total Units to B.S. Degree 120 Units*

HCC Computer Science A.S. 61

Completion of University Core at TU 6-9

Completion of Computer Science program requirements 46-56

Electives 0-7

**This program is designed to be completed in 120 credits. Students who do not take courses at HCC as outlined in this document or who choose optional tracks may require additional credits depending on their course selections.*

Bachelor's Degree Requirements:

- A C (2.0) or higher is required in all major 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).