Exhibit C - Program Transfer Articulation Addendum
Bachelor of Science in Interdisciplinary Physics &
Bachelor of Science in Biophysics

This Program Transfer Articulation Addendum (this "Addendum") effective as the date of the last signature below, is entered into pursuant to the Umbrella Program Transfer Agreement (the "Transfer Agreement") dated June 3, 2024, by and between Harford Community College ("HCC") and Towson University ("TU") and collectively with HCC, the "Parties"), and is incorporated into the Transfer Agreement. Unless specifically modified in this Addendum, all terms and conditions in the Transfer Agreement shall remain in full force and effect. Should any conflict exist between the Transfer Agreement and this Addendum, the terms and conditions of the Transfer Agreement shall prevail.

This Addendum establishes an articulated transfer pathway ("Pathway") in which students from the Associate of Science (A.S.) in Physics at HCC may seamlessly transfer into the following Bachelor of Science Physics degree concentrations at TU:

- Bachelor of Science in Interdisciplinary Physics, Computational Physics Concentration
- Bachelor of Science in Interdisciplinary Physics, Planetary Science Concentration
- Bachelor of Science in Interdisciplinary Physics, Physics Innovation and Entrepreneurship Concentration
- Bachelor of Science in Biophysics

For each degree program listed, a 2+2 Articulation Agreement shall be attached to this Addendum hereto and incorporated herein detailing the course equivalencies, general education, and major requirements, as well as any special admission and other additional requirements, necessary for HCC students to transfer into the aforementioned Bachelor of Science in Interdisciplinary Physics concentrations at TU and successfully complete a bachelor's degree.

For the Pathway included in this Addendum, both Parties agree that faculty representatives from both institutions will meet regularly to engage in ongoing discussion to enhance and strengthen this collaboration, and agree to update the Pathway and/or associated 2+2 Articulation Agreements whenever substantive changes in the degree programs listed occur at either HCC or TU.

[Signatures Appear on Following Page]

[Signature Page to Addendum]

IN WITNESS WHEROF, the Parties hereby have caused this Addendum to be executed by their duly authorized representatives

HARFORD COMMUNITY COLLEGE

By: Diane N. Ryan
Diane N. Ryan (May 1, 2025 16:33 EDT)

Dr. Diane Ryan
Vice President
Academic Affairs

Date: 05/01/2025

TOWSON UNIVERSITY

By: _____

Dr. Melanie Perreault
Provost and Executive Vice President for
Academic Affairs

Date: 5/15/25

PROGRAM TRANSFER GUIDE

HARFORD COMMUNITY COLLEGE

TOWSON UNIVERSITY

This transfer guide is intended for students pursuing an Arts and Sciences Transfer with Area of Concentration in Physics at Harford Community College who are interested in pursuing a Bachelor of Science in Interdisc Physics; Area of Concentration: Computational Physics at Towson University. This transfer guide outlines the courses and program requirements a student should follow to satisfy degree requirements at HCC in order to complete both the HCC and TU degrees within a total of 4 years and 120 credits.

Arts and Sciences Transfer with Area of Concentration in Physics

Interdisciplinary Physics; Area of Concentration: Computational Physics

Effective Term: Fall 2025

YEAR 1 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
CHEM 111 General Chemistry I (GL)	CHEM 131/131L	4	CHEM 112 General Chemistry II A (GL) ©	CHEM 132/132L	4
ENG 101 English Composition (GE)* ©	ENGL 102	3	MATH 204 Calculus II (GM)*	MATH 274	4
MATH 203 Calculus I (GM)* ©	MATH 273	4	PHYS 201 General Physics I: Mechanics (GL)*	PHYS 241	4
PSY 101 General Psychology (GB) ֍ ©	PSYC 101	3	MATH 210 Discrete Structures*	MATH 263	3
TOTAL CREDITS:		14	**TOTAL CREDITS:**		15

YEAR 2 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
MATH 208 Elementary Differential Equations*	MATH T74 (374)	3	MATH 206 Calculus III*	MATH 275	4
PHYS 204 Gen Phys II: Heat, Electricity and Magnetism (GL)*	PHYS 242	4	MATH 217 Linear Algebra	MATH 265	4
CSI 130 Introduction to Concepts in Computer Science*	COSC 175	3	PHYS 205 Gen Phys III: Waves, Optics and Modern Phys*	PHYS 243	4
SOC 101 Introduction to Sociology (GB) ֍ ©	SOCI 101	3	CMST 210: Group Communication & Leadership (GAH) ֍ ©	COMM 216	3
PHIL 205 Ethics (GAH) OR ©	PHIL 103	3	Physical Education Elective	PHEA TLL	1
PHIL 220 Bioethics (GAH) OR ©	PHIL T61 (361)				
PHIL 221 Business Ethics (GAH) OR ©	PHIL T71 (371)				
PHIL 222 Environmental Ethics (GAH) ©	PHIL 255				
TOTAL CREDITS:		16	**TOTAL CREDITS:**		16

YEAR 3 - Towson University

Fall	Credits	Spring	Credits
PHYS 185 Introductory Seminar in Physics*	1	COSC 237 Introduction to Computer Science II*	4
COSC 236 Introduction to Computer Science I*	4	PHYS 341 Interrmediate Physics Laboratory*	3
PHYS 305 Computers in Physics*	4	PHYS 385 Physics Seminar OR ASTR 385 Astrophysics Seminar*	1
PHYS 311 Modern Physics I*	3	COSC 290 Principles of Computer Organization*	4
PHYS 307 Introductory Mathematical Physics*	3	Any 300- or 400- level course from PHYS, COSC, or MATH*	3
TOTAL CREDITS:	15	**TOTAL CREDITS:**	15

YEAR 4 - Towson University

Fall	Credits	Spring	Credits
Any 300- or 400- level courses from PHYS, COSC, or MATH*	6	Any 300- or 400- level courses from PHYS, COSC, or MATH*	3
COSC 336 Data Structures and Algorithm Analysis*	4	PHYS 337 Digital Electronics*	4
CHEM 301 Professional Ethics for Scientists ֍ * ©	3	PHYS 486 Physics Seminar II*	1
PHYS 460 Computational Methods in Physics*	3	Any elective course	5
TOTAL CREDITS:	16	**TOTAL CREDITS:**	13

** Denotes course that must be completed with a grade of C or better* *** Must consult with a TU Academic Advisor* *© Core Curriculum*

Notes & Recommendations from Towson University:

- Core 1 at TU is automatically waived for all transfer students.
- Course equivalents ending in TLL are general lower-level elective coursework at TU.
- Students must follow the course selections outlined in this agreement. Failing to complete the specified courses will require them to fulfill remaining requirements at TU and could jeopardize their ability to earn a bachelor's degree within two years. Courses with the ֍ symbol are recommendations only; consult with advising for alternate options to complete all coursework within four years.
- A course number beginning with T or F indicates that it is a lower-level equivalent of an upper-level TU course. These courses will not count toward the TU degree requirement for 32 upper-level units.
- Students entering into this agreement will need to complete one Core Curriculum requirement at TU: Advanced Writing Seminar (Core 9). Students not completing the courses listed above will be required to complete additional Core Curriculum requirements at TU.

Bachelor's degree requirements for all students:

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

PROGRAM TRANSFER GUIDE

HARFORD COMMUNITY COLLEGE

TOWSON UNIVERSITY

This transfer guide is intended for students pursuing an Arts and Sciences Transfer with Area of Concentration in Physics at Harford Community College who are interested in pursuing a Bachelor of Science in Interdisc Physics: Physics Innovation and Entrepreneurship at Towson University. This transfer guide outlines the courses and program requirements a student should follow to satisfy degree requirements at HCC in order to complete both the HCC and TU degrees within a total of 4 years and 120 credits.

Arts and Sciences Transfer with Area of Concentration in Physics

Interdisciplinary Physics; Area of Concentration: Physics Innovation and Entrepreneurship

Effective Term: Fall 2025

YEAR 1 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
CHEM 111 General Chemistry I (GL)* ©	CHEM 131/131L	4	CHEM 112 General Chemistry II A (GL) *©	CHEM 132/132L	4
ENG 101 English Composition (GE)* ©	ENGL 102	3	MATH 204 Calculus II (GM)*	MATH 274	4
MATH 203 Calculus I (GM)* ©	MATH 273	4	PHYS 201 General Physics I: Mechanics (GL)*	PHYS 241	4
ECON 102 Microeconomics (GB) ©*	ECON 201	3	PHIL 205 Ethics (GAH) OR ©	PHIL 103	3
			PHIL 220 Bioethics (GAH) OR ©	PHIL T61 (361)	
			PHIL 221 Business Ethics (GAH) OR ©	PHIL T71 (371)	
			PHIL 222 Environmental Ethics (GAH) ©	PHIL 255	
TOTAL CREDITS:		14	**TOTAL CREDITS:**		15

YEAR 2 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
MATH 208 Elementary Differential Equations*	MATH T74 (374)	3	MATH 206 Calculus III*	MATH 275	4
PHYS 204 Gen Phys II: Heat, Electricity and Magnetism (GL)*	PHYS 242	4	MATH 217 Linear Algebra	MATH 265	4
CSI 130 Introduction to Concepts in Computer Science*	COSC 175	3	PHYS 205 Gen Phys III: Waves, Optics and Modern Phys*	PHYS 243	4
SOC 101 Introduction to Sociology (GB) ֍ ©	SOCI 101	3	CMST 210: Group Communication & Leadership (GAH) ֍ ©	COMM 216	3
BA 246 Legal Environment of Business ©*	LEGL 225	3	Physical Education Elective	PHEA TLL	1
TOTAL CREDITS:		16	**TOTAL CREDITS:**		16

YEAR 3 - Towson University

Fall	Credits	Spring	Credits
PHYS 185 Introductory Seminar in Physics*	1	Any PHYS 300-or 400-level couse*	3
PHYS 305 Computers in Physics*	4	MKTG 451 Professional Selling*	3
PHYS 311 Modern Physics I*	3	PHYS 312 Modern Physics II*	3
MKTG 341 Marketing and Creativity*	3	PHYS 341 Intermediate Physics Laboratory I*	3
PHYS 385 Physics Seminar OR ASTR 385 Astrophysics Seminar*	1	ENGL 317 Writing for Business and Industry* © OR	3
COMM 131 Public Speaking*	3	BUSX 301 Business Communications (4 credits) ©	
TOTAL CREDITS:	15	**TOTAL CREDITS:**	15

YEAR 4 - Towson University

Fall	Credits	Spring	Credits
Any PHYS 300-or 400-level couse*	3	Any PHYS 300-or 400-level couse*	3
PHYS 335 Basic Electronics* OR PHYS 337 Digital Electronics* OR	4	PHYS 486 Physics Seminar II*	1
PHYS 361 Optics Fundamentals*		Student completion of Entrepreneurship or Marketing Minor:	
Student declaration of Entrepreneurship or Marketing Minor:		Choose one pair: ENTR 355 and ENTR 410 OR MKTG 445 and MKTG elective*	6
Choose one pair: ENTR 110 and ENTR 215 OR MKTG 350 and MKTG 425*	6	Any elective course	3
Any elective course	3		
TOTAL CREDITS:	16	**TOTAL CREDITS:**	13

** Denotes course that must be completed with a grade of C or better* *** Must consult with a TU Academic Advisor* *© Core Curriculum*

Notes & Recommendations from Towson University:

- Core 1 at TU is automatically waived for all transfer students.
- Course equivalents ending in TLL are general lower-level elective coursework at TU.
- Students must follow the course selections outlined in this agreement. Failing to complete the specified courses will require them to fulfill remaining requirements at TU and could jeopardize their ability to earn a bachelor's degree within two years. Courses with the ֍ symbol are recommendations only; consult with advising for alternate options to complete all coursework within four years.
- A course number beginning with T or F indicates that it is a lower-level equivalent of an upper-level TU course. These courses will not count toward the TU degree requirement for 32 upper-level units.
- Students entering into this agreement will need to complete one Core Curriculum requirement at TU: Advanced Writing Seminar (Core 9). Students not completing the courses listed above will be required to complete additional Core Curriculum requirements at TU.

Bachelor's degree requirements for all students:

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

PROGRAM TRANSFER GUIDE

HARFORD COMMUNITY COLLEGE

TOWSON UNIVERSITY

This transfer guide is intended for students pursuing an Arts and Sciences Transfer with Area of Concentration in Physics at Harford Community College who are interested in pursuing a Bachelor of Science in Interdisc Physics; Area of Concentration: Planetary Science at Towson University. This transfer guide outlines the courses and program requirements a student should follow to satisfy degree requirements at HCC in order to complete both the HCC and TU degrees within a total of 4 years and 120 credits.

Arts and Sciences Transfer with Area of Concentration in Physics

Interdisciplinary Physics; Area of Concentration: Planetary Science

Effective Term: Fall 2025

YEAR 1 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
CHEM 111 General Chemistry I (GL)* ©	CHEM 131/131L	4	CHEM 112 General Chemistry II A (GL) *©	CHEM 132/132L	4
ENG 101 English Composition (GE)* ©	ENGL 102	3	MATH 204 Calculus II (GM)*	MATH 274	4
MATH 203 Calculus I (GM)* ©	MATH 273	4	PHYS 201 General Physics I: Mechanics (GL)*	PHYS 241	4
PSY 101 General Psychology (GB) ֍ ©	PSYC 101	3	PHIL 205 Ethics (GAH) OR ©	PHIL 103	3
			PHIL 220 Bioethics (GAH) OR ©	PHIL T61 (361)	
			PHIL 221 Business Ethics (GAH) OR ©	PHIL T71 (371)	
			PHIL 222 Environmental Ethics (GAH) ©	PHIL 255	
TOTAL CREDITS:		14	**TOTAL CREDITS:**		15

YEAR 2 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
MATH 208 Elementary Differential Equations*	MATH T74 (374)	3	MATH 206 Calculus III*	MATH 275	4
PHYS 204 Gen Phys II: Heat, Electricity and Magnetism (GL)*	PHYS 242	4	MATH 217 Linear Algebra	MATH 265	4
CSI 130 Introduction to Concepts in Computer Science*	COSC 175	3	PHYS 205 Gen Phys III: Waves, Optics and Modern Phys*	PHYS 243	4
SOC 101 Introduction to Sociology (GB) ֍ ©	SOCI 101	3	CMST 210: Group Communication & Leadership (GAH) ֍ ©	COMM 216	3
ES 105/ES 106 Earth Science Lecture & Laboratory	GEOL 121	4	Physical Education Elective	PHEA TLL	1
TOTAL CREDITS:		17	**TOTAL CREDITS:**		16

YEAR 3 - Towson University

Fall	Credits	Spring	Credits
PHYS 185 Introductory Seminar in Physics*	1	ASTR 371 Planetary Astronomy*	3
ASTR 261 Intro to Astrophysics*	4	PHYS 341 Interrmediate Physics Laboratory*	3
PHYS 305 Computers in Physics*	4	PHYS 385 Physics Seminar OR ASTR 385 Astrophysics Seminar*	1
PHYS 311 Modern Physics I*	3	Any 300- or 400- level course from ASTR, CHEM, PHYS, or MATH*	3
GEOL 331 Mineralogy*	4	GEOG 221 Introduction to Geospatial Technology*	3
TOTAL CREDITS:	16	**TOTAL CREDITS:**	13

YEAR 4 - Towson University

Fall	Credits	Spring	Credits
Any 300- or 400- level course from ASTR, CHEM, PHYS, or MATH*	6	Any 300- or 400- level course from ASTR, CHEM, PHYS, or MATH*	3
GEOL 333 Petrology of Igneous and Metamorphic Rocks*	4	Any 300- or 400- level course from ASTR, CHEM, PHYS, or MATH*	3
CHEM 301 Professional Ethics for Scientists ֍ * ©	3	PHYS 486 Physics Seminar II*	1
Any elective course	3	GEOG 321 Introduction to Remote Sensing and Photogrammetry*	3
		Any elective course	3
TOTAL CREDITS:	16	**TOTAL CREDITS:**	13

** Denotes course that must be completed with a grade of C or better* *** Must consult with a TU Academic Advisor* *© Core Curriculum*

Notes & Recommendations from Towson University:

- Core 1 at TU is automatically waived for all transfer students.
- Course equivalents ending in TLL are general lower-level elective coursework at TU.
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- Students entering into this agreement will need to complete one Core Curriculum requirement at TU: Advanced Writing Seminar (Core 9). Students not completing the courses listed above will be required to complete additional Core Curriculum requirements at TU.

Bachelor's degree requirements for all students:

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

PROGRAM TRANSFER GUIDE

HARFORD COMMUNITY COLLEGE

TOWSON UNIVERSITY

This transfer guide is intended for students pursuing an Arts and Sciences Transfer with Area of Concentration in Physics at Harford Community College who are interested in pursuing a Bachelor of Science in Biophysics at Towson University. This transfer guide outlines the courses and program requirements a student should follow to satisfy degree requirements at HCC in order to complete both the HCC and TU degrees within a total of 4 years and 120 credits.

Arts and Sciences Transfer with Area of Concentration in Physics

Bachelor of Science in Biophysics

Effective Term: Fall 2025

YEAR 1 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
CHEM 111 General Chemistry I (GL)* ©	CHEM 131/131L	4	CHEM 112 General Chemistry II A (GL) *©	CHEM 132/132L	4
ENG 101 English Composition (GE)* ©	ENGL 102	3	MATH 204 Calculus II (GM)*	MATH 274	4
MATH 203 Calculus I (GM)* ©	MATH 273	4	PHYS 201 General Physics I: Mechanics (GL)*	PHYS 241	4
PSY 101 General Psychology (GB) ֍ ©	PSYC 101	3	PHIL 205 Ethics (GAH) OR ©	PHIL 103	3
			PHIL 220 Bioethics (GAH) OR ©	PHIL T61 (361)	
			PHIL 221 Business Ethics (GAH) OR ©	PHIL T71 (371)	
			PHIL 222 Environmental Ethics (GAH) ©	PHIL 255	
TOTAL CREDITS:		14	**TOTAL CREDITS:**		15

YEAR 2 - Harford Community College

Fall	TU Equivalent	Credits	Spring	TU Equivalent	Credits
MATH 208 Elementary Differential Equations*	MATH T74 (374)	3	MATH 206 Calculus III*	MATH 275	4
PHYS 204 Gen Phys II: Heat, Electricity and Magnetism (GL)*	PHYS 242	4	MATH 217 Linear Algebra	MATH 265	4
CSI 130 Introduction to Concepts in Computer Science*	COSC 175	3	PHYS 205 Gen Phys III: Waves, Optics and Modern Phys*	PHYS 243	4
SOC 101 Introduction to Sociology (GB) ֍ ©	SOCI 101	3	CMST 210: Group Communication & Leadership (GAH) ֍ ©	COMM 216	3
BIO 120 General Biology (GL)*	BIOL 200/200L	3	Physical Education Elective	PHEA TLL	1
TOTAL CREDITS:		16	**TOTAL CREDITS:**		16

YEAR 3 - Towson University

Fall	Credits	Spring	Credits
PHYS 185 Introductory Seminar in Physics*	1	CHEM 333 & CHEM 333L Essentials of Organic Chem Lecture/Lab*	5
PHYS 305 Computers in Physics*	4	PHYS 341 Intermediate Physics Laboratory I*	3
PHYS 311 Modern Physics I*	3	BIOL 206 & BIOL 206L Biology II: Intro to Ecology & Evolution Lecture/Lab*	4
PHYS 320 Biophysics*	3	CHEM 301 Professional Ethics for Scientists ֍ * ©	3
PHYS 385 Physics Seminar*	1		
Any elective course	3		
TOTAL CREDITS:	15	**TOTAL CREDITS:**	15

YEAR 4 - Towson University

Fall	Credits	Spring	Credits
Any 300-or 400- level courses from PHYS, CHEM, BIOL, or MATH*	6	Any 300-or 400- level courses from PHYS, CHEM, BIOL, or MATH*	6
BIOL 309 Genetics*	4	Any elective course	3
CHEM 351 Biochemistry*	3	PHYS 486 Physics Seminar II*	1
CHEM 356 Biochemistry Lab*	2	BIOL 408 Cell Biology*	4
TOTAL CREDITS:	15	**TOTAL CREDITS:**	14

** Denotes course that must be completed with a grade of C or better* *** Must consult with a TU Academic Advisor* *© Core Curriculum*

Notes & Recommendations from Towson University:

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Bachelor's degree requirements for all students:

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- A C grade (2.0 GPA) or higher is required for all major courses and prerequisites.
- 32 credits of the bachelor's degree must be completed at the upper level (courses numbered 300 or above) at TU