The City University of New York

Articulation Agreement Between

Queensborough Community College

and

New York City College of Technology

A.   Sending and Receiving Institutions

Sending Institution: Queensborough Community College (QCC)
Department: Physics
Program: Liberal Arts and Sciences (Mathematics and Science)
Degree: A.S.

Receiving Institution: New York City College of Technology
Department: Physics
Program: Applied Computational Physics
Degree: B.S.

B.   Admission Requirements for Senior College Program

Minimum GPA: 2.5

To take advantage of this articulation agreement, students must complete the A.S. in Liberal Arts and Sciences (Mathematics and Science) at Queensborough Community College and be accepted for admission to New York City College of Technology. Upon transfer to New York City College of Technology, students must declare a major in applied computational physics.

Total transfer credits granted toward the baccalaureate degree: 60 credits.
Total additional credits required at New York City College of Technology to complete the baccalaureate degree: 60 credits.

C. Course-to-Course Equivalencies and Transfer Credit Awarded

Queensborough Community College		New York City College of Technology		
Pathways Core Requirements	**Credits**	**Course Equivalency**	**Credits**	**Transfer Credits Awarded**
Required Core 1A: ENGL-101 English Composition I ENGL-102 English Composition II	3 3	ENG 1101 English Composition I ENG 1121 English Composition II	3 3	3 3
Required Core 1B: MA-440 Pre-Calculus Mathematics[1,2]	4	MAT 1375: Precalculus - Mathematical and Quantitative Reasoning	4	4
Required Core 1C: PH-421 General Calculus Physics A	5	PHYS 1441 General Physics I: Calculus Based	5	5
Flexible Core 2A: Select one course	3	World Cultures and Global Issues	3	3
Flexible Core 2B: SP211 Speech Communication	3	U.S. Experience in Its Diversity	3	3
Flexible Core 2C: Select one course	3	Creative Expression	3	3
Flexible Core 2D: Select one course	3	Individual and Society	3	3
Flexible Core 2E: PH-422 General Calculus Physics B	5	PHYS 1442: General Physics II: Calculus Based	5	5
Additional Flexible Core Course: MA-441 Analytical Geometry and Calculus I[1,2]	4	MAT 1475 Calculus I	4	4
Subtotal	**36**	**Subtotal**	**36**	
Requirements for the Major		**Course Equivalency**		
MA-442 Analytical Geometry and Calculus II	4	MAT 1575 Calculus II	4	4
MA-443 Analytic Geometry and Calculus III	4	MAT 2675 Calculus III	4	4
PH-160 Physics Colloquium	1	Elective	1	1
PH-440 Modern Physics	4	PHYS 2443 Modern Physics	4	4
PE-400, PE-500, or DAN-100 series	1	Elective	1	1
HE-101 Introduction to Health Education or HE-102 – Health Behavior &Society	1-2	Elective	1-2	1-2
History or Social Sciences course	3	Elective	3	3
Subtotal	**17-18**	**Subtotal**	**17-18**	
Major Electives[2]		**Course Equivalency**		
Take 6-7 credits from the following list:				
CH-151 General Chemistry I	4.5	CHEM 1110 General Chemistry I Elective	4 0.5	4 0.5
CH-152 General Chemistry II	4.5	CHEM 1210 General Chemistry II Elective	4 0.5	4 0.5
CS-101 Algorithmic Problem Solving I (Recommended)	4	CST 1101 Problem Solving with Computer Programming Elective	3 1	3 1
MA-119 College Algebra[1] and MA-121 Trigonometry[1]	3 1	MAT 1275 College Algebra and Trigonometry	4	4
MA-451 Differential Equations	4	MAT 2680 Differential Equations	4	4
MA-461 Linear Algebra	4	MAT 2580 Linear Algebra Elective	3 1	4
PH-240 Computerized Physical Measurement Using Graphical Programming	3	Elective	3	3
PH-414 Analytical Mechanics	4	PHYS 3100 Classical Mechanics	4	4
PH-415 Electricity and Magnetism	4	PHYS 3200 Electricity and Magnetism	4	4
PH-416 Thermodynamics	4	Elective	4	4
PH-450 Introduction to Physics Research	3	PHYS 2601 Introduction to Research	3	3
PH 451 Numerical Methods	3	Elective	3	3
PH-501 Special Topics	3	Elective	3	3
PH-900 Research	2	Elective	2	2
Subtotal	**6-7**	**Subtotal**	**6-7**	
Total	**60**	**Total**	**60**	

Notes:

1. Depending on their math placement, students may be required to complete MA-119 and/or MA-121 (both with a C or better) prior to MA-440. When required by math placement, MA-119 and MA-121 will count as major electives.

2. Students who place into mathematics at MA-441 will use that course to satisfy Required Core 1B, use MA-442 in the Flexible Core, and take an additional 4 credits of major elective courses to reach 60 credits.

All Queensborough Community College students must complete at least two writing intensive courses, designated as "WI" in the course schedule.

D. **Senior College Courses Remaining for Baccalaureate Degree***

COLLEGE OPTION REQUIREMENTS		
Public Speaking	COM 1330 or higher	3
Interdisciplinary Course	Any course in approved list, elective	3
Total Common Core & College Option Requirements		**6**
CURRICULUM REQUIREMENTS**		
PHYS 2607	Introduction to Quantum Mechanics	3
PHYS 2609	Introduction to Quantum Computing	4
PHYS 3100	Classical Mechanics	4
PHYS 3200	Electricity and Magnetism	4
PHYS 3600	Machine Learning for Physics and Astronomy	3
PHYS 4100	Computational Methods	4
PHYS 4150	Computational Methods Lab	2
PHYS 4200	Internship/Real research Experience (WI)	4
MAT 2572	Probability and Mathematical Statistics I	4
MAT 2580	Linear Algebra	3
CST 1201	Programming Fundamentals	3
CST 1204	Database Systems Fundamentals	3
	Additional Elective Courses (up to 120 overall Credits)	13
Total Curriculum Requirements		**54**
Total Program Credits		**60**

Note (*): This table is based on the choice of the Major Electives recommended in Table C. In the event that students at QCC opt for a different selection of Major Electives, the requirements outlined in this Table might change.
Note (**): To meet New York City College of Technology's bachelor's graduation requirement students must complete two additional writing intensive courses (WI), one in the core curriculum (general education) and one in the major.

E. **Summary of Credits Required**

Total credits to be earned at Queensborough Community College	60
Total credits to be earned at New York City College of Technology College	60
Total credits required for the B.S. in Applied Computational Physics degree	120

F. **Articulation Agreement Follow-up Procedures**

Procedures for reviewing, updating, modifying, or terminating the agreement:

This agreement will be valid for 3 academic years from the Effective Date (below). Each year, there will be a review of the agreement's effectiveness by the Academic Affairs Officers at each institution.

When any of the programs within this agreement undergo any changes relevant to this agreement, this agreement will be reviewed and revised as necessary by the Curriculum Committees of both the sending and receiving program.

Either party may independently cancel this agreement by notifying the other party no less than one academic year before the intended date of cancellation.

Procedures for evaluating agreement:

The academic department, advisement centers, and Offices of Institutional Effectiveness from each campus will keep data on the academic progress of the transfer students. Upon request, New York City College of Technology will provide Queensborough Community College with the

following information: a) the number of QCC students who enrolled; and b) the GPAs of these enrolled students.

<u>Sending and receiving college procedures for publicizing agreement:</u>

Queensborough Community College and New York City College of Technology will collaborate in publicizing this agreement on their websites and in their catalogs. They will share brochures and other marketing materials including web-based promotions. Transfer advisors will be made aware of this agreement and will have available all necessary materials to publicize the agreement to the students with whom they work.

<u>Additional Information</u>

In order to graduate students must satisfy City Tech's residency requirement which includes a minimum of 30 credits taken at the college and 15 within major requirements and have a minimum cumulative GPA of 2.0.

Effective Date: Spring 2021

For Queensborough Community College: *For New York City College of Technology College:*

Sandra Palmer, Ph.D.	Date		Pamela Brown, PhD, PE	Date
Acting Provost and Vice-President			Interim Provost and VP for Academic	
for Academic Affairs			Affairs	

Michael Pullin, Ph.D.	Date		
Associate Dean of Academic			
Affairs			

David Lieberman, Ph.D.	Date		German Kolmakov, Ph.D.	Date
Chair, Department of Physics			Chairperson, Physics Department	